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Naturalized Epistemology and the Law of
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Ronald Jay Allen and Brian R. Leiter

Abstract

This paper important developments in epistemology, and defends a theoretical framework for evidence scholarship from the perspective of naturalized epistemology. It demonstrates that naturalized epistemology provides a firm conceptual foundation for much research into law of evidence. These developments in epistemology have not been much noted in legal scholarship, despite their importance in philosophy and their coincidence with some widely shared approaches to evidence scholarship. This article is a partial antidote for the unproductive fascination in some quarters of the legal academy with “postmodern” conceptions of knowledge and truth and to the even more common search by the legal professoriat for algorithms that provide answers to important legal questions. In the field of evidence, there is some interest in post-modern epistemology, and much searching for the appropriate algorithm, such as Bayesian decision theory or micro-economics, or simply the complete neglect of epistemological matters. The article argues that the naturalistic turn in epistemology of the past thirty years (especially that branch of naturalized epistemology known as social epistemology) provides the appropriate theoretical framework for the study of evidence, as it does for virtually any enterprise concerned with the empirical adequacy of its theories and the truth-generating capacity of its methodologies. Evidence scholarship and law are concerned with both, and thus naturalized epistemology provides a fruitful way of understanding the limitations of some of the existing efforts to provide theoretical and philosophical foundations to evidence law. It also provides a way to conceptualize and evaluate specific rules of evidence, and concomitantly explains what most evidence scholars do, regardless of their explicit philosophical commitments. For the great bulk of evidentiary scholars, this article should solidify the ground beneath their feet.

NATURALIZED EPISTEMOLOGY AND THE LAW OF EVIDENCE

Ronald J. Allen*

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This paper sets itself two tasks: (1) to introduce lawyers to important recent developments in epistemology; and (2) to show lawyers and philosophers how these developments provide a conceptual foundation for some familiar approaches to problems from the law of evidence. The developments in epistemology have not, to date, been much noted in legal scholarship, despite their importance in philosophy and their coincidence with some widely shared approaches to evidence scholarship. This may partly explain--or perhaps is partly explained by--the unfortunate fascination in some quarters of the legal academy with "postmodern" conceptions of knowledge and truth, conceptions notable for their superficiality and for the fact that almost no philosophers subscribe to them.¹ It may also partly explain--or be explained by--the even more common search by the legal professoriat for the algorithm that, a priori, provides answers to important legal questions. In the field of evidence, while there is

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¹ They are also remarkably useless for evidence law, as discussed in Mirjan Damaška, *Truth in Adjudication*, 49 HASTINGS L.J. 289 (1998). "Postmodern" conceptions of truth and knowledge are patiently and clearly criticized in ALVIN I. GOLDMAN, KNOWLEDGE IN A SOCIAL WORLD 9-40 (1999).

some interest in post-modern epistemology,² more typical is either the search for the appropriate algorithm, such as Bayesian decision theory³ or more recently micro-economics,⁴ or simply the complete neglect of epistemological matters. However, in our view the naturalistic turn in epistemology of the past thirty years--and, in particular, that branch of naturalized epistemology known as social epistemology--provides the most appropriate theoretical framework for the study of evidence, as it does for virtually any intellectual enterprise concerned with the empirical adequacy of its theories and the truth-generating capacity of its methodologies. Evidence scholarship and law are concerned with both, and thus naturalized epistemology provides a fruitful way of understanding the limitations of some of the existing efforts to provide "theoretical" and "philosophical" foundations to evidence law, and it also provides a way to conceptualize and evaluate specific rules of evidence. It has the additional virtue of explaining what most evidence scholars do, regardless of their explicit philosophical commitments. For the great bulk of evidentiary scholars, then, this article merely solidifies the ground beneath their feet.

Part I involves philosophical stage-setting, aimed at making intelligible to lawyers recent developments in philosophy. Part II situates the naturalized

² See, e.g. Bernard S. Jackson, *Law, Fact and Narrative Coherence* (1988).

³ See, e.g., John Kaplan, *Decision Theory and the Factfinding Process*, 20 STAN. L. REV. 1065 (1968); Richard Lempert, *Modeling Relevance*, 75 MICH. L. REV. 1021 (1977); JONATHAN L. COHEN, *The PROBABLE AND THE PROVABLE*. (1977); DAVID H. KAYE, *SCIENCE IN EVIDENCE*. (1997); David H. Kaye, *Introduction: What is Bayesianism?* in *PROBABILITY AND INFERENCE IN THE LAW OF EVIDENCE: THE USES AND LIMITS OF BAYESIANISM*, 1 (Peter Tillers & Eric D. Green, eds., 1988).

⁴ Richard A. Posner, *An Economic Approach to the Law of Evidence*, 51 STAN. L. REV. 1477 (1999).



epistemology approach briefly with respect to other "grand" attempts to provide conceptual foundations to evidence law. Part III employs the naturalized epistemology approach to criticize existing theories of different evidentiary rules, including Bayesianism, expected utility theory, and Judge Richard Posner's recent economic analysis of the law of evidence. Part III concludes with a brief examination of another evidentiary theory—the relative plausibility theory—that better meets the demands of the naturalistic approach. Part IV shows how this epistemological approach applies to specific rules of evidence and sketches directions for further research.

I. NATURALIZING EPISTEMOLOGY

If the twentieth-century began with the "linguistic turn" in philosophy⁵--with the idea that traditional philosophical problems were best analyzed and conceptualized as problems about language and its relation to the world--its concluding quarter-century has been marked by "the naturalistic turn." "Naturalism" has acquired multiple meanings in recent years,⁶ but the *core* commitment of naturalists (at least for our purposes here) is *methodological*: philosophy should be continuous with *a posteriori* inquiry in the empirical sciences; philosophy cannot be an exclusively *a priori* discipline.⁷ At one

⁵ See THE LINGUISTIC TURN: RECENT ESSAYS IN PHILOSOPHICAL METHOD (Richard Rorty ed., 1967).

⁶ For a review, with citations to much of the literature, and an attempt to sort out the different meanings, see Brian Leiter, *Naturalism and Naturalized Jurisprudence*, in ANALYZING LAW: NEW ESSAYS IN LEGAL THEORY 79, 80-92 (Brian Bix ed., 1998).

⁷ Many naturalists also adopt a *substantive* view to the effect that the only things that exist are those countenanced by the natural sciences. For discussion and citations, see again Leiter, *id.* at 81-84. All substantive naturalists of this kind profess to be driven to the view by methodological naturalism, though it is hard to see how appeal to the empirical sciences would underwrite the most extreme forms of physicalism. See also Jerry Fodor, *Edward O. Wilson's Consilience: the Unity of Knowledge*, LONDON REVIEW OF BOOKS, October 29, 1998 at 3.

extreme, best exemplified by W.V.O. Quine,⁸ this means the *replacement* of philosophy by empirical science. In a less extreme and more influential form, best exemplified by Alvin I. Goldman,⁹ philosophical theorizing is constrained by empirical facts, and often demands supplementation by empirical information. Thus, in the case of individual epistemology--that branch of the theory of knowledge which focuses "on mental operations of cognitive agents in isolation or abstraction from other persons"¹⁰--we can not craft epistemic norms (norms that would guide our acquisition of knowledge) without empirical information about how the human cognitive apparatus actually works. Since for Goldman a belief counts as knowledge if "caused by a generally reliable process,"¹¹ it follows that, "Only if (some of) our basic cognitive processes are...reliable...can we qualify as knowers....[W]hether we so qualify hinges, in part, on facts in [empirical] psychology's bailiwick."¹² Notice that on Goldman's approach, the relevance of empirical psychology to epistemology results from a proffered conceptual analysis of a conventional philosophical kind, i.e., the suggestion that a belief is knowledge if caused by a reliable process. It is *that* conceptual analysis that makes empirical science relevant to assessing which beliefs count as knowledge and

⁸ See, e.g., W.V.O. QUINE, *Epistemology Naturalized*, in ONTOLOGICAL RELATIVITY AND OTHER ESSAYS (1969).

⁹ See, e.g., ALVIN I. GOLDMAN, *EPISTEMOLOGY AND COGNITION* (1986). For an indication of the scope of the influence of Goldman's approach, see Philip Kitcher, *The Naturalists Return*, 101 PHIL. REV. 53 (1992), and the discussion and citations therein.

¹⁰ GOLDMAN, *supra* note 1, at 4.

¹¹ GOLDMAN, *supra* note 9, at 51. The details of Goldman's externalist reliabilism do not matter here.

¹² *Id.* at 53.



to crafting epistemic norms to regulate belief formation so that it yields knowledge.

But why *naturalize* epistemology or any branch of philosophy, in the sense of making it dependent upon empirical science? The motivations are various, and they sometimes depend on what part of philosophy we are considering. One important impetus for naturalizing philosophy was Quine's seminal attack on the distinction between "true in virtue of meaning" ("analytic" truths) versus "true in virtue of empirical fact" ("synthetic" truths).¹³ The former were thought, at least by some logical positivists, to constitute the distinctive domain of philosophical expertise, while the latter were the property of empirical science. Philosophers would analyze and clarify the meanings and concepts that define the framework in which empirical science operates. But if there is no distinctive domain of truths of meaning, as Quine argues, then there is nothing for philosophy to do: all the intellectual work falls to empirical science.¹⁴ Few philosophers have followed Quine this far, though the general moral—that philosophical claims are always vulnerable to the successes of *a posteriori* inquiry—has been hard to deny.¹⁵ *A priori* conceptual analysis can continue to play a role in philosophy, but it offers no special insight in to timeless truths, and is always vulnerable to radical revision or

¹³ Carnap and Logical Truth; Willard V.O. Quine, *Truth by Convention*, in THE WAY OF PARADOX 77 (1976); Quine, *Two Dogmas of Empiricism*, in FROM A LOGICAL POINT OF VIEW 20 (2d ed. 1980). For an accessible discussion, see also Brian Leiter, *Why Quine is Not a Postmodernist*, 50 SMU L. REV. 1739, 1746-1747 (1997). For more demanding treatments, see GEORGE ROMANOS, QUINE AND ANALYTIC PHILOSOPHY (1982); CHRISTOPHER HOOKWAY, QUINE: LANGUAGE, EXPERIENCE, AND REALITY (1988).

¹⁴ Of course, it is important for Quine's holism that there are no, strictly speaking, "synthetic" truths either, since every claim can be maintained in the face of recalcitrant evidence, as long as we are willing to adjust other aspects of our world-view.

¹⁵ But not universally heeded, as Gilbert Harman correctly complains in *Doubts About Conceptual Analysis* in PHILOSOPHY IN MIND 43 (Michaelis Michael & John O'Leary-Hawthorne eds., 1994).

elimination in the light of empirical progress.¹⁶

Some of the reasons for naturalism are more particular to epistemology. Gettier's refutation of the then prevailing analysis of the concept of knowledge as "justified true belief"¹⁷ was taken by many to show "that the epistemic status of a belief state depends on the etiology of the state and, consequently, on psychological facts about the subject."¹⁸ What Gettier's refutation meant, in other words, was that the *actual* causal trajectory leading from evidentiary input to belief was crucial for establishing whether the resultant belief would count as "knowledge."¹⁹ But the "actual causal trajectory" leading to belief fell within the domain of empirical science, not philosophy conceived as mere conceptual analysis. Quine, on the other hand, thought the failure of Cartesian foundationalism rendered the normative project of philosophical epistemology futile, and recommended its replacement with the empirical study of the causal relationship between sensory inputs and theoretical outputs.²⁰

This is not, to be sure, the place for a sustained defense of the naturalistic turn;

¹⁶ This may understate the difficulties confronting conceptual analysis; for stronger criticisms, see Brian Leiter, *The Naturalistic Turn in Legal Philosophy* APA NEWSLETTER ON LAW & PHIL. (forthcoming).

¹⁷ Edmund Gettier III, *Is Justified True Belief Knowledge?* 23 ANALYSIS 121 (1963).

¹⁸ Kitcher, *supra* note 9, at 60.

¹⁹ Goldman's alternative conceptual analysis of knowledge (and its component elements like "justification") was responsive to this problem, by introducing as an element of the concept the relevance of the actual trajectory leading to belief. That in turn made empirical science relevant to the project of epistemology, as noted earlier in the text.

²⁰ There is some debate about the role of normative epistemology in Quine's approach. For contrasting views, see Jaegwon Kim, *What is "Naturalized Epistemology?"* reprinted in JAEGWON KIM, *SUPERVENIENCE AND MIND* (1993) and Richard Foley, *Quine and Naturalized Epistemology*, 19 MIDWEST ST. IN PHIL. 243 (1994). For Quine's own views on the question (which support, in part, Foley), see W.V.O. QUINE, *PURSUIT OF TRUTH* 19-21 (1990).

we only want to locate our project within the existing philosophical landscape. Whether epistemology in general should be naturalized is, in any case, irrelevant to the question of whether naturalized epistemology provides a fruitful way of understanding evidence law. The latter is our central contention, and the one this paper as a whole is meant to vindicate.

At the most general level, then, naturalizing epistemology means viewing philosophical theorizing about knowledge as more than an *a priori*, armchair exercise, but rather as continuous with and dependent upon empirical science. Insofar as we follow Goldman in retaining the distinctively *normative* element of epistemology--the regulation of our cognitive activities so that they result in knowledge--then the rationalization for naturalization is "that one cannot give the best [normative] advice about intellectual operations without detailed information about mental processes"²¹ and how they *really* work. But information about "mental processes" suffices only for *individual* epistemology, as noted already. Yet "[t]he bulk of an adult's world-view is deeply indebted to her social world. It can largely be traced to social interactions, to influences exerted by other knowers....It is imperative, then, for epistemology to have a social dimension."²² Social epistemology is simply that branch of naturalized epistemology concerned not with individual knowers but with the social processes and practices which inculcate belief.²³ And while naturalized individual epistemology

²¹ Alvin I. Goldman, *Epistemics: The Regulative Theory of Cognition*, 75 J. PHIL. 509 (1978).

²² Alvin I. Goldman, *Foundations of Social Epistemics*, 73 SYNTHÈSE 109 (1987).

²³ More precisely, as Goldman says in his recent book, the "social" element of social epistemology is threefold: (1) "it focuses on social paths or routes to knowledge;" (2) it "does not

depends primarily on the empirical sciences of the human cognitive apparatus, naturalized social epistemology must consider the range of empirical sciences that examine the social mechanisms of belief-inculcation. In what follows, we shall often speak of "naturalized epistemology" and "social epistemology" interchangeably.

It does bear noting, however, that there is another, rather different sense of "social epistemology" current in the literature, with which our approach should *not* be confused. For some of those who talk about "social" epistemology mean an approach which tries to explain what "passes" for knowledge in some community as simply the product of social factors rather than epistemic considerations of any kind.²⁴ We may call this approach *debunking* social epistemology, since it means to unmask the pretense of putative knowledge claims by showing them to reflect social interests and circumstances. Of course, debunking social epistemology *might* be the upshot of a naturalized approach to epistemology:²⁵ it could turn out, as an *a posteriori* matter, that the best explanation of the claims we call "knowledge" only makes reference to non-epistemic social factors. We needn't rule out that possibility, and, of course, as naturalists, we can not rule it out *a priori*. But it remains an open empirical question whether debunking social epistemology is true.

Social epistemology, in the sense we adopt, is *normative* or *regulative* in its

restrict itself to believers taken singly. It often focuses on some group or entity--a team of co-workers, a set of voters in a political jurisdiction, or an entire society--and examines the spread of information or misinformation across that group's membership"; and (3) "instead of restricting knowers to individuals, social epistemology may consider collective or corporate entities, such as juries or legislatures, as potential knowing agents." GOLDMAN, *supra* note 9, at 4-5.

²⁴ See, e.g., STEVE FULLER, SOCIAL EPISTEMOLOGY (1988).

²⁵ See the discussion of "radical naturalism" in Kitcher, *supra* n. 9 at 96 ff.



ambitions. We want to ask, as Goldman puts it in his recent important book on the subject, "Which [social] practices have a comparatively favorable impact on knowledge as contrasted with error and ignorance?"²⁶ Social epistemology is, in this respect, *veritistic* (to borrow Goldman's term): it is concerned with the production of knowledge, meaning (in part) *true* belief.²⁷ So the normative naturalized epistemologist embraces as his goal the promulgation of norms by which to regulate our epistemic practices so that they yield knowledge. In the case of individual epistemology, this means the norms governing how individuals should acquire and weigh evidence as well as, ultimately, form beliefs; in the case of social epistemology, this means the norms governing the social mechanisms and practices that inculcate belief.

The rules of evidence are a prime case of the latter: for these rules structure the epistemic process by which jurors arrive at beliefs about disputed matters of fact at trials. As such, the rules of evidence are a natural candidate for investigation by social epistemologists. We may ask of any particular rule: does it increase the likelihood that jurors will reach *true* beliefs about disputed matters of fact? Of course, it does not make sense to ask that of *every* rule, since some rules of evidence--for example, FRE 407-411--are not meant to facilitate the discovery of truth, but to carry out various policy objectives like reducing accidents and avoiding litigation. We shall return to this issue in Part II below.

Social epistemology, as a branch of naturalized epistemology, must honor two

²⁶ *Id.* at 5.

²⁷ *Id.* See generally *id.* at 79-100 for some of the details and complications involved in assessing practices along veritistic dimensions.

particularly important constraints. First, as Goldman remarks, "advice in matters intellectual, as in other matters, should take account of agent's capacities....As in the ethical sphere, 'ought' implies 'can.'"²⁸ In other words, normative epistemology, like normative ethics, can not require of agents actions (mental or physical) that they can not perform. Second, naturalized epistemology "assumes that cognitive operations should be assessed instrumentally: given a choice of cognitive procedures, those which would produce the best set of *consequences* should be selected."²⁹ In other words, normative epistemology must always ask about the *actual* consequences of alternative sets of epistemic norms, i.e., which are the most effective means for producing knowledge. Given these constraints, naturalized epistemology must then be continuous with empirical science in two quite particular senses: (1) we need to know what epistemic norms *in fact* lead to the acquisition of knowledge; and (2) we need to identify epistemic norms that are *actually* usable by creatures like us. This rules out epistemic norms which require of cognizers (individual or social) belief-formation practices beyond their ken.³⁰ Naturalized epistemology, in short, emphasizes the *instrumental* character of normative theorizing in epistemology; but the only way to assess instrumental claims is empirically, i.e. by finding out what means *really* bring about what ends.

II. NATURALIZED EPISTEMOLOGY AND THE CONCEPTUAL

²⁸ Goldman, *Epistemics*, *supra* note 21, at 510.

²⁹ *Id.* at 520. For a similar approach, see Larry Laudan, *Normative Naturalism*, 57 PHIL. SCI . 44, 46 (1990).

³⁰ See, e.g., Goldman, *Epistemics*, *supra* note 21, at 512-513.

FOUNDATIONS OF EVIDENCE

James B. Thayer, in his famous treatise, says,

When men speak of historical evidence and scientific evidence, and the evidences of Christianity, they are talking about a different sort of thing. The law of evidence has to do with the furnishing to a court a matter of fact, for use in a judicial investigation.³¹

Social epistemology, as a naturalistic approach to the law of evidence, is premised on a rejection of Thayer's position, at least understood as a claim about differences in kind. In fact, social epistemology might properly consider history, science, and religion from the veritistic standpoint, trying to ascertain the extent to which the constitutive practices of each arena reliably produce knowledge. For the social epistemologist, then, the law of evidence is *not* a "different sort of thing" from any other practice that has as one of its elements the production of knowledge.

But, in another sense, the law of evidence *is* different. It operates within a distinctive social institution (the trial and the adversarial system more generally), rather than the laboratory or the library. It employs a distinctive division of epistemic labor, with one set of actors (judges) first determining the evidential base upon which another set of actors (jurors) will rely in forming beliefs about disputed matters of fact.³² And,

³¹ JAMES B. THAYER, A PRELIMINARY TREATISE ON EVIDENCE AT COMMON LAW 264 (1898).

³² The division is actually more complex than this, since judges only make their determination within an evidential base created not by them, but by the advocates for each party to a dispute. In theory, at least, the adversarial system should produce a very large evidential base, one that might even match or exceed in scope the evidential base that the scientist or historian might consider for his distinctive purposes. See the further discussion, *infra*, Part III.

finally, considered as a whole, the law of evidence does *not* have as its only aim the production of true belief. It is true that FRE 102 defines the "purpose" of the rules as "that the truth may be ascertained," but some of the rules themselves have no veritistic dimension (e.g. 407-411, excluding evidence to achieve various policy objectives, as well as the common-law privileges), while others mix veritistic and non-veritistic concerns (e.g. 413-415, concerning sex offense cases³³).

Still, considered as a whole, it is striking and important that the vast majority of the rules of evidence have as their primary rationale their (alleged) truth-conducive virtues. Competency of witnesses, authentication of evidence, relevancy, expert testimony, and hearsay (including the exceptions) all, at bottom, rest on the thought that inclusion and exclusion of evidence in line with these rules will increase the frequency with which truth is ascertained.³⁴ Social epistemology, as a framework for thinking about evidence, is committed to an investigation of the extent to which the conceptual foundations of evidence law rest upon the aim of and succeed in producing true belief.

This approach permits conceptual neutrality over some of the debates about evidence law familiar from the secondary literature. Thus, for example, we have no reason to take sides between those who advocate the "jury control principle" (the idea "that the organizing principle of Evidence law [is] a fear that lay jurors would misuse

³³ These recent lamentable amendments to the Federal Rules--which admit the sexual background of sexual predators apparently regardless of its relevancy or prejudicial effect--are unique in authorizing admission of evidence *on "policy" grounds*. The cases, however, seem to be concluding that FRE 413-415 do not dispense with FRE 403. See, e.g., *U.S. v. Meacham*, 115 F.3d 1488 (10th Cir. 1997).

³⁴ Hearsay is also in part driven by policy considerations, in particular in the criminal arena where there is a deeply held belief in the importance of confrontation.

certain types of evidence"³⁵) and those who advocate "the best evidence principle" (the idea that, "The best evidence must be given of which the nature of the case permits"³⁶).

Both are quite obviously predicated on an interest in promoting true belief, and thus both are compatible with the social epistemology framework. Thus, the worry that "jurors would misuse certain types of evidence" is precisely the worry that they will misuse them in the sense of drawing inferences that lead to false beliefs. So too, the underlying impetus for the best evidence principle is precisely the idea that "the rules of evidence with respect to trial in a court of law are, and should be, focused primarily on ascertaining the truth about controverted issues of fact within appropriate resource constraints."³⁷ Of course, the empirical adequacy of either account deserves investigation, with respect to both the accuracy of the description of the litigation process and the vertistic consequences of different approaches.

The jury control principle does, however, highlight an interesting feature of our evidentiary rules: namely, their epistemic paternalism.³⁸ Paternalism in any domain of legal regulation supposes that rules should substitute the rulemaker's judgment about what is best for agents for the agents' own judgments. *Epistemic* paternalism substitutes the rulemaker's judgment about what is *epistemically* best for agents for the

³⁵ Edward J. Imwinkelried, *The Worst Evidence Principle: The Best Hypothesis as to the Logical Structure of Evidence Law*, 46 U. MIAMI L. REV. 1069, 1070 (1992).

³⁶ S. Phipson, EVIDENCE, ¶126, at 55 (12th ed. 1976), *cited in* Dale Nance, *The Best Evidence Principle*, 73 IOWA L. REV. 227, 264 (1988). Nance's formulation is: "a party should present to the tribunal the best evidence reasonably available on a litigated factual issue." *Id.* at 227.

³⁷ *Id.* at 294.

³⁸ See Brian Leiter, *The Epistemology of Admissibility: Why Even Good Philosophy of Science Would Not Make for Good Philosophy of Evidence*, 1997 BYU L. REV. 803, 814.

agents' own judgment. Assuming that the primary epistemic value is truth, epistemic paternalism entails designing rules of evidence that are epistemically best for jurors, i.e., that lead them to form true belief about disputed matters of fact. Doing so requires, of course, taking into account *both* the epistemic frailties of jurors, and the epistemic limits of the rule-appliers (the "gatekeepers"), namely judges. Indeed, it is useful in analyzing the law of evidence to distinguish *primary* from *secondary* epistemic rules. Primary epistemic rules take in to account the epistemic shortcomings of jurors, such as their susceptibility to confusion and prejudice or their generally modest level of intellectual ability. Secondary epistemic rules take in to account the epistemic shortcomings of judges, such as their general lack of expertise in scientific matters. The rule of evidence that excludes unscientific evidence is a primary epistemic rule in the sense that it is predicated on the assumption that jurors must be "protected" from junk science in forming beliefs about disputed matters of fact. The rule of evidence requiring judges to exclude unscientific evidence is a secondary epistemic rule in the sense that it requires judges to make an epistemic judgment about the scientific status of proffered evidence. We can evaluate either a primary or secondary epistemic rule along veritistic dimensions: with respect to the former, we ask whether evidence excluded and included in accordance with the rule will reliably lead jurors to form true beliefs about disputed matters of fact; with respect to the latter, we ask whether the rule is such that judges can reliably apply it. Of course, a primary epistemic rule that fails along its veritistic dimension precludes any need to inquire about how it fares *qua* secondary epistemic rule.

III. NATURALIZED EPISTEMOLOGY AND THE EMPIRICAL ADEQUACY OF EXISTING THEORIES OF THE EVIDENTIARY PROCESS

Existing attempts to make theoretical sense of the evidentiary process have inadequately attended to their empirical adequacy and in addition, have fairly systematically run afoul of the two injunctions of naturalized epistemology: "ought implies can" and the instrumental character of normative advice. Formal models of legal decision-making often ask actors to do what they can not do, and (unsurprisingly) fail to inquire as to whether the formalized models at issue will *in fact* increase the veritistic reliability of the process. We shall critique three models of the evidentiary process, two of which fall prey to these problems and for which there is a substantial literature: expected utility theory as an explanation of burdens of persuasion; and Bayes' theorem as a theory of inference and relevance. The third model we consider is the economic analysis of evidence law represented by Judge Posner's recent foray into the field. The economic model is less directly concerned with veritism than its competitors; our main interest in it is that it exemplifies the limits of formal, a priori, reasoning about the evidentiary process. We conclude with a discussion of a fourth model of the evidentiary process, the relative plausibility theory, that we think better captures the relevant empirical phenomena, and does not demand of decision makers that they engage in tasks beyond their ken.

A. Expected Utility Theory

Burdens of persuasion appear quite readily to lend themselves to decision-theoretic explanations. Actual truth is rarely known in any particular case, otherwise there would be little need for a trial, and a large number of cases need decision. It certainly violates no canon of common sense to view this as calling for maximizing expected utility. Moreover, simple calculation generates the expected utility maximizing rules. In a case involving a binary choice where the disutilities of wrongful verdicts are equal, decision should be for whomever the probabilities favor, which is the .5 rule of civil law. In cases involving more than two possible explanations, decision should be for the most probable (and here we see the first problem, for this is not the law). If disutilities of wrongful decisions are not equal, as in criminal cases where a wrongful conviction is considerably worse than a wrongful acquittal, the decision rule is adjusted to accommodate the difference. Or so the expected utility theorists argue.³⁹

Naturalized epistemology should alert us to the fact, however, that the relationship between the world of mathematics and the world of human affairs may not be simple, and here there are two substantial difficulties. First, in its present version, expected utility theory does not in fact describe the law, although it may be used to criticize it. The law applies burdens of persuasion to elements, not to causes of action as a whole. Expected utility theory conflates the two as though the question asked at trial were liability or no liability. In a sense it is, but only after burdens of persuasion are applied to individual elements. Applying burdens of persuasion understood as

³⁹ See, e.g., Kaplan, *supra* note 2; David Kaye, *Naked Statistical Evidence*, 89 YALE L.J. 601 (1980); Kaye, *The Limits of the Preponderance of the Evidence Standard: Justifiable Naked Statistical Evidence and Multiple Causation*, 1982 ABA F. RES. J. 487.

probability measures to elements yield the well-known paradoxes of proof. If, for example, two stochastically independent issues are each established to a .6 probability, the probability of them both being true is .36.⁴⁰ Returning a verdict for a plaintiff in such cases is not going to maximize expected utility.

The puzzles press more deeply, however. The expected utility theorist may respond by criticizing the law and arguing that it is the conjunction of elements that should be found to a specific level. This, too, yields unacceptable consequences, by making the level of proof of specific elements turn on the fortuity of the number of elements in a cause of action. Take the example of theft and murder. Theft has considerably more elements than murder. Thus to convict for theft requires on average that intent to steal be established to a higher probability than intent to kill for a murder conviction. This strikes all legal observers as both unacceptable and absurd.

There is a still deeper formal problem here. Finding the probability of the conjunction of discrete elements may require massive amounts of information, and in any event cannot be done in the simple and direct manner of providing proof of the discrete elements. One of the logical implications of probability theory is, briefly, that virtually any relationship may exist between discrete elements and their combinations. For example, as the probability of two discrete elements each goes up, the probability of their conjunction may go down.⁴¹ As Shapira has summed up the situation:

⁴⁰ For a discussion of this and other paradoxes, see Ronald J. Allen, *A Reconceptualization of Civil Trials*, 66 B.U. L. REV. 401 (1986).

⁴¹ This is an example of Simpson's paradox, which has only recently been introduced into the evidentiary literature. See Allen, *Factual Ambiguity*, *supra* note *****Error! Bookmark not defined.**, at 608. For a thorough development of its implications see Ron A. Shapira, *The Susceptibility of Formal Models of Evidentiary Inference to Cultural Sensitivity*, 5 CARDOZO J.

one of the crucial things which require knowledge in all theories of evidence is a prior partition of the universe of discourse into equivalence classes, or, alternatively, a prior determination of essential properties of objects or relevant experimental variables.⁴²

The point, of course, is that the path between even such a simple formalization as probability statements about discrete elements and the objectives of trials is quite unclear. The specter of running afoul of "ought implies can" now arises.

There is a second set of problems with expected utility theory: in its simplest manifestation, it ignores base rates, the accuracy of probability assessments, and that it is not the subjective expectation of judges and jurors that the legal system wishes to maximize. More sophisticated versions, by contrast, have not given a plausible account of how these matters could in fact be taken into account in such a way as to increase the probability of furthering the objectives of the legal system. Both versions also neglect certain implications of subjective probabilities that will be taken up in the next subsection.

The legal system involves third party decision makers--judges and juries--implementing the wishes and commands of the sovereign people--or less grandly the policy maker's--who are typically legislators and sometimes constitution makers. Thus the utility to be maximized is that of the policy makers, not that of the judges and juries, and the two could be widely disparate. For example, with no knowledge of base rates

INT'L & COMP. L. 165 (1997).

⁴² *Id.* at 187.



or the relative accuracy of probability assessments, the lessons of expected utility theory are quite straightforward for fact finders. However, the policy maker may think he is in possession of such knowledge, and that knowledge dramatically affects the expected outcome, from the policy maker's point of view. Take a simple example. If no factually liable defendants go to trial, the only kind of error possible is holding a defendant wrongfully liable (a false positive). Lowering the burden of persuasion can only increase the policy maker's expected utility, whatever it does to that of the fact finder. Analogously, policy makers may believe that probability assessments of fact finders are skewed in some fashion, generating the same problem.

No means of accommodating this point has been advanced. The proponents of expected utility theory within the law have simply asserted that beliefs about base rates and the probability assessments can themselves be taken into account in forming subjective probabilities. True enough, but it is difficult to see what programmatic implications this may have, for informing the fact finder of this knowledge would have unpredictable effects on the fact finder's appraisal of the evidence. Any particular fact finder may over- or underestimate the probabilities of liability, and information about the systemic knowledge may lead to widely disparate adjustments to accommodate that knowledge. In any event, the current state of the law in the United States disconfirms a close connection between expected utility theory and trial process.⁴³

B. Bayes' Theorem

Just as burdens of proof seem to lend themselves to decision theoretic analyses,

⁴³ A full treatment of the relevant issues would have to include the vast area of presumptions, inferences, and explicit modifications of the burdens of proof.

so does the evidentiary process at trial seem to lend itself to a Bayesian interpretation. Indeed, it is quite natural to think of the evidentiary process as the updating of a prior in light of new evidence. There are a number of difficulties with such an analysis from the standpoint of social epistemology.

The first worry is computational complexity, which raises the specter of violating "ought implies can." A huge and complicated data set is involved at most trials, even most "simple" trials. No computer, let alone any human, has the computational capacity to do the calculations necessary for the operation of Bayes' Theorem in a reasonable amount of time. Bayesians respond, appropriately, that it is not their fault that the world is complicated. The issue, however, isn't fault, but reality: the world *is* complicated, and that fact constrains normative advice. The Bayesians might still retort that nothing within Bayes' Theorem instructs on what the unit of analysis should be. Thus, the fact finder can lump a bunch of stuff together and update his prior using the bunch of stuff as the datum of "new evidence."⁴⁴ This move carries only a false promise. The real intellectual work will have been done in the "bunching," and the failure to "bunch" correctly will lead inexorably to false outcomes (except only by chance).⁴⁵

A second worry arises when we reflect upon the description of trials. Fact finders typically have no good sense of what is going on until the end of the trial at closing arguments. Moreover, they are not bound in any way by those arguments, and

⁴⁴ For a discussion, see Ronald J. Allen, *Rationality, Algorithms and Juridical Proof: A Preliminary Inquiry*, 1 INT'L J. EVIDENCE & PROOF 254 (1997).

⁴⁵ See Ronald J. Allen, *Clarifying The Burden Of Persuasion And Bayesian Decision Rules: A Response To Professor Kaye*, 4 Int. J. Evi. & Proof 246 (2000).

thus are free to generate their own theories of what happened. This has two implications. First, once the fact finder hears the various theories in closing argument, to operate Bayes' Theorem it must then assign probabilities to the various theories. But those probabilities will be assigned in light of the evidence heard at trial, and thus all that evidence is what is called "old evidence," which simply means it has already been taken into account. Second, even following the assignment of initial probabilities, new theories can emerge during deliberations. The emergence of a new theory requires, for Bayes' Theorem, a reassignment of initial probabilities of all possible theories, and again the problem of old evidence rears up. The possible scope of Bayesian computations is thus exceedingly limited.⁴⁶

Another difficulty with Bayesian approaches to juridical evidence is that the assignments of initial probabilities, which are crucial to the application of the Theorem, are subjective and need respect only the conditions of consistency and summing to 1.0. That means that individuals can begin from radically different perspectives, and each, in Bayesian terms, will be operating equally rationally. Bayes' Theorem provides no method of adjudicating such differences, and thus can not offer useful guidance for fact finders. In other contexts, such as science, these differences may be marginalized by convergence theorems that demonstrate that over time and with enough new evidence the divergent initial starting points will washout and the result will converge on the truth. There is nothing even remotely analogous to this in the condition of trials. Jurors are

⁴⁶ *Id.* at ____-____. The point in the text holds at least so far as discovery is concerned. Justification may be a different matter, but the task at trial is more analogous to discovery than justification. For an analogous discussion of the role of Bayes' theorem in the sciences, see Marc Lange, *Calibration and the Epistemological Role of Bayesian Conditionalization*, 96 J. PHIL. 294 (1999).

more like scientists reflecting on new theories for the first time than like scientists who have generated substantial evidence over time designed to adjudicate between competing scientific theories. Without something to take the place of convergence theorems, the arguments about Bayes' Theorem in the law are left with no obvious bridge between the subjective and the objective.⁴⁷

To be sure, all theories of juridical evidence will have a subjective component, but the irony of the Bayesian approach is that it implicitly exploits the false hope that by running one's subjective beliefs through Bayes' Theorem with the assistance of equally subjective likelihood ratios something other than a subjective output will result, which of course is false. The risk is that the allure of the false hope will distract decision makers from what tools for reaching objectivity they actually have available to them, tools that can be summarized in the notion of painstaking attention to and examination of the evidence and its logical and empirical implications. Moreover, the radical subjectivity of juridical Bayesianism is not a necessary component of theories of juridical proof. For example, the relative plausibility theory discussed in Section D below, emphasizes the substantive component of fact finding and does not exploit the Bayesian mirage that algorithms may be substituted for substantive engagement with the evidence.

There are further intractable problems. For example, Savage's formalization of subjective probability includes the "sure thing" principle, which is the pivotal axiom that produces the interchangeability of subjective and objective probabilities.⁴⁸ This axiom

⁴⁷ Allen, *supra* note *** at ___-___.

⁴⁸ LEONARD J. SAVAGE, *THE FOUNDATIONS OF STATISTICS* 21-26 (1972).



says that if act A is preferred to act B under one set of assumptions about nature, then augmenting the set of assumptions should not cause a reversal of preferences, i.e., for B to be preferred to A. For example, if you are given a menu and you prefer chicken to turkey and then are told that the kitchen also serves duck, it is a violation of the sure thing principle to say, "Given that additional information, I will switch my order to turkey."⁴⁹ Unfortunately, humans disobey this axiom all the time. Suppose you believe that turkey requires great care in preparation, and you ordered chicken because you are risk averse. Duck is very difficult to prepare, however. Having learned that duck is on the menu, you have greater trust in the chef and so switch from chicken to turkey. This violates the sure thing axiom. People regularly disobey this axiom because it requires the articulation of all logical propositions in a probability space, a daunting task even in a quite confined space and an impossible one when the probability space ranges over all human affairs. (Remember: "ought implies can"!) This is a particularly acute problem for group decision making. As Savage himself said, "It would not be strange, for example, if a banquet committee about to agree to buy chicken should, on being informed that goose is also available, finally compromise on duck."⁶⁰

⁴⁹ The textual words are largely Albert Madansky's of the University of Chicago, for whose help with some of the more difficult aspects of subjective probability we are indebted.

⁵⁰ SAVAGE, *supra* note 48, at 207. There are certain complexities here. Empirical work has demonstrated that individuals violate the sure thing principle. See Eldar Shafir, *Uncertainty and the Difficulty of Thinking Through the Disjunction*, 50 COGNITION 403 (1994); Amos Tversky & Eldar Shafir, *The Disjunction Effect in Choice Under Uncertainty*, 3 PSYCH. SCI. 305 (1992). Whether the textual example is a real life example is more difficult, for it might instead be an example of a misspecification of the probability space. The upshot, however, is essentially the same, regardless what the example is an example of. If it is a violation of the sure thing principle, then subjective probability axioms are violated. If it is an example of a misspecified probability space, it demonstrates how at trial the probability space is constantly corrigible based on new information until the point of decision. That in turn means that there is no work for Bayes' Theorem to do until the point of decision, at which point the probability space is formed; but, at that point there is no work for Bayes' Theorem to do either, for all evidence will be old evidence.

Naturalized epistemology, then, recommends considerable skepticism about Bayesianism for thinking seriously about evidence. It is formally elegant, but of little practical use for explicating juridical matters, although it does have some value as an informal heuristic.⁵¹

C. The Economic Analysis of Evidence

Another form of *a priori* reasoning that from time to time can run afoul of the admonitions of naturalized epistemology is microeconomic analysis of law, a point implicit in Prof. Shapira's argument "that conventional formulae of law and economics are so removed from the practice of fact finding as to render their application to the law of evidence highly problematic, even as a normative tool."⁵² Nonetheless, Judge Richard Posner has recently published a wide ranging economic analysis of the law of evidence and other litigation related matters.⁵³ Although Judge Posner's effort is "eclectic rather than narrowly economic, . . . it slights epistemological and other philosophical perspectives on the trial process, which seem to me to have only a very

Another difficulty for subjective probability approaches is that preferences may not be stable over time; alternatively, individuals may misassess their preferences. See Daniel Gilbert, *Immune Neglect: a Source of Durability Bias in Affective Forecasting*, 75 J. PERS. & SOC. PSYCH. 617 (1998). The latter point is at the heart of the debate over euthanasia, for example, with many believing that preferences stated in advance of any particular event may not reflect an individual's views once imminently faced with that event.

⁵¹ See, e.g., Richard Lempert, *Of Flutes, Oboes, and the As If World of Evidence Law*, 1 INT'L J. EVIDENCE & PROOF 316 (1997).

⁵² Ron A. Shapira, *Economic Analysis of the Law of Evidence: A Caveat*, 19 CARDOZO L. REV. 1607 (1998). For a more general treatment of a similar theme, see Shapira, *The Susceptibility of Formal Models*, *supra* note 45.

⁵³ Richard A. Posner, *An Economic Approach to the Law of Evidence*, 51 STAN. L. REV. 1477 (1999).



limited utility.”⁵⁴ We think the good judge doth protest too much; indeed, he has it exactly backwards. The value of his article is in an inverse relationship to its reliance on *a priori* micro-economic reasoning. When engaging in his “eclectic analysis” from the stance of the empiricist more interested in the relationship between predictions of formal models and reality than just the predictions themselves, Judge Posner provides some interesting discussions largely confirmatory of pre-existing scholarship in the field of evidence.⁵⁵ When, by contrast, Judge Posner shifts to the mode of the law and economics *a priori* analyst, little of value relevant to the actual operation or understanding of the legal system results. Rather, his analysis highlights the limits of this form of *a priori* reasoning.

The objective in this section is to demonstrate that the utility of Posner’s analysis is directly proportional to the extent he works within the empirical tradition and inversely proportional to his reliance on *a priori* reasoning divorced from the relevant factual setting. We do not intend here to provide a general critique of economics, economic reasoning, or law and economics⁵⁶; rather, we are critiquing just the forms and applications of economic reasoning employed by Judge Posner in this one context.

⁵⁴ Id. at 1479.

⁵⁵ For example, his discussion of the positive social value of litigation is a helpful antidote to the argument that litigation is simply an argument over spilled milk. For previous discussions, see Craig Callen, *Adjudication and the Appearance of Statistical Evidence*, 65 TUL. L. REV. 457, 479 (1991); Ronald J. Allen et al., *A Positive Theory of the Attorney-Client Privilege and Work Product Doctrine*, 19 J. LEGAL STUD. 359 (1990).

⁵⁶ For such critiques, see Brian Leiter, *Holmes, Economics, and Classical Realism*, in THE PATH OF THE LAW AND ITS INFLUENCE: THE LEGACY OF OLIVER WENDELL HOLMES, JR. 285, 303-310 (Steven Burton ed., 2000); ALEXANDER ROSENBERG, *ECONOMICS: MATHEMATICAL POLITICS OR SCIENCE OF DIMINISHING RETURNS?* (1992); Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471 (1998). For Judge Posner’s response to the latter critique, see Richard Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551 (1998).

Even pursuing such limited objectives has certain difficulties, however. Foremost is that Judge Posner's analysis is not limited to what is conventionally thought of as the law of evidence but includes the rules of discovery and basic structural issues such as the differences between inquisitorial and adversarial proceedings. We ignore most of this, for two reasons. First, the portrayal of the "inquisitorial" system bears little relationship to any existing system of which we are aware, apparently deliberately so. Judge Posner remarks that "I wish to make the contrast between the systems as stark as possible, and so I shall treat tendencies as if they were their extremes." Perhaps he has succeeded in doing so, but to what avail is unclear. The question, one would think, is the actual operation of actual systems, not the hypothesized tendencies of hypothetical systems. Perhaps Posner's analysis might lead an investigator to hypotheses for investigation, but all it leads to here is the reiteration of well known questions about the relative virtues of differing forms of adjudication.⁵⁷ Second, Posner's analysis neglects

⁵⁷ Even if it leads him to some unconventional conclusions. For example, Judge Posner comments that "It is commonly remarked, as though the point were obvious, that the inquisitorial approach is more efficient than the adversarial approach. . . This article challenges that assumption." Posner, *supra* note 53, at 1488 n.20. We agree with the assessment of the implications of the comparison of American and some foreign systems, but Posner's argument has no more power to persuade than the American comparativists who assert to the contrary, and for precisely the identical reason: Neither is exploring the actual operation of any system as it really is; both are merely expressing logical conclusions given their assumptions. The neglect of even the most basic form of empiricism—accurate description of relevant phenomena—in comparative legal scholarship is astonishing; there is typically a yawning chasm separating what comparativists writing in English say about systems and what is actually true of them. See, e.g., Ronald J. Allen et al., *The German Advantage in Civil Procedure: A Plea for Fewer Generalities and Greater Detail in Comparative Law Scholarship*, 82 NW. L. REV. 705 (1988). Recently a German judge has written of the German criminal process, Judge Michael Bohlander, *A Silly Question? Court Sanctions Against Defence Counsel for Trial Misconduct*, 10 CRIM. L. FORUM 467, 468-469 (1999), and entitled Sec. I of his article "The Crisis in German Criminal Procedure." He comments:

For years academic writings on German criminal law as well as the country's appellate courts have explored the possibilities of reacting to obstruction of justice by defence counsel. The criminal justice systems is said to be in overload. It is thought that a great part of this is due to dilatory and obstructive tactics of defence counsel or of the

the extent to which discovery mechanisms, the structure of trial, and evidentiary rules can be independent, and thus neglects that there are similarities in the rules of evidence of these supposedly contrasting systems the effects of which on adjudication, given differing formal structures, must be explained. Germany has robust privileges, for example, experts have to be qualified as experts everywhere to our knowledge,⁵⁸ much of Europe employs a version of the hearsay rule in various contexts,⁵⁹ the European

defendants themselves. Some even complain that it has become impossible to conclude a criminal trial within an adequate period of time and to reach a verdict. At least one court . . . has reacted with an act of desperation, dismissing an appeal because defence counsel had threatened to boycott the proceedings with a veritable flood of motions for new evidence. Rather, they are required to identify it and then request the court to summon and hear new witnesses, procure documents, and so on. Such motions have no time limits. They may be made up to the very moment when the judge begins reading the sentence.

Judge Bohlander's brief description is good evidence both of the limitations of conventional American comparative scholarship and Posner's alternative approach. The defender of the standard law and economics approach may think we are being ungenerous in neglecting the support given to empirical conclusions consistent with our own by analyses such as Posner's, but, risking even more the appearance of lack of generosity, we do not see such analyses as providing any support. Judge Posner is not only talking of "tendencies" rather than the real thing; he also is talking of "tendencies" of fictional entities.

⁵⁸ John Langbein, *The German Advantage in Civil Procedure*, 52 U. CHI. L. REV. 823 (1985); Allen, *The German Advantage*, supra note 60.

⁵⁹ Article 6 of the Convention for the Protection of Human Rights and Fundamental Freedoms provides in part:

3. Everyone charged with a criminal offence has the following minimum rights: ...

(d) to examine or have examined witnesses against him and to obtain the attendance and examination of witnesses on his behalf under the same conditions as witnesses against him

In a series of cases, the European Court of Human Rights has found that the failure to allow confrontation of witnesses, i.e. what we would call the admissibility of hearsay, can violate the convention. See, e.g., the Kostovski case, # 10/1988/154/208:

In principle, all the evidence must be produced in the presence of the accused at a public hearing with a view to adversarial argument (see the above-mentioned Barberà, Messegué and Jabardo judgment, Series A no. 146, p. 34, § 78). This does not mean, however, that in order to be used as evidence statements of witnesses should always be made at a public hearing in court: to use as

Court of Justice has found a right to silence and to be free from compelled self-incrimination implicit in the European Convention on Human Rights,⁶⁰ and so on.⁶¹

In addition to emphasizing again that we do not make here any general claims about economics or its utility in any other context, we wish further to clarify the scope of our discussion in one particular. We are assuming that Posner's "economic appraisal" of the law of evidence is directed at explanation. The issue, in other words, is not economics as a theoretical construct that has certain interesting implications if applied in a certain way to specific concepts taken from the field of evidence, but instead the

evidence such statements obtained at the pre-trial stage is not in itself inconsistent with paragraphs 3 (d) and 1 of Article 6 (art. 6-3-d, art. 6-1) provided the rights of the defence have been respected.

As a rule, these rights require that an accused should be given an adequate and proper opportunity to challenge and question a witness against him, either at the time the witness was making his statement or at some later stage of the proceedings (see, *mutatis mutandis*, the Unterpertinger judgment of 24 November 1986, Series A no. 110, pp. 14-15, § 31).

Compare *Doorson v. the Netherlands*, # 54/1994/501/583 (examination of witnesses in the presence of defense counsel sufficient). The standard assertion that "the hearsay rule" is not employed in "inquisitorial systems" is thus obviously false. Some times it is applied quite analogously to its use in the United States. In fact, the analogy is even more complete than appears. Although in many jurisdictions there is formally no exclusion of hearsay, nonetheless hearsay is viewed skeptically as undeserving of substantial weight as evidence. There are in addition rules of corroboration to the effect that unsubstantiated hearsay may be insufficient to justify verdicts. For a recent example from the International Tribunal for the Prosecution of Persons Responsible for Serious Violations of International Humanitarian Law Committed in the Territory of the Former Yugoslavia since 1991 see *Prosecutor v. Zlatko Aleksovski* Case No. IT-95-14/1-AR73, Feb. 16, 1999. To "compare" the hearsay rule in the United States to its functional counterparts in the European Community, or anywhere else, one must take such nuances into account.

⁶⁰ *Saunders v. United Kingdom*, 23 E.H.R.R. 313 (1997).

⁶¹ See, e.g., Richard S. Frase, *The Search For the Whole Truth About American and European Criminal Justice*, 3 *Buff. Crim. L. Rev.* 785, 787 (2000):

One of [Prof. Pizzi's] most important contributions is to spread the word about the growing similarity of criminal justice systems in western countries—all of them are at least partially 'adversary'—and most of them have rules excluding at least some illegally-seized evidence.



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question is the actual utility of economics as employed by Posner to explain what is observed in the field of evidence.

To begin, there is much to praise in Judge Posner's effort. It is the first attempt at a comprehensive economic analysis of evidence, and will undoubtedly spur considerable work in the field. Moreover, many of his points are persuasive; indeed many of his points, as he notes, are already well accepted in the field.⁶² We thus doubt that Judge Posner is correct that his "conclusion will startle . . . that the institutional and doctrinal structure of the American law of evidence has a subtle, though intuitive, implicit, and incomplete economic logic. . . . Most evidence professors, and even a few judges, would, if asked, say that of course the American system of finding facts at trial is inefficient, ludicrously so, and redeemed if at all by the noneconomic values that the system protects."⁶³ The support for this empirical proposition is a cite to Marvin Frankel's well known lament about the adversary system in a lecture given prior to the effective date of the Federal Rules of Evidence.⁶⁴ Judge Frankel, somewhat like Judge

⁶² "The economic approach serves more to refine and to extend than to challenge the intuitions of the legal professional." Posner, *supra* note 53, at 1485. Often, however, Judge Posner's analysis simply repeats well known positions without any discernable refinement or extension, or citation to or discussion of the relevant literature for that matter, which obscures precisely what refinements and extensions there may be. His treatment of burdens of proof is an example. His conclusion that burdens of production may further efficiency has been known since John McNaughton's famous (at least in evidence circles) article, *Burden of Production of Evidence: A Function of a Burden of Persuasion*, 68 HARV. L. REV. 1382 (1955), and is part of standard discussions in evidence casebooks. See, e.g., RONALD J. ALLEN, EVIDENCE, *supra* note 36, at 820-825. His analysis of the McDonnell Douglas rule, that it "is justifiable in neutral terms of minimizing cost, specifically the cost of trial in cases where the parties can be induced to 'show their hand' before trial," appears to map directly onto the standard descriptions given of the rule in the case books. See, e.g., *id.* at 870-872. There are numerous instances like this in which it would have been helpful to have the refinements and extensions pointed out more explicitly so that they could be evaluated.

⁶³ Posner, *supra* note 53, at 1478.

⁶⁴ Marvin Frankel, *The Search for Truth: An Umpireal View*, 123 U. PA. L. REV. 1031 (1975), based on his lecture given Dec. 16, 1974. The Federal Rules came into effect in 1975.

Posner, was not addressing the law of evidence at all, and certainly not the nonexistent Federal Rules of Evidence. Perhaps if the set of all comparativists, proceduralists (civil and criminal) and evidence professors were asked about Judge Posner's conclusion, it would startle the bulk of them. However, most law professors specializing in evidence "if asked" would say that of course the law of evidence (understood primarily as the Federal Rules of Evidence and its common law predecessor—the entire system of litigation is another matter) has *at least* "a subtle, though intuitive, implicit, and incomplete economic logic."⁶⁵ Many (actually, close to all, we predict) would say that the "economic logic" of some of the rules is pretty explicit—at least in the sense that they are concerned with cost/benefit relationships. FRE 102 refers to construing the rules "to secure . . . elimination of unjustifiable expense and delay"; FRE 403 permits the exclusion of evidence on "considerations of undue delay, waste of time, or needless presentation of cumulative evidence." American evidence professors would also point to various notice provisions designed to forbid costly surprises at trial, such as in FRE 412-415, 609, and 807. They would point to a series of rules excluding evidence of specific instances of conduct largely because such presentations, and the responses they would engender, are rarely worth the cost. And they would mention how FRE 408 and 410 are motivated in part by the desire to facilitate compromises in large measure

⁶⁵ This is, to be sure, a factual issue that, to our knowledge, has not been the subject of robust empirical inquiry, and thus we remain open to the possibility of being in error. But based on our experience of teaching and writing in the area over a twenty-five year period, the economics of trial generally and of presenting evidence specifically are standard fare in standard evidence courses, even if standardly spoken of in conventional rather than microeconomic terminology. We are unaware of any support for Judge Posner's assertions about what evidence professors would assert. Again, one of the important lessons of naturalized epistemology is the importance of facts, and the misleading potential of untested beliefs.

because compromises are more efficient than trials.

What is noteworthy of Judge Posner's argument is not the trivial point that one can discern some economic value to some of the rules of evidence. Rather, notwithstanding Posner's qualification that his work is eclectic, it is his relentlessness in pursuing the implications of certain formalisms that is striking. We think aspects of these portions of his argument are problematic, and we concentrate on them. In our judgment, they tend to confirm the veritistic value of the approach of naturalized epistemology and the concomitant skepticism with which implications of *a priori* reasoning should be approached.

1. *The Implications of Rational Choice Theory.* Judge Posner's analysis relies heavily on a simplistic expected utility model of decision making, which is what he means by "rational choice" in this article: As the expected cost of an act goes up, the incidence of that act goes down in a direct relationship.⁶⁶ There are more sophisticated versions of rational choice, and Judge Posner is an expert in them, but they are not employed here.⁶⁷ The model of behavior he does employ is common in much *a priori* theorizing about human behavior in the law and economics literature,⁶⁸ but the critical question is its relationship to reality. Although one can hardly tell from the legal

⁶⁶ This is the premise of virtually the entire article.

⁶⁷ See, e.g., Richard A. Posner, *Rational Choice, Behavioral Economics, and the Law*, 50 STAN. L. REV. 1551 (1998). "Rational choice" is often employed in the legal literature as though it referred to a well defined, unproblematic entity. Neither is true. See, e.g., Isaac Levi, Review Essay: James M. Joyce, *The Foundations of Causal Decision Theory*, 97 J. of Phil. 387 (2000).

⁶⁸ A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV L. REV. 869 (1998).

literature,⁶⁹ and as Judge Posner certainly knows, economists who actually do empirical work view simple expected utility models as relatively poor predictors of behavior. For example, a review of the literature in the *Journal of Economic Literature* concludes that simple expected utility models are poor predictors of reality and thus “are clearly rather imperfect guides to policy.”⁷⁰ The authors suggest that the economic models, when used to forward the goal of deterrence, may not even be close approximations of reality: “This is an important area, because the econometric results to date suggest that the use of a ‘stick’ to enforce compliance with tax laws may not have any long-run impact.”⁷¹ The authors conclude that there must be something other than simple expected utility that explains why people pay their taxes. They speculate that factors not considered by the microeconomists, such as morals and social dynamics, may have great impact on the economic models, but point out that research exploring these factors is currently lacking.⁷²

Recently, Gneezy and Rustichini empirically tested the predictions of the utility maximizer model of human behavior in a field study involving a day care, and the results were disconfirming. Parents arrived late to collect their children, which imposed costs on the school. A money fine was introduced. The number of late arriving parents actually increased significantly.⁷³ Similarly, Erling Eide, cites multiple factors beyond the

⁶⁹ Jeffrey J. Rachlinski, *The “New” Law and Psychology: A Reply to Critics, Skeptics, and Cautious Supporters*, 85 CORNELL L. REV. 739 (2000).

⁷⁰ James Andreoni et al., *Tax Compliance*, 36(2) J. ECON. LIT. 818, 855 (1998).

⁷¹ *Id.* at 844.

⁷² *Id.* at 852.

⁷³ Uri Gneezy & Aldo Rustichini, *A Fine is a Price*, 29 J. LEGAL S. 1 (2000).



threat of economic sanction that explain behavior:

The reasons why people are more or less law-abiding are manifold. . . . In criminometric studies it might be useful to distinguish between norm variables (representing desires for various courses of action), want (or taste) variables (representing preferences for various outcomes), ability variables (representing intellectual, psychic and physical characteristics), punishment variables (representing the probability and severity of punishment), individual economic variables (representing legal and illegal income opportunities), and environmental variables (other than punishment and economic variables). . . .⁷⁴

From this complex of variables, Posner has employed one, the effect of the imposition of costs upon behavior, and has addressed neither how that variable may interact with any other nor the implications of the interactions for the law of evidence.

We see little point to this as an explanatory exercise. Rather plainly, what matters is how people and the system behave in fact, not how they are predicted to behave by the application of formal tools, no matter how elegant, for which there is substantial discomfiting if not disconfirming data. We respectfully suggest that, to be useful, an

⁷⁴ E. Eide, *Economics of Criminal Behavior: Survey and Bibliography*. U. of Oslo, Institute for Private Law, Law and Economics Working Paper C 5 at 21-22. Other empiricists concur. In his book, *WHY PEOPLE OBEY THE LAW* (1990), Tom Tyler reports the results of a study testing the contribution of various variables to the decision of individuals to obey the law, including the deterrent efficacy of the law. As he summarizes the data:

The findings of the Chicago study also support the suggestion that the influence of deterrence on compliance may be overrated (Paternoster et al. 1984). The Chicago study used an approach to measurement patterned after that of Paternoster and a similarly designed panel study, and found little evidence of deterrence effects. Although the study does not question the assumption that deterrence works, other studies may well work.



explication of the law of evidence must deal with the disturbances to the expected utility theory caused by the data rather than simply ignoring them without explanation.

Posner's article is not very helpful to the extent it rests without explanation upon this simple version of rational choice theory.⁷⁵

2. *Bayes' Theorem and the Meaning of Relevance.* Judge Posner cautiously suggests Bayes' theorem may be a useful heuristic in analyzing juridical proof, a point that others have made before him⁷⁶ and with which we agree. However, as much more than a casual heuristic, Bayes' theorem has little to recommend it in the juridical context, as we have previously discussed. Posner also endorses the use of Bayes' theorem to explicate the meaning of relevancy, as first suggested in the path breaking article by Vaughn Ball, and developed in the legal literature by Richard Lempert.⁷⁷

⁷⁵ Curiously, one of the strongest proponents in the legal literature of the theory of behavior that Posner employs in his evidence article, Prof. Steven Shavell, apparently has conceded when writing in an economic journal that the theory he propounds so vigorously in the legal literature does not accurately portray the reality of deterrence and that more study on other variables is needed. Shavell, with Polinsky, writes:

We also have not discussed social norms as a general alternative to law enforcement in channeling individuals' behavior. By a social norm, we mean a rule of behavior (for example, that people should not litter or should not discriminate on the basis of race) whose violation may have the following consequences: the violator may experience an internal sanction (guilt or remorse); others may impose on the violator external extra-legal social sanctions (gossip, ostracism); and others may experience utility or disutility from punishment of the violator. There is an emerging literature on social norms that seems worth amplifying because of the influence that social norms have on behavior, because of their role as a substitute for and supplement to formal laws, and also because of the possibility that laws themselves might influence social norms. A. Mitchell Polinsky & Steven Shavell, , *The Economic Theory of Public Enforcement of Law*, 38 J. ECON. LIT. 45, at 73 (2000).

What Prof. Shavell counsels when writing for his colleagues schooled in economics is precisely what naturalized epistemology counsels: Don't pass off your beliefs or commitments as truth, especially in the face of disconfirming data; test your beliefs empirically.

⁷⁶ Kaplan, *supra* note 3; Lempert, *supra* note 2.

⁷⁷ Posner, *supra* note 53, at 1522 n. 95, cites Lempert, *supra* note 3, but not Vaughn Ball, *The Moment of Truth: Probability Theory and Standards of Proof*, 14 VAND. L. REV. 807 (1961), nor Kaplan, *supra* note 3.

As elegant as the Bayesian theory of relevance is, naturalized epistemology reminds us to ask how it comports with the facts about human reasoning, both what people *actually* do and what they *can* do. An obvious truth (obvious by both analysis and inspection) is that virtually all evidence is highly contingent.⁷⁸ Accordingly, a useful likelihood ratio cannot be formed to test the relevancy of a piece of evidence unless all the other pieces of evidence are already known, as well as how they all interact. That is why likelihood ratios are not discussed after evidence is produced, but instead substantive arguments are that describe how the bit of evidence in question will be integrated into the fabric of the party's story. Posner recognizes the point—"Evidence that is cumulative must be distinguished, however, from evidence necessary to complete a mosaic of proof. A costly bit of 'additional' evidence might be cost justified because it fits in with other evidence to establish the truth convincingly."⁷⁹—but he confuses the rule with the exception. The issue of relevancy generally is whether evidence fits into a "mosaic of proof"; this is not limited to the issue of cumulative evidence. And obversely, only in exceptional cases can a plausible case be made for testing admissibility by a Bayesian likelihood ratio.⁸⁰

By focusing on the formalism of Bayes', Posner's analysis also misses the deeper significance of the relevancy rules. The relevancy rules, quite to the contrary of

⁷⁸ See Allen, *supra* n. .

⁷⁹ Posner, *supra* note 53, at 1524.

⁸⁰ DNA evidence is the contemporary standard example, but it is a complete mystery whether DNA evidence can be incorporated formally into trials in a manner that increases the accuracy of decision. "Formally" here is important. Obviously DNA evidence can easily be a primary determinant of the truth of competing stories, but for such a purpose no formal analysis of the type discussed here need be employed.

the formal Bayesian argument, recognize that relevancy determinations require extensive substantive knowledge of the entire case to be made intelligently and thus cannot be reduced to algorithms of the Bayes' theorem kind. But that means they are very difficult to make intelligently prior to being in possession of that knowledge. And even with all the evidence, people can reasonably disagree about whether any particular piece of evidence rationally fits into a "mosaic" or not. Thus, relevancy rulings must be made cautiously and contingently, and they must be made in a manner respectful of the bifurcated nature of fact finding when a jury is involved. They must be made, in other words, along the lines that FRE 104(b) lays out, a rule that makes considerable sense viewed as instantiating the "mosaic" view of relevancy but that bears a Bayesian interpretation only awkwardly.⁸¹

3. *Rootless Theorizing.* Another concern about Posner's economic approach to the law of evidence can be summarized in the phrase "rootless theorizing." The results of formal systems are dependent upon their axioms and rules of deduction. The relationship between the results of deductions and reality, by contrast, depends on the truth of the axioms and the nature of the rules of deduction. Focusing attention on the logical implications of formalisms may deflect consideration from the truth content of the larger enterprise. We give two examples of this.

In summing up his comparison of different systems of adjudication, Posner notes that in the United States:

conviction rate is lower in bench trials than in jury trials. This is significant

⁸¹ The definition of relevancy in FRE 401 can be read as consistent with a Bayesian test for relevancy, but it is also consistent with any imaginable rational test for relevancy as well.

because in most states the decision in a criminal case as to whether to be tried by a judge or by a jury is entirely the defendant's. If juries are less accurate guilt determiners than judges, innocent defendants will choose to be tried by judges rather than run the risk of jury mistake, while guilty defendants will choose to be tried by juries, hoping for a mistake. The acquittal rate should therefore be higher in bench trials—and it is.⁸²

This appears to be empirical vindication of the economic model, but of course it all rests upon the assertion that “in most states the decision in a criminal case as to whether to be tried by a judge or by a jury is entirely the defendant's.” This is false. Judge Posner has provided an economic rationale for a nonexistent entity⁸³:

At present, some states provide for a defendant's unilateral right to a bench trial. Other states require prosecutorial and court consent. Still others allow for a defendant to waive a jury trial in all but capital cases or cases where the death penalty is sought. In some jurisdictions, the court must consent to the defendant's waiver. In other states, the court accepts the defendant's waiver only upon consent of the Government. In one state, Ohio, if the defendant's jury waiver is proposed either shortly before or during the trial, the trial judge and prosecutor must consent. One other state, North Carolina, does not

⁸² Posner, *supra* note 53, at 1501.

⁸³ Judge Posner has said in his helpful and generous comments on a draft of this article that this is not an “economic” argument. We so classify it because it is a standard application of the simple expected utility model that is at the core of Judge Posner's “economic” arguments about evidence. If we misclassify it, it remains nonetheless an interesting example of rootless theorizing, which in any event is our main subject in this section.

appear to permit the accused to waive a jury trial in a felony case under any circumstances.⁸⁴

Posner's argument, in addition to resting on an apparently false premise,

⁸⁴ Kurland, *Providing a Defendant With a Unilateral Right to a Bench Trial: A Renewed Call to Amend Federal Rule of Criminal Procedure 23(a)*, 26 U.C. DAVIS L. REV. 309, 321-323 (1993). We have updated Kurland's research on a defendant's right to waive a jury trial in all fifty states and D.C. Only six states give defendants the unilateral right to a bench trial. See 725 Ill. Comp. Stat. Ann. 5/103-6 (West, 1992); Iowa R. Crim. P. 16(1); La. Const. art. I §17; La. Code Crim. Proc. Ann. art. 780 (West, 1981); Md. Code Ann. [Cts. & Jud. Proc.] §8-305 (1998); Md. Code Ann. [Crim. Causes] R. 4-246 (a) (1998); *Thomas v. State*, 598 A.2d 789, 793 (Md. Ct. Spec. App. 1991); N.H. Rev. Stat. Ann. §606:7 (1986); Ohio Rev. Code Ann. §2945.05 (West, 1996); Ohio R. Crim. P. 23(a).

In nineteen states and D.C., defendants must receive prosecutorial and court consent to waive a jury trial. See Ala. R. Crim. P. 18.1(b); Alaska R. Crim. P. 23(a); Ariz. Const. art. VI §17; Ark. R. Crim. P. 31.1; Del. Super. Ct. Crim. R. 23(a); D.C. Code Ann. §16-705(a) (1997); D.C. Super. Ct. Crim. R. 23(a); Ind. Code §35-37-1-2 (West, 1994); Kan. Stat. Ann. §22-3403 (1993); Ky. R. Crim. P. 9.26(1); Okla. Const. art. II §19; *Valega v. City of Oklahoma City*, 755 P.2d 118, 119 (Okla. Crim. App. 1988); *Crawford v. Brown*, 536 P.2d 988, 990 (Okla. Crim. App. 1975); S.C. R. Crim. P. 14(b); S.D. Codified Laws. Ann. §23A-18-1 (Michie, 1998); Tenn. Code Ann. §39-13-205(a) (1997); Tex. Crim. P. Code Ann. art. 1.13 (West, 1977); Utah R. Crim. P. 17(c); Va. Const. art. I §8; Vt. R. Crim. P. 23(a); W. Va. R. Crim. P. 23(a); Wis. Const. art. I §5; Wis. Stat. Ann. §972.02(1) (West, 1998); Wyo. R. Crim. P. 23(a).

Ten states do not allow a defendant to waive a jury trial when the death penalty is sought. See Ark. R. Crim. P. 31.4; La. Const. art. I §17; La. Code Crim. Proc. Ann. art. 780 (West 1981); Mass. Gen. Laws Ann. ch. 263, §6 (West 1992); *Evans v. State*, 547 So.2d 38, 40 (Miss. 1989); N.H. Rev. Stat. Ann. §606:7 (1986); N.Y. Const. art. I §2; N.Y. [Crim. Proc.] §320.10 (McKinney 1993); Or. Const. art. I §11; Tex. Crim. P. Code Ann. art. 1.13 (West, 1977); Vt. R. Crim. P. 23(a); Wash. Rev. Code Ann. §10.01.060 (West 1990).

Thirteen states require only court consent before allowing defendants to waive a jury trial. See *McCorquodale v. State*, 211 S.E.2d 577, 581-82 (Ga. 1974); *Palmer v. State*, 25 S.E.2d 295, 300-01 (Ga. 1943); Haw. Rev. Stat. Ann. §806-61 (Michie 1994); Haw. R. Penal. Proc. 23(a); Me. Rev. Stat. Ann. tit. 15, §2114 (West 1964); Me. R. Crim. P. 23(a); Mass. Gen. Laws Ann. ch. 263, §6 (West 1992) (This section was amended in 1992 to the effect that "consent to waiver shall not be denied in the district court or the Boston municipal court if the waiver is filed before the case is transferred for jury trial to the appropriate jury session," assuming that if there is more than one defendant, all of them assent to a bench trial.); Mass. R. Crim. P. 19(a); Mo. Const. art. I §22(a); Minn. R. Crim. P. 26.01(2); Neb. Const. art. I §6; N.J. R. Gen. Applic. 1:8-1(a); N.Y. Const. art. I §2; N.Y. [Crim. Proc.] §320.10 (McKinney 1993); Or. Const. art. I §11; Or. Rev. Stat. 136.001 (1999); Pa. R. Crim. P. 1101; *Commonwealth v. Sorrell*, 456 A.2d 1326, 1328-29 (Pa. 1982); R.I. R. Crim. P.23(a); Wash. Rev. Code Ann. §10.01.060 (West 1990).

Six states require only prosecutorial consent for waiver of jury trial. See Cal. Const. art. I §16; Colo. Rev. Stat. Ann. §16-10-101 (West 1999); *People v. District Court*, 843 P.2d 6 (Colo. 1992); Fla. R. Crim. P. 3.260; Idaho Const. art. I §7; Idaho R. Crim. P. 23(a); *Evans v. State*, 547 So.2d 38, 40 (Miss. 1989); *Robinson v. State*, 345 So.2d 1044, 1045 (Miss. 1977); Mont. Const. art. II §26; Mont. Code Ann. §46-16-110(3) (1999).

Ohio requires court and prosecutorial consent when the waiver is requested during trial. See Ohio R. Crim. P. 23(a). North Carolina does not permit waiver of jury trial under any circumstances. See N.C. Gen. Stat. §15A-1201 (1999).

demonstrates the manipulability of formal arguments. An equally plausible variation of his argument can be made that the evidence of higher acquittal rates by judges demonstrates that juries are, and are believed to be, more, not less as in Posner's original argument, accurate decision makers. If juries are believed to be more accurate decision makers, innocent parties will choose juries, but prosecutors will read the signal and dispose of many cases of innocent defendants in one manner or another (such as dismissal or really good plea bargains). Pre-trial proceedings will thus take a large proportion of the innocent defendants who would have had jury trials out of the system, leaving a much higher proportion of guilty defendants going to jury trials who are subsequently found guilty by highly accurate juries. A high proportion of guilty individuals hoping for a mistake will also be tried by judges, and their lower conviction rate proves that judges are less accurate decision makers than juries. Is any of this true? Who knows? That, of course, is our point: Who knows? Knowledge is not advanced by this kind of reasoning.

The second example is Posner's discussion of what is known as the blue bus hypothetical and whether naked statistical evidence suffices for a verdict. Posner constructs an economic explanation premised on the assertion that "The law's answer is 'no.'"⁸⁵ Posner relies on some of the evidentiary literature for this conclusion, and the case of *Smith v. Rapid Transit, Inc.*⁸⁶ Unfortunately

Smith is difficult to view as a "statistical evidence" case. . . The plaintiff did not

⁸⁵ Posner, *supra* note 53, at 1508.

⁸⁶ 58 N.E. 2d 754 (Mass. 1945).



rely on statistical evidence of any sort. She merely asserted that she was forced off the road by a bus and in addition proved that Rapid Transit, Inc. was the only bus company operating regularly on the road where the accident occurred. In appraising the strength of the evidence, the court concluded that it was a matter of ‘conjecture’ who owned the bus and that ‘[t]he most that can be said of the evidence in the instant case is that perhaps the mathematical chances favor the proposition that a bus of the defendant caused the accident. This was not enough.’⁸⁷

The language of the case is hardly the language of rejection of the adequacy of statistical proffers; the “perhaps” alone should be sufficient to make that point clear. In any event, cases raising clean issues of naked statistical evidence are rare, perhaps nonexistent in fact, but the impression from the cases is inconsistent with Posner’s assumption. An example is the ninth circuit’s opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, on remand from the Supreme Court:

Plaintiffs do not attempt to show causation directly; instead, they rely on experts who present circumstantial proof of causation. Plaintiffs’ experts testify that Bendectin is a teratogen because it causes birth defects when it is tested on animals, because it is similar in chemical structure to other suspected teratogens, and because statistical studies show that Bendectin use increases the risk of birth defects. Modern tort law permits such proof, but plaintiffs must

⁸⁷ Allen, *A Reconceptualization of Civil Trials*, 66 B.U. L. REV. 401, 429 n.67 (1986), quoting from *Smith v. Rapid Transit, Inc.*, 58 N.E. 2d 754, 755 (Mass. 1945).

nevertheless carry their traditional burden; they must prove that their injuries were the result of the accused cause and not some independent factor. In the case of birth defects, carrying this burden is made more difficult because we know that some defects--including limb reduction defects--occur even when expectant mothers do not take Bendectin, and that most birth defects occur for no known reason. California tort law requires plaintiffs to show not merely that Bendectin increased the likelihood of injury, but that it more likely than not caused their injuries. . . . In terms of statistical proof, this means that plaintiffs must establish not just that their mothers' ingestion of Bendectin increased somewhat the likelihood of birth defects, but that it more than doubled it--only then can it be said that Bendectin is more likely than not the source of their injury. Because the background rate of limb reduction defects is one per thousand births, plaintiffs must show that among children of mothers who took Bendectin the incidence of such defects was more than two per thousand.⁸⁸

Judge Posner's economic argument again appears to be founded on a misconception of the law—the most that can be said of the cases favorable to his argument is that the adequacy of a naked statistical case is an open question—and thus he has constructed an economic rationale for a plausibly nonexistent entity,

⁸⁸ 43 F.3d 1311, 1320 (9th Cir. 1995). See also *Kramer v. Weedhopper of Utah, Inc.*, 490 N.E.2d 104 (Ill. 1986), involved a bolt that allegedly sheared off causing harm. Ninety percent of the bolts were supplied by defendants; 10 % by some other party not part of the litigation. No other evidence could identify which supplier supplied the bolt in question. The trial court entered summary judgment for the defendant; the appellate court reversed, holding that this presented a sufficient case to go to the jury. Whether a relative risk approach to the meaning of a preponderance of the evidence is sensible is a different question. See, e.g., Sander Greenland & James M. Robins, *Epidemiology, and the Probability of Causation*, 40 *Jurimetrics* 321 (2000).

demonstrating the noteworthy flexibility but not the veritistic prodigiousness of his technique.

Judge Posner concludes this section of his article with another economic argument:

There is still another objection to allowing the bus case to go to the jury. If B, though responsible in fact for almost half the accidents, is never held liable and A is always held liable, A will have a big incentive to be careful and B little or no incentive to be careful. As a result, over time, more than half the accidents will be caused by B, increasing the error rate resulting from allowing juries to base decisions on the ratio of the companies' buses on the route in question.

Eventually, A, having higher liability costs, will probably withdraw from the route; the rule on burden of proof will have created a monopoly!⁸⁹

Our doubts about the value of this form of *a priori* reasoning for explicating the law of evidence are well captured by this paragraph. Taking the argument on its own terms--terms which we reject, of course--the consequence Judge Posner fears will occur only if A is remarkably stupid. In the world Judge Posner is hypothesizing, all A need do is take at most three buses out of service. If A takes three buses out of service, the ratio of buses now favors A (from 51/49 to 48/49), and B will henceforth be held liable for all accidents.⁹⁰ Of course, perhaps another economic fear will now

⁸⁹ Posner, *supra* note 53 at 1510.

⁹⁰ Or, if company A is really smart, it will take exactly two buses out of service. If both companies have 49 buses in service, the probability of liability would be exactly .5, meaning plaintiffs injured by buses could never recover.

arise: B, also not being massively stupid, will respond by taking two of its buses out of service. Perhaps the prediction would now be that “bus reduction” would become recursive, eventually resulting in only one bus company with only one bus driven by a very careful driver, which would surely not serve the needs of the community!

Therefore, allowing verdicts based on naked statistics is not economically sensible.

Neither a monopoly nor the essential elimination of the industry would result from allowing probabilistic verdicts. If such verdicts began to accumulate inaccurately against bus companies, they would invest in precautions, many of which are cheaply available. Of course, if they are as massively stupid as Posner’s argument entails, they probably should not be in business in any event.

Judge Posner might respond that we are making economic arguments: Both error reduction and subjective expected utility may be advanced by permitting decision on naked statistics and the individuals will intelligently assess the value of investments in precaution. Our claim, however, is not that there is no role for policies concerned with errors and costs; nor is it that incentives are irrelevancies. Rather, the point is to critique a form of *a priori* reasoning that is curiously out of touch with the phenomenon supposedly under investigation.⁹¹

More importantly, as employed by Judge Posner in this context, the technique seems curiously out of touch with the essential justification for the technique in the first

⁹¹ Thus, the economics analysis is not redeemed by the move that some economists, including Judge Posner, make to the effect that empirical adequacy of a model or its assumptions does not matter; only the predictions of the model do. As we have shown, the tools employed by Judge Posner apparently permit virtually any prediction to be made, thus making the making of predictions irrelevant. Moreover, he has apparently made some false predictions. These are not very surprising consequences of disregarding the empirical adequacy of models.

place. Apart from aesthetics, the primary value of any formalization is its capacity to generate true (or, within pure mathematics, valid) answers. A “formalization” that can be used to justify inconsistent states of affairs is, in our view, not a “formalization” at all and in any event serves no obvious useful purpose. Typically the less, not more, valuable an argument or approach is the more sides of different problems that can be defended or explained with it; at the limit, an argument that explains everything explains nothing. This, we take it, is the common complaint against law and economics work that it tends toward being ad hoc,⁹² a complaint that, with all deference, and regardless of the general utility of microeconomics for explicating the law, is supported by much of Posner’s argument here. We do not mean by this to consign economics, so far as the law of evidence is concerned, to the trash bin of history, an eminently ridiculous proposition. Costs, benefits, and incentives are obviously material concerns to the structuring of dispute resolution. As we said at the beginning of this section, our point is considerably narrower, to-wit, to analyze the contributions of this one expression of economic analysis.

D. The Relative Plausibility Theory and Naturalized Epistemology

Not all theorizing about evidence is a priori. One example is the relative plausibility theory that was constructed in response to the empirical and analytical inadequacies of the expected utility and Bayesian approaches.⁹³ The critical component

⁹² For a discussion, see Mark Blaug, *The Methodology of Economics or How Economics Explains* (2d. ed. 1992). For an extended critique of Posner’s methodology, see Jeanne Schroeder, *Just So Stories: Posnerian Economic Methodology*, Social Science Research Network Electronic Paper Collection: http://papers.ssrn.com/paper.taf?abstract_id=229874.

⁹³ See Ronald J. Allen, *The Nature of Juridical Proof*, 13 *CARDOZO L. REV.* 373 (1991); Allen,

of the relative plausibility theory is that legal fact finding involves a determination of the comparative plausibility of the parties' explanations offered at trial rather than a determination of whether discrete elements are found to a specific probability. In civil cases, the fact finder is to identify the most plausible account of the relevant events, and in criminal cases the prosecution must provide a plausible account of guilt and show that there is no plausible account of innocence. The structure of liability is provided by the formal elements, but that is different from the proof process, which proceeds in a largely comparative fashion over the stories advanced by the parties. Once the most plausible account of the relevant events is determined, liability flows deductively from the formal structure of the law. The relative plausibility theory as developed in the legal literature bears a close relationship to the empirical work on jury decision making done by Pennington and Hastie.⁹⁴ It also bears a close relationship to the work done on hypothesis comparison through the use of connectionist approaches, such as in the work of Paul Thagard.⁹⁵

From the perspective of naturalized epistemology, among the advantages of the relative plausibility theory are:

1. It appears to explain what fact finders actually do.
2. It unmistakably explains what advocates actually do at trial.
3. It avoids the formal difficulties of Bayesianism, as it has so far been

*Factual Ambiguity, sura note ***.*

⁹⁴ Nancy Pennington & Reed Hastie, *A Cognitive Theory of Juror Decision Making: The Story Model*, 13 CARDOZO L. REV. 519 (1991).

⁹⁵ PAUL THAGARD, *CONCEPTUAL REVOLUTIONS* (1992).

developed in the literature.

4. The paradoxes of proof are marginalized because they are distributed evenly over both sides of a dispute.
5. Computational complexity is largely eliminated as a problem because litigation focuses on the plausibility of coherent stories advanced by the parties rather than on discrete items of evidence.⁹⁶

In addition to better explaining the basic structure of trials than does its competitors, the relative plausibility theory also produces falsifiable predictions, apparently unlike Judge Posner's economic argument, a number of which are suggested above. One prediction is that actual litigation would proceed in a comparative fashion. Support for this prediction of the relative plausibility theory is ubiquitous in the cases. Examples could be multiplied endlessly, because virtually all trials reduce to the comparison of competing claims; and as we say, if we are wrong in this our error should be easy to expose. For example, in *MCI Communications v. American Tel. & Tel. Co.*⁹⁷, the court said: "Considering the trial evidence and argument as well as the instructions tendered, the jury's obvious choice was between a nationwide market (espoused by MCI) or a more limited market (advocated by AT&T)." The jury's "most obvious choice" was not between whether the plaintiff had proved its allegations by a preponderance or not, but between the two markets espoused by the parties. *Swajian*

⁹⁶ For an extended defense, see Allen, *Juridical Proof*, *supra* note 93; Allen, *Factual Ambiguity*, *supra* note ***.

⁹⁷ 708 F.2d 1081, 1174 (7th Cir. 1983).



*v. General Motors Corp*⁹⁸ deal with whether an accident was caused by a faulty axle, as alleged by the plaintiff. The defense was driver error as a result of intoxication. The trial court excluded the defendant's evidence. On appeal, the issue was not whether the excluded evidence was admissible to demonstrate that causation had not been proven by a preponderance of the evidence but instead whether the evidence was admissible as proof of an alternative story:

Armed with this evidence, the jury could have concluded that driver error contributed significantly to, if not caused, decedent's accident. As it was, the jury was presented with the following factual scenario: the two month old vehicle was traveling down a straight, flat road in good weather when it swayed and went out of control for no apparent reason. The only explanation proffered was that there was a defect in one of its axles. Without the evidence of intoxication the jury was left with no reason for the loss of control other than Swajian's allegations.⁹⁹ During the bench trial, Mrs. Wyletal and the postal carrier presented conflicting testimony as to how the collision occurred. Mrs. Wyletal testified she was hit from the back, while the postal carrier testified they collided head-on.

⁹⁸ 916 F.2d 31 (1st Cir., 1990).

⁹⁹ *Id.* at 34. See also *Wyletal v. United States*, 907 F.2d 4975 (7th Cir. 1990). Josephine Wyletal, a lively eighty-five year old widow with a cataract in her left eye, was walking eastbound on the north side of Oakton Street in Skokie, Illinois at 11:00 a.m. on a cloudy day in November. She was not wearing her glasses. At the same time, a letter carrier for the United States Postal Service was hurriedly delivering mail by foot heading west on the north wide of Oakton Street. As Mrs. Wyletal proceeded along the side walk, the postal carrier emerged from a recessed doorway. Neither saw the other and they collided [resulting in damages] . . .

Inconsistent pleading cases also provide support for the relative plausibility theory by typically instructing the jury to decide which story is most plausible. In *McCormick v. Kopmann*,¹⁰⁰ the court upheld the trial judge who sent a case to the jury containing inconsistent claims. In one claim, the plaintiff alleged that one defendant was liable for having killed her husband and that the husband was not contributorily negligent as a result of being drunk (she alleged he was sober), and in another claim against different defendants she alleged liability under the dramshop act for having sold sufficient alcohol to her husband to render him intoxicated. The jury was essentially instructed to return a verdict against the party--plaintiff or either defendant--most likely liable for the event, just as the relative plausibility theory would predict.

In his economic critique of evidence law, Judge Posner adopted aspects of the relative plausibility theory.¹⁰¹ However, he implicitly rejects it in one particular that bears upon cases like *McCormick v. Kopmann*. He asserts that if “the plaintiff’s story had a probability of .42 of being true, the defendant’s story a probability of .30 of being true, and the probability that another story or stories is true was .28, then the plaintiff should lose because he has failed to prove that his story is more likely than not true.” Applied to *McCormick*, this means that the plaintiff would have to show one of the defendants to be more likely than not liable. This is wrong, as the case at least implicitly recognizes. It may be instructive to explicate the error, however.

One either knows or does not know what the implications of the story or set of

¹⁰⁰ 161 N.E.2d 720 (Ill. App. Ct. 1954).

¹⁰¹ Posner, *supra* note 53, at 1512 n.74.



stories comprising the missing .28 probability. If there is knowledge, whomever the various stories favor should get the benefit of the probability associated with the story or stories that favor them. If there is no knowledge, there is no good reason to systematically disfavor plaintiffs by attributing all the ambiguity to them. In civil cases, given mutual discovery, the parties can be expected to search for and produce evidence of whatever stories they think can plausibly support their legal claims. Indeed the only reason to systematically disfavor plaintiffs is an unpersuasive slippery slope problem that posits that plaintiffs will bring actions where the probability of their story is extremely low but defendants cannot respond.¹⁰² This conceptual problem has no obvious empirical counterpart. Simply ignoring the ambiguity that no party, remember, wishes to litigate will advance all theories of trials (e.g. risk reduction, optimizing expected returns, fairness). The inconsistent claims cases implicitly recognize this point.

Posner's argument that all ambiguity should be allocated against plaintiffs and the state is another interesting example of how apparently straightforward, logical, perhaps "economic", arguments often are unresponsive to the actual conditions about which they purport to be theorizing. Plaintiffs could not possibly establish that half the ways plus one that the universe might have been on the day and at the place in question favor liability, nor whatever the analogous requirement would be for criminal cases.

¹⁰² This is one of two reasons why ambiguity should also not be assessed against the state in criminal cases: The state is not likely to go around looking for false criminal charges that it can prosecute solely because the wrongly accused defendant will not have evidence supporting his innocence. The second reason is that in criminal cases a low probability of guilt will rationally give rise to the belief that some other explanation than the guilt of this defendant is true, and therefore this defendant should be acquitted, a point that can be brought out by counsel. The relative plausibility theory is not falsified by analogous fact finding in civil cases, either, as the fact finders' own knowledge and experience is relevant to fashioning the possible stories explaining the litigated events.

Take as an example any criminal case in any populated area, such as the O.J. Simpson murder case. There were roughly 7,000,000 people in the greater Los Angeles the night in question. Were Posner's argument an accurate explication of the law, all the defense counsel would have had to do, or any defense counsel anywhere, is to present to the jury the phone book of the relevant area (or, to eliminate quibbles, authenticated census data) and put it to the prosecution to eliminate all these alternative hypotheses. Unless one knows, which means here has sufficient evidence to establish, that the probabilities of these alternative hypotheses are zero, each must count in the defendant's favor. And it would be quite astonishing if the cumulative probability of 7,000,000 or so low probability events does not equate with reasonable doubt.¹⁰³

That defense counsel do not pursue the logical implications of Posner's argument is strong data that his argument is false as a proposition about the phenomenon under investigation. By contrast, it is good evidence in favor of the factual accuracy of the relative plausibility theory, and that the juridical world is deeply comparative in the sense advanced by the relative plausibility model.¹⁰⁴

¹⁰³ Under the relative plausibility theory, by contrast, the question is whether any of the individuals in the area plausibly committed the crime. In the absence of evidence that any one did, it would not be plausible. This highlights another difference between the relative plausibility theory and the Bayesian approach, and one that corrects a false conventional belief about criminal trials. The conventional belief is that defendants do not have to raise alternative theories or provide evidence. While formally this is supposedly true; functionally, and in fact, it is false. And the reason it is false is explained by the relative plausibility theory. If theories supported by evidence are not presented to the fact finder, they exist only to the extent they preexist in the fact finders' mind.

¹⁰⁴ For discussions of these and many related issues, in addition to the articles cited in note ** *supra*, see Ronald J. Allen, et al., *Probability and Proof in State v. Skipper*, 35 JURIMETICS J.277 (1995). It also bears noting that Posner's qualification of the relative plausibility theory in the case of multiple possible explanations eliminates the legal significance of the theory. In any case in which the probability of the plaintiff's case does not exceed .5, the total probability of the alternative explanations, whether advanced or not by the defendant must meet or exceed .5, resulting in a decision for the defendant. It is just this manner of viewing the preponderance of the

Various decisions of the Seventh Circuit Court of Appeals, including three opinions of Judge Posner, exemplify the point:

1. *Spitz v. Com. Of IRS*,¹⁰⁵ involved a prosecution for tax fraud. The trial court was unimpressed with the taxpayers' explanations. In reversing, the Seventh Circuit, per Judge Posner, commented that "in general and in this instance the plausibility of an explanation depends on the plausibility of the alternative explanations However implausible the [defendants' story] explanation might seem in isolation, it does not stand alone, but must be compared with the government's alternative explanation. . . ."¹⁰⁶

2. In *Bracket v. Peters*,¹⁰⁷ the defendant was charged with felony murder following the rape and beating of the victim. While in the hospital as a consequence of the assault, the 85 year old victim's physical and mental condition deteriorated, and she eventually died, having been asphyxiated by some food lodged in her trachea. The question on appeal was whether a rational finder of fact could have found that the defendant caused the death of the victim. In affirming the conviction, the court, per Judge Posner, commented that "there are dangers in inferring consequence from sequence. But they are slight when as in this case the event not only follows the act closely in time but is the kind of event frequently produced by the kind of act, and no

evidence standard that the theory critiques and for which it provides a substitute. In any event, nothing turns on whether there is any legal significance to the theory under Posner's qualification; the proper issue is its empirical validity.

¹⁰⁵ 954 F.2d 1382 (7th Cir. 1992).

¹⁰⁶ *Id.* at 1384-1385, citations omitted.

¹⁰⁷ 11 F.3d 78 (7th Cir. 1993).



persuasive evidence of an alternative causal sequence is presented. . .”

3. In *U.S. v. Morales*,¹⁰⁸ the court, per Judge Posner, reversed a conviction and remanded for a new trial, asserting that: “The issue becomes: not was it highly likely beforehand that a sequence such as that described by Officer Maher would actually occur, but, given that the gun and clip were found in the sinks, was the prosecution’s hypothesis as to how they got there substantially more probable than the hypothesis that someone other than Morales put them there?”¹⁰⁹

Two other instructions typically given at trial better reflect the relative plausibility theory than the elements approach. The first is that jurors are to rely on their common sense,¹¹⁰ but doing so would mean the jury would disregard the judge's instructions to find elements by a preponderance of the evidence and focus instead on the competing claims of the parties. The other instruction is that jurors are not to draw inferences until all the evidence is in.¹¹¹ This instruction is a striking embarrassment to a Bayesian understanding of the structure of litigation. The fact finders are explicitly instructed to do the opposite of what the Bayesian argument requires. By contrast, this instruction is not at all in tension with relative plausibility theory. Under the relative plausibility theory, the objective is to test the explanatory power of the stories of the parties, which might be

¹⁰⁸ 902 F.2d 604 (7th Cir. 1990).

¹⁰⁹ See also *Wyletal*, 907 F.2d 4975 (Flaum, J.); *U.S. v. Crosby*, 75 F.3d 1343 (9th Cir. 1996) (Kozinski, J.).

¹¹⁰ See COMMITTEE ON PATTERN JURY INSTRUCTIONS, DISTRICT JUDGES ASSOCIATION (5th Cir. 1999), PATTERN JURY INSTRUCTIONS (CIVIL CASES), GENERAL INSTRUCTIONS FOR CHARGE 3.1, 29-31.

¹¹¹ 1 COMMITTEE ON PATTERN JURY INSTRUCTIONS, ASSOC. OF SUPREME COURT JUSTICES, NEW YORK PATTERN JURY INSTRUCTIONS-CIVIL ¶1.11 (1974).

put at risk by reaching conclusions too hastily. The contrast between Bayesian and relative plausibility explications of juridical proof could not be more stark: This instruction is devastating to the Bayesian arguments, and easily explained by relative plausibility.

The data provided here are admittedly anecdotal. Nonetheless, it is obvious both that there is considerable data supporting the relative plausibility theory and that it could be falsified by well formulated studies.

The relative plausibility theory also explains many discrete aspects of the rules of evidence, a point deserving of some elaboration. Many aspects of trial implicitly embrace the relative plausibility theory in order to advance the veritistic consequences at the heart of naturalized epistemology. For example, various rules of completeness override technical regulatory or exclusionary rules of evidence. These rules provide data to fact finders in conventional story form by admitting surrounding material relevant to specific testimony. One example is FRE 105: "When a writing or recorded statement or part thereof is introduced by a party, an adverse party may require the introduction at that time of any other part or any other writing or recorded statement which ought in fairness to be considered contemporaneously with it." The *res gestae* rule found in many jurisdictions that permits virtually any background matter to the litigated question to be adduced in order to flesh out the relevant events, regardless of the technical admissibility of the background material,¹¹² and the standard practice of trying conspirators jointly "to

¹¹² MCCORMICK ON EVIDENCE 385-386 (3rd ed. 1984).



give the jury a fuller picture of scheme," are other examples¹¹³ Motive is never an element but always admissible in criminal cases, and for that matter in civil cases, and convictions are difficult to obtain without proof of motive. Motive fills in the gaps, and converts formal structures into human events. FRE 612 provides that, if a witness relies on a writing to refresh memory for purpose of testifying, the writing is admissible regardless of exclusionary rules. Again, the result is to put before fact finder an entire human episode.¹¹⁴ Opening statements and closing arguments are also more consistent with the relative plausibility theory than the elements model. Opening statements inform the fact finder of the story to be told, and closing arguments attempt to demonstrate that one story is more plausible than its competitors.

Some rules of evidence may appear inconsistent with the relatively plausibility model, but are not. For example, exclusionary rules keep evidence from the jury, retarding the emergence of the full picture, but there are few general exclusionary rules. Apart from the constitutional exclusionary rules whose purpose is to vindicate rights, there are only two general exclusionary rules: relevancy and hearsay. Relevancy exclusions do keep information from juries, but only that information which no person

¹¹³ United States v. Taglia and McDonnell, 922 F.2d 413 (7th Cir. 1991).

¹¹⁴ Another example of the completeness principle is the commonly held belief among criminal practitioners that defendants generally must testify to stand a reasonable chance of acquittal. If the person most knowledgeable about the truth of the state's case chooses not to testify, the inference is virtually irresistible that the state's case is accurate. It is just this point which makes the admission of prior records so controversial. Defendants must testify, but admitting prior records may engender the sense that this particular defendant is someone who should be kept off the streets, regardless whether he committed this particular act. An error of a wrongful conviction, in other words, is not much to be regretted.

could reasonably rely upon¹¹⁵ or whose prejudicial value substantially outweighs its probative value.¹¹⁶ This is a quite liberal standard for admission, and thus quite supportive of the relative plausibility theory. Moreover, to the extent the relevancy determinations *exclude* evidence they do so based on a veritistic rationale, which the relative plausibility theory also honors.

The treatment of hearsay is also consistent with the relative plausibility theory. The most important forms of hearsay, admissions and prior statements, are largely excluded from the definition of hearsay, or admitted under exceptions.¹¹⁷ In addition, there are numerous explicit exceptions—at a minimum twenty-eight in the Federal Rules of Evidence, and a residual exception.¹¹⁸ The *res gestae* principle previously mentioned additionally acts as a catch-all rule of admission for many hearsay statements. The hearsay rule keeps only the rankest and least reliable form of evidence from the fact finder, and thus is quite consistent with the relative plausibility theory and its veritistic implications.¹¹⁹

Privilege rules do keep information from the jury, but even here the inconsistency with our basic thesis is not striking. Most privilege rules are designed to sacrifice truth seeking to other values, and thus they are indifferent to the comparison of the conventional view of the proof rules and the relative plausibility theory. Moreover,

¹¹⁵ See, e.g., FRE 401.

¹¹⁶ See, e.g., FRE 403.

¹¹⁷ See, e.g., FRE 801.

¹¹⁸ See FRE 803, 804, 807.

¹¹⁹ In fact, there are even more hearsay exceptions. See, e.g., FRE 703. See generally Ronald J. Allen, *The Evolution of the Hearsay Rule to a Rule of Admission*, 76 Minn. L. Rev. 797 (1992).

an important privilege--the attorney-client privilege--is best understood as promoting rather than retarding the production of information.¹²⁰

One set of rules—the burden of proof rules—are no more consistent with the relative plausibility theory than its competitors. Like expected utility and Bayesian approaches, the relative plausibility theory predicts that elements will not be the focus of decision at trial. However, both expected utility and Bayesian approaches view the question at trial as liability or not. The relative plausibility theory predicts the focus at trial will be competing accounts of what occurred. For the reasons already advanced, the relative plausibility theory does not suffer from the logical problems afflicting its competitors, and considerable evidence of its accuracy can be found in the cases. By contrast, virtually no such evidence can be found for the other theories.

IV. NATURALIZED EPISTEMOLOGY AND THE SPECIFIC RULES OF EVIDENCE

For any rule of evidence that has a veritistic rationale, we can properly analyze that rule from the standpoint of social epistemology. That means, of course, asking an essentially *empirical* question: does this rule of inclusion or exclusion *in fact* increase the likelihood that fact finders, *given what they are actually like*, will achieve knowledge about disputed matters of fact. For ease of reference, let us paraphrase this as asking: does this rule of inclusion or exclusion maximize veritistic value? This, in fact, is precisely the question we take many evidence scholars to be asking already--albeit not framed in these precise terms, and albeit not by those scholars attracted to the *a*

¹²⁰ Allen, *A Positive Theory*, supra note 58. This also explains cross-examination. Cross-examination brings out more information, and thus facilitates the construction of stories, even if not quite the one a particular party is attached to.

priori formalisms discussed in section III. It is part of the argument of this paper, however, that this is *the* question all evidence scholarship should be asking.

Of course, many rules that on their face invite one kind of veritistic analysis require a very different kind in practice. So, for example, FRE 404, *on its face*, excludes character evidence in most contexts, though, in fact, the exception in 404(b) largely swallows the rule. Thus, while it might seem that we should ask whether *excluding* character evidence maximizes veritistic value, the real question is whether *admitting* it does. The same may be said for the hearsay rule. Although on its face, the hearsay doctrine is a rule of exclusion, in reality it is a rule of admission: what the advocate must really know is how to get the proffered hearsay admitted under one of the multitude of exceptions to the nominal rule of exclusion (FRE 802). Thus, the pertinent veritistic question concerns the veritistic credentials of the grounds on which hearsay is admitted, rather than the veritistic reasons for excluding it in most cases.

Thus, all of the following questions would fall within the purview of the social epistemology approach to evidence:

- (1) What standards of relevance (under FRE 402) and their implementation (under FRE 104) would *in fact* maximize veritistic value?
- (2) Are out-of-court statements based on present sense impressions (FRE 803(1)) *in fact* more reliable, such that they do not need to be tested with cross-examination, under oath, and with the benefit for the trier of fact of evidence of demeanor? What about out-of-court statements made for the purpose of medical diagnosis or treatment (FRE 803(4))? Etc.
- (3) What kinds of statistical and probabilistic evidence are *in fact* probative without being confusing and misleading (under FRE 403)?

- (4) How can statistical evidence be integrated with unquantified evidence?
- (5) What standard for the admissibility of scientific evidence (under FRE 702) will *in fact* maximize veritistic value (taking account both of the cognitive limitations of judges, who must apply the standard, and jurors who must weigh the evidence)?
- (6) What is the proper role for instructions on inferences, presumptions, and comments on or summary of the evidence?
- (7) Should jurors be instructed to, or not to, take notes, discuss the evidence among themselves prior to the close of evidence at trial, reach tentative conclusions, or ask questions at trial of witnesses, parties or lawyers?

In fact, however, all these questions central to the social epistemology enterprise present a threshold issue: namely, to what extent is the available empirical evidence probative as to expected veritistic values in the context of real trials? To what extent do cognitive shortcomings manifest in the laboratory reflect cognitive shortcomings that won't, in fact, be compensated for by other aspects of the trial process, by group deliberation, by cross-examination, and the like? These are serious questions that threaten to cut short the social epistemology inquiry before it gets started.

Fortunately, there are some answers. The best way to appreciate them is by looking at a paradigm case of a social epistemology inquiry in to one particular area of the law of evidence.

A. The Case of Demeanor



In a well-known 1991 article, Professor Wellborn examined the empirical

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evidence concerning (as we would put it) the instrumental value of demeanor evidence for maximizing veritistic value.¹²¹ As Wellborn comments:

The importance of demeanor as an indicator of credibility is commonly cited as a premise of the general requirement of live testimony, the hearsay rule, and the right of confrontation. The importance placed upon demeanor information is highlighted by the strict limits traditionally placed upon trial use of depositions and transcribed testimony taken in other proceedings. The opportunity of the trier of fact to observe the demeanor of witnesses is a principal basis for the deference accorded by reviewing courts to factual determinations of trial courts and hearing officers. The assumption that demeanor provides highly useful information plays an important role in other procedural doctrines.¹²²

In fact, however, it appears that demeanor evidence has little instrumental value as a maximizer of veritistic value. "[T]he experimental evidence indicates that ordinary observers do not benefit from the opportunity to observe nonverbal behavior in judging whether someone is lying."¹²³ In addition, "a good body of experimental evidence

¹²¹ Olin Guy Wellborn III, *Demeanor*, 76 CORN. L. REV. 1075 (1991).

¹²² *Id.* at 1077 (citations omitted).

¹²³ *Id.* at 1088. See the sources cited in *id.* at 1078 n.10 and 1079 n.12. See generally, Paul Ekman, *Why Don't We Catch Liars?* 63 SOC. RES. 801 (1996). For more recent work on this topic, see, e.g., Thomas H. Feeley and Mark A. DeTurck, *Global Cue Usage in Behavioral Lie Detection*, 43 COMM. Q. 420 (1995). But see, Mark A. DeTurck and Gerald R. Miller, *Training Observers to Detect Deception: Effects of Self-Monitoring and Rehearsal*, 16 HUM. COMM. RES. 603 (1990) (training can help to improve detection of deception, at least deception by unskillful liars); Mark G. Frank and Paul Ekman, *The Ability to Detect Deceit Generalizes Across Different Types of High-Stake Lies*, 72 J. PERS. & SOC. PSYCH. 1429 (1997) (lie detection improves when the stakes are high, probably because the liar gives off more nonverbal cues).

consistently shows that jurors simply cannot tell whether a witness's perception and memory are accurate...[N]either verbal nor nonverbal cues are effectively employed...."¹²⁴

Wellborn, however, is appropriately cautious in his normative recommendations in light of the empirical facts about demeanor evidence. The conclusion to draw is *neither* that we should eliminate live testimony (such testimony may still maximize veritistic value in factfinding, even if it doesn't enhance credibility determinations; and in any case, live testimony serves non-veritistic purposes as well¹²⁵), nor that we should eliminate the hearsay rule (since the more important "hearsay dangers" are lack of cross-examination and absence of the oath¹²⁶). It does suggest, however, several modest reforms: for example, that appellate courts should give less deference to the factual findings of trial courts, especially as they bear on witness credibility, since "a transcript is actually as good a basis for a credibility determination as live testimony."¹²⁷

Professor Wellborn is cautious in another way that makes his article a good model for the social epistemology of evidence. For he is sensitive to the worries broached above about generalizing from laboratory results to the rules of evidence as

¹²⁴ Wellborn, *supra* n. at 1090-1091. See, e.g., the material cited in *id.* at 1989 nn.70, 73 & 74. See generally, Elizabeth F. Loftus, *Psychologists in the Eyewitness World*, 48 AM. PSYCHOLOGIST 550 (1993); Siegfried L. Sporer et al., *Choosing Confidence and Accuracy: A Meta-Analysis of the Confidence-Accuracy Relation in Eyewitness Identification*, 118 PSYCH. BULL. 315 (1995). For more recent work in a similar vein, see also Gary L. Wells, "Good You Identified the Suspect: Feedback to Eyewitnesses Distorts Their Reports of the Witnessing Experience", 83 J. APPL. PSYCH. 360 (1998); Elizabeth F. Loftus & Gary L. Wells, *The Malleability of Eyewitness Confidence Co-Witness and Perseverance Effects*, 79 J. APPL. PSYCH. 714 (1994).

¹²⁵ Wellborn, *supra* n. at 1091-1092.

¹²⁶ *Id.* at 1094.

¹²⁷ *Id.* at 1095.



they apply at trial. In particular, he identifies four pertinent differences that might undermine the utility of experimental results--what he calls "context, cross-examination, deliberation, and preparation"¹²⁸:

- (1) *Context*: "each witnesses's testimony has a much more substantial context--the other evidence in the case--than the respondents' stories in the experiments."
- (2) *Cross-examination*: experiments typically do not elicit information from respondents via the trial method of direct and cross-examination.
- (3) *Deliberation*: "jurors deliberate and make decisions by consensus rather than individually; by contrast, the experimental subjects decide alone whether to believe a respondent's staement."
- (4) *Preparation*: real witnesses are often rehearsed or coached prior to testifying, in part to enhance their credibility. "Experimental respondents normally make their true or false statements without rehearsal or coaching."

The question then is whether these differences *vitiare* the value of existing empirical evidence. In the case of experimental evidence on the probative value of demeanor, Wellborn concludes that they do not: "The four named trial conditions probably decrease, rather than increase, the utility of nonverbal deception cues."¹²⁹

So, for example, Wellborn points out that other empirical evidence shows that suspicious questioning (like that in a cross-examination) and stress (a byproduct of

¹²⁸ *Id.* at 1079. All the quotes that follow in the text are from this page.

¹²⁹ *Id.*



an aggressive cross-examination) tends to make even respondents "view their responses as deceptive even when they are honest, which significantly increases [lie] detection errors."¹³⁰ So, too, some studies have employed real attorneys, as well as direct and cross examination, and yet still found that, "Even experienced lawyers, free to question the witness as they chose, were unable to lead mock jurors to believe accurate eyewitnesses more than inaccurate eyewitnesses."¹³¹

In the end, the details of the demeanor case matter less than the guidelines Wellborn's approach suggests. With respect to proffered empirical evidence bearing on the instrumental value of some evidentiary rule for maximizing veritistic value, we must always ask whether differences in context, cross-examination, deliberation, and preparation between the experimental and trial settings affect the utility of the empirical data for evaluating the evidentiary rules within a social epistemology framework.

We now turn to sketch two areas of evidence law that cry out for reform and/or additional research when subjected to analysis from the standpoint of naturalized epistemology. These examples are merely illustrative, and in many respects are familiar to scholars of the rules in question. But they suggest the structure of the questions and problems that evidence, as a branch of social epistemology, should concern itself.

B. Probabilistic Evidence

¹³⁰ *Id.* at 1080. See the sources cited in *id.* at n.19.

¹³¹ R.C.L. Lindsay et al., *Mock-Juror Belief of Accurate and Inaccurate Eyewitnesses*, 13 L. & HUM. BEHAV. 333, 338 (1989) (quoted in Wellborn, *supra* n. ___ at 1090).

Probabilistic evidence is increasingly important in trials, yet there remains a serious question about what exactly jurors make of it. Does such evidence "mislead" and "confuse" jurors within the meaning of FRE 403, and if so, when and how?

The best-known instances of probabilistic evidence--largely thanks to the O.J. Simpson case, though the casebook classic *People v. Collins*¹³² makes the problem equally vivid--concern DNA matching of defendant's blood sample to blood at the scene of a crime, yielding astounding probabilities, as in the Simpson case, like "1 in 57 billion." But what does such evidence really mean? It gives us the "Random Match Probability" (RMP), that is, "the theoretical likelihood that a randomly selected person from the general population (or from the population of certain large ethnic or racial groups) would genetically match the trace evidence as well as the defendant."¹³³

The worry about such evidence, however, is that lay persons may understand it to mean things it does *not* mean. Such evidence, for example, does not give us a "Source Probability" (SP), that is, "the likelihood that the defendant committed the crime in question."¹³⁴ For that probability is affected by all the other evidence for and against the claim that the defendant is the source.

Of course, if the odds are 57 billion to 1, and Simpson matches, then it's unclear

¹³² 438 P.2d 33 (Cal. 1968).

¹³³ Jonathan J. Koehler, *DNA Matches and Statistics: Important Questions, Surprising Answers*, 76 JUDICATURE 222, 224 (1993).

¹³⁴ *Id.*



who else is available on the planet to point to as a possible source.¹³⁵ Jonathan J. Koehler has urged in a number of papers that such enormous probabilities are still misleading because of the fact that error rates in labs (on the order of 1 in 100 results) undermine the validity of the astronomical probability.¹³⁶ As Professor Koehler comments:

Do the tiny DNA frequencies--frequencies on the order of 1 in millions, billions, and trillions--have any probative value beyond that which is given by the laboratory error rate when the error rate is many orders of magnitude greater than DNA frequency? My answer is that they do not....¹³⁷

Even granting Koehler this much, it does not follow that such evidence should be excluded under FRE 403: the obvious solution seems to be for triers of fact to also consider error rates.

Some empirical evidence, however, suggests that this will not suffice. Koehler and colleagues, drawing on recent empirical psychology,¹³⁸ observe that:

[J]urors may overweight extremely small RMPs for two reasons. First, vividness theory suggests that people give inferential weight to evidence in

¹³⁵ Doubts (not entirely convincing we think) about astronomical probability ratios are raised in Jonathan J. Koehler, *One in Millions, Billions, and Trillions: Lessons from People v. Collins (1968) for People v. Simpson (1995)*, 47 J. LEGAL EDUC. 214, 219-220 (1997).

¹³⁶ *Id.* at 221-222; Koehler, *DNA Matches*, *supra* note 133 at 228-229; Jonathan J. Koehler et al., *The Random Match Probability in DNA Evidence: Irrelevant and Prejudicial?* 35 JURIMETRICS J. 201 (1995).

¹³⁷ Koehler, *One in Millions*, *supra* note 135, at 221-222. For criticism of Koehler's interpretation, see [get sources].

¹³⁸ See the sources cited in Koehler et al., *Random Match Probability*, *supra* note 136, at 212 nn. 42, 43.

proportion to its vividness or memorability. Very small statistics, such as one in millions or billions, may be quite vivid and memorable, and therefore exert a large impact on verdicts. Second, people often combine probabilistic items of evidence by averaging them. When an averaging strategy is used to estimate the disjunctive probability of error from either of two sources, one of which is several orders of magnitude smaller than the other, it substantially outweighs the contribution of the smaller error source. In this way, jurors provided with RMPs and laboratory error rates may attach great significance to very small-- but minimally diagnostic--RMPs.¹³⁹

Professor Koehler and his colleagues tested these hypotheses with jury-eligible subjects at the University of Texas and in the local community. Subjects reviewed written summaries of a murder case, in which the strongest evidence was the RMP connected to the DNA evidence. Some subjects received no RMP, some received the RMP without information on laboratory error rates, and some received both pieces of information.¹⁴⁰ The researchers found "that introduction of the RMP had a strong effect on mock jurors' verdicts, both when laboratory error rates were absent and present....Introduction of laboratory error rates...did not significantly affect conviction rates...."¹⁴¹ Their conclusion, accordingly, was that RMP evidence was "potentially

¹³⁹ *Id.* at 212 (citations omitted).

¹⁴⁰ For the details of the methodology in the two studies, see *id.* at 212-215.

¹⁴¹ *Id.* at 213. They add: "The probability that a juror would convict in the hypothetical case doubled or tripled when the RMP was introduced. Separate introduction of the highly diagnostic laboratory error rate had little impact. But when the aggregated error rate [which "reflected the combined possibility of error from coincidental matches and laboratory mistakes" (*id.*)] was introduced, and jurors were not afforded separate access to a small RMP, convictions rates declined by nearly half." *Id.* at 213-214.

prejudicial"¹⁴² and that even when jurors are also given information about error rates, they are still "likely to be hopelessly confused about the weight to accord" the evidence.¹⁴³

FRE 403, of course, calls for a balancing test, and nothing said so far establishes how the balance should be struck: RMPs may be prejudicial, but they are also rather clearly probative as well. But there is a more serious worry arising from Professor Wellborn's cautionary notes about applying laboratory results to real-world trials. As Professor Koehler and his colleagues concede:

An important issue for future research is whether the findings described here will persist even when corrective steps are taken. For example, expert testimony or judicial instructions explaining that laboratory error rates should be considered even in cases involving very small RMPs may be sufficient to sensitize jurors to the normative issue. We also caution that the studies presented here do not consider the effects of group deliberation.¹⁴⁴

In addition, the Koehler experiments did not include *live* testimony and, in particular, did not include live cross-examination. Surely a skilled attorney (say, one who has carefully read Professor Koehler's articles) might effectively demolish RMP evidence in the eyes of a jury.

In the case of probabilistic evidence, then, social epistemology can make

¹⁴² *Id.* at 215.

¹⁴³ *Id.* at 216 (quoting Richard O. Lempert, *Some Caveats Concerning DNA as Criminal Identification Evidence: With Thanks to the Reverend Bayes*, 13 CARDOZO L. REV. 303, 325 (1991)).

¹⁴⁴ *Id.* at 216-217.



no concrete recommendations yet. We know that in the laboratory, lay people make a mess of RMPs and error rates. To date, we have no real idea what jurors in real trials will make of such evidence.

C. Character Evidence

Character evidence figures in the Federal Rules in two contexts: FRE 404(a) excludes most character evidence in criminal trials (except in special circumstances) and all character evidence in civil trials, but 404(b) has the practical consequence of making it possible to admit most character evidence by making admissible evidence "of other crimes, wrongs, or acts" to prove "motive, opportunity, intent, preparation, plan, knowledge, identity, or absence of mistake or accident." FRE 608, in turn, permits evidence of character in order to impeach a witness.

There is now a large social psychology literature examining the explanatory power of the concept of character: do individuals act "in conformity with character"--with stable long-term behavioral dispositions--or do they, rather, act in situation-specific ways such that the notion of "character" is an unreliable predictor of subsequent conduct? A now dominant view--"situationalism"--holds that, in fact, people's actions are situation-specific, rather than reflecting stable dispositions constitutive of character.¹⁴⁵ Situationalism runs strongly counter to "common sense" about

¹⁴⁵ Sources of situationalism include the early studies of obedience, bystander intervention, and Good Samaritans. See Stanley Milgram, *Behavioral Study of Obedience*, 67 J. ABNORMAL PSYCH. 371 (1963); B. Latane & John M. Darley, *Group Inhibition of Bystander Intervention in Emergencies*, 10 J. PERS. & SOC. PSYCH. 215 (1968); John M. Darley & C. Daniel Batson, *From Jerusalem to Jericho: A Study of Situational and Dispositional Variables in Helping Behavior*, 27 J. PERS. & SOC. PSYCH. 100 (1973). Important contemporary accounts of situationalism include SUSAN T. FISKE & SHELLY E. TAYLOR, *SOCIAL COGNITION* (2nd ed. 1991); Daniel T. Gilbert & Patrick S. Malone, *The Correspondence Bias*, 117 PSYCH. BULL. 21 (1995); Edward E. Jones, *The Rocky Road from Acts to Dispositions*, 34 AM. PSYCHOLOGIST 117 (1979);

explanations of behavior. As two situationalists explain:

[P]eople tend to (a) offer dispositional explanations for behavior instead of situational ones, even when it should be transparent that the behavior is produced by situational factors (the "correspondence bias" or "the fundamental attribution error"); (b) make overly confident predictions about behavior on the basis of a small amount of information concerning dispositions; and (c) describe the self as well as others in terms of internal dispositions rather than context-specific factors.¹⁴⁶

One natural question for social epistemology to ask is: if situationalism is correct, what becomes of character evidence?

Richard Friedman has addressed the issue in the context of impeachment, arguing that even non-situationalist, but plausible psychological premises require a radical revision of the impeachment rules.¹⁴⁷ Situationalism strengthens the case. If "manipulations of the immediate social situation can overwhelm in importance the type of individual differences in personal traits or dispositions that people normally think of as being determinative of social behavior,"¹⁴⁸ then why think bad behavior in some out-of-court context has bearing on truth-telling *in court, under oath, in front of a jury, with*

Ziva Kunda & Richard E. Nisbett, *The Psychometrics of Everyday Life*, 18 COG. PSYCH. 195 (1986);
LEE ROSS & RICHARD E. NISBETT, *THE PERSON AND THE SITUATION: PERSPECTIVES OF SOCIAL PSYCHOLOGY* (1991).

¹⁴⁶ Incheol Choi & Richard E. Nisbett, *Situational Salience and Cultural Differences in the Correspondence Bias and Actor-Observer Bias*, 24 PERS. & SOC. PSYCH. BULL. 949, 949-950 (1998).

¹⁴⁷ Richard Friedman, *Character Impeachment: Psycho-Bayesian [!?] Analysis and a Proposed Overhaul*, 38 UCLA L. REV. 637 (1991).

¹⁴⁸ ROSS & NISBETT, *supra* note 145 at xiv.



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a threat of perjury, etc. The situations could not be more different, between the kind of evidence offered for impeachment purposes, and the kind of situation in which the witness now testifies.

In any case, Professor Friedman has already addressed impeachment at some length; we want to consider here FRE 404 in light of situationalism. The whole premise of character evidence--namely, "to prove the character of a person in order to show action in conformity therewith" (FRE 404(b))-- is exactly the premise of lay psychology that situationalism repudiates. As two leading situationalists, Ross and Nisbett, write:

[P]eople are inveterate dispositionalists. They account for past actions and outcomes, and make predictions about future actions and outcomes, in terms of the person--or more specifically, in terms of presumed personality traits or other distinctive and enduring personal dispositions.¹⁴⁹

In fact, however, "standard correlation coefficients determined in well-controlled research settings" show that "personality traits" lack substantial "explanatory and predictive power."¹⁵⁰

Now FRE 404(b), of course, does not permit the use of character evidence for "inveterate dispositionalist" purposes. Other "crimes, wrongs, or acts" may be highly probative of "motive, opportunity, intent [etc.]" for reasons perfectly congenial to the situationalist: insofar as the other acts are similar along one of the relevant dimensions, their probative value is clear. The real worry, rather, is that 404(b), in effect,

¹⁴⁹ *Id.* at 90.

¹⁵⁰ *Id.* at 91.



undermines the bar on more generalized character inferences of the sort situationalism tells us are not warranted. A jury may be warned that the evidence of prior wrongdoing is *only* to be considered with respect to defendant's "opportunity" to commit the crime with which he is currently charged, yet the suspicion is strong that jurors will also draw the inference that defendant has "bad character" and draw damaging inferences accordingly.

This means, of course, that there is always an argument for exclusion of 404(b) evidence on 403 grounds. If situationalism is correct, the 403 dangers are quite substantial: if the jury draws (forbidden) inferences from putative traits of character, the jury will be seriously misled and prejudiced, since situationalism teaches us that character traits have relatively little predictive power. The more radical conclusion, however, that situationalism suggests is that the 404(b) exception that swallows the rule is a bad idea: situationalism would counsel that the 403(a) bar on character evidence be preserved.

We do not, however, want to overstate the conclusion. For one thing, this argument against FRE 404(b) and the admission of character evidence is premised on the *truth* of situationalism. Even a casual reading of the social psychology literature, however, suggests certain weaknesses in the evidence for situationalism. Most obviously, the predictive value of situational variants is limited. Thus, the famous 1973 study of Good Samaritan behavior¹⁵¹ found that "[i]f the subjects were in a hurry..., only about 10 percent helped [the person needing assistance]. By contrast, if they were not



¹⁵¹ Darley & Batson, *supra* note 145.

in a hurry...., about 63 percent of them helped."¹⁵² Well, what about that ten percent? Wouldn't it be reasonable to invoke their good character in explaining their behavior, against the majority? Moreover, there are difficulties with the notion of a "situation."

Thus Ross and Nisbett make the following claim:

While knowledge about John is of surprisingly little value in predicting whether he will help the person slumped in the doorway, details concerning the specifics of the situation would be invaluable. For example, what was the appearance of the person in the doorway? Was he clearly ill, or might he have been drunk or, even worse, a nodding dope addict? Did his clothing make him look respectably middle class or decently working class, or did he look like a homeless derelict?¹⁵³

Supposing that these factors *are* relevant, how exactly do they show that knowledge of *character* is irrelevant? Doesn't it make perfectly good sense to say that someone of a genuinely charitable (or "altruistic" or "sensitive") character (maybe that 10% we met above!) thinks only of human need, and not of the class status of the person in need? Wouldn't it be quite natural to say that the people who let class status determine their decision to help those in need betray something about their character?

Even if situationalism is correct, there still remains the question what will real jurors--who hear character evidence *in context*, subject to cross-examination, under instruction from the judge to consider it only with respect to 404(b) issues, and who then deliberate about its significance with others--actually do with such evidence? It is



¹⁵² ROSS & NISBETT, *supra* note 145, at 4.

possible that the faulty inference that situationalism would reject is not one jurors will make, even if experimental subjects and ordinary people do draw those inferences.

D. Conclusion

In this paper, we have tried to sketch and defend a theoretical framework for evidence scholarship, naturalized epistemology, and show both the kinds of theoretical approaches it, correctly, rules out (Part III), and the kinds of questions and inquiries it, correctly, demands (Part IV). As noted earlier, there is already a body of evidence scholarship operating within what we would call the naturalized epistemology framework, examining topics ranging from hearsay¹⁵⁴ to expert evidence.¹⁵⁵ We hope we have shown why there are good philosophical reasons supporting the practical reasons for this kind of evidence scholarship to predominate in the exploration of the law of evidence. *A priori* formalisms that too often have commanded the allegiance of law professors may have their place, but it is limited to the suggestion of avenues for research and does not extend to generating useful conclusions about the real world.

¹⁵³ *Id.* at 3.

¹⁵⁴ See, e.g., Margaret Bull Kovera, Roger C. Park, & Steven D. Penrod, *Jurors' Perceptions of Eyewitness and Hearsay Evidence*, 76 MINN. L. REV. 703 (1992); Peter Miene, Roger C. Park, & Eugene Borgida, *Juror Decision Making and the Evaluation of Hearsay Evidence*, 76 MINN. L. REV. 683 (1992).

¹⁵⁵ See, e.g., Ronald J. Allen & Joseph S. Miller, *The Common Law Theory of Experts: Deference or Education*, 87 NW. U. L. REV. 1131 (1993); Ronald J. Allen, *Expertise and the Daubert Decision*, 84 J. CRIM. L. & CRIMINOL. 1157 (1994).