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EMPIRICAL LEGAL SCHOLARSHIP AS SCIENTIFIC DIALOGUE

GREGORY MITCHELL*

This Essay considers how the scientific status of empirical legal scholarship might be enhanced. The leading proposal for making empirical legal research more scientific is to move to a system of peer review for research reports. Although a move to pre-publication peer review might well improve the quality of empirical legal research, the probability of a widespread adoption of peer review by law reviews is low. A more feasible reform is for law reviews to adopt a set of stringent disclosure requirements designed to foster critical review and replication of empirical legal research. Adherence to such disclosure rules would increase the objectivity of empirical legal research by forcing researchers to commit publicly to definite empirical propositions in reproducible terms and would facilitate the systematic accumulation of knowledge about legal phenomena using meta-analysis.

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Without the trial-by-fire of peer review, how can journalists and the public possibly know which discoveries are credible, which are nothing more than acts of self-promotion by ambitious researchers,

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and which smack of the delusional?¹

We portray peer review to the public as a quasi-sacred process that helps to make science our most objective truth teller. But we know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong.²

[O]bjectivity is what makes science believable and is in part what is scientific about science.³

INTRODUCTION

A prominent, if not yet consensus, view within the legal academy is that legal scholars should produce more empirical research.⁴ Richard Posner, for instance, recommends that the “legal professoriat redirect its research and teaching efforts toward fuller participation in the enterprise of social science,”⁵ and Michael Heise contends that “[o]ur legal literature would be enriched if more academics, particularly law professors, became more engaged in empirical legal research and produced more of it.”⁶ Likewise, Deborah Rhode recommends that legal institutions “increase support for empirical and interdisciplinary research” as part of a commitment to “improving the quality and impact of academic work,”⁷ while Thomas Ulen holds out hope that the study of the law will become more scientific, with empirical work being “an absolutely vital part of the development of a mature legal science.”⁸ As if heeding this call for greater

1. Robert A. Weinberg, *Of Clowns and Clones*, ATLANTIC MONTHLY, June 2002, at 55.

2. Richard Horton, Editorial, *Genetically Modified Food: Consternation, Confusion, and Crack-up*, 172 MED. J. AUSTRALIA 148, 149 (2000).

3. Peter Kosso, *Science and Objectivity*, 86 J. PHIL. 245, 256 (1989).

4. Compare Dennis Patterson, *The Limits of Empiricism: Facts Tell Us*, 98 MICH. L. REV. 2738, 2738 (2000) (“The conventional legal academic wisdom about empiricism is that empirical information is by-and-large a good thing, that we need more of it, and that empirical analysis is preferable to many scholarly alternatives now on offer in the law review literature.” (footnote omitted)), with William M. Landes, *The Empirical Side of Law and Economics*, 70 U. CHI. L. REV. 167, 180 (2003) (suggesting that “most law professors regard empirical work as a form of drudgery not worthy of first-class minds,” which “translates into a downward shift in the demand for empirical relative to theoretical scholarship”). See also Elizabeth Warren, *The Market for Data: The Changing Role of Social Sciences in Shaping the Law*, 2002 WISC. L. REV. 1, 2 n.2 (citing several works over the last decade calling for more empirical legal research).

5. RICHARD A. POSNER, *THE PROBLEMATICS OF MORAL AND LEGAL THEORY* 164 (1999).

6. Michael Heise, *The Importance of Being Empirical*, 26 PEPP. L. REV. 807, 834 (1999).

7. Deborah L. Rhode, *Legal Scholarship*, 115 HARV. L. REV. 1327, 1357–58 (2002).

8. Thomas S. Ulen, *A Nobel Prize in Legal Science: Theory, Empirical Work, and the Scientific Method in the Study of Law*, 2002 U. ILL. L. REV. 875, 900. See also Rachel Croson, *Why and How to Experiment: Methodologies from Experimental Economics*, 2002 U. ILL. L. REV. 921, 945 (“[M]ore [legal experiments] should be used in the future. Experiments are an

empiricism, each new law review issue seems to bring yet another report of original empirical research.⁹

At the same time, serious concerns exist regarding the quality of empirical legal research. Most notable in this respect is the critique recently offered by Lee Epstein and Gary King, who opine that “the current

important addition to the researcher’s toolbox that can help to achieve our goal of better understanding and explaining our world.”)

9. Student-edited law reviews now regularly publish original empirical research on topics of legal interest, and the frequency of publication of such research in law reviews seems to be increasing. See Robert C. Ellickson, *Trends in Legal Scholarship: A Statistical Study*, 29 J. LEG. STUD. 517, 528–29 (2000) (providing data on law review articles from 1982 to 1996 that “hint that law professors and students have become more inclined to produce (although not consume) quantitative analyses”); Heise, *supra* note 6, at 812 (observing that “[a]lthough empirical legal scholarship remains the overwhelming exception to a general rule favoring non-empirical research” the role of empirical legal has grown, although somewhat haltingly, in the past decade); Michael Heise, *The Past, Present, and Future of Empirical Legal Scholarship: Judicial Decision Making and the New Empiricism*, 2002 U. ILL. L. REV. 819, 825 [hereinafter Heise, *New Empiricism*] (“Traditional law reviews are beginning to publish more empirical work, despite editors who are frequently just a few years removed from college and typically lack any advanced graduate-level training.”); cf. Richard A. Posner, *Legal Scholarship Today*, 115 HARV. L. REV. 1314, 1316–17 (2002) (noting the growth in interdisciplinary legal research since the late 1960s).

An even cursory review of recent law review issues will reveal the current popularity of empirical approaches to legal questions. See, e.g., Helen M. Bowers, *Fairness Opinions and the Business Judgment Rule: An Empirical Investigation of Target Firms’ Use of Fairness Opinions*, 96 NW. U. L. REV. 567, 568 (2002) (using empirical research to cast doubt on “widely held perceptions concerning the use of fairness opinions”); Douglas L. Colbert et al., *Do Attorneys Really Matter? The Empirical and Legal Case for the Right of Counsel at Bail*, 23 CARDOZO L. REV. 1719, 1720 (2002) (using empirical evidence to show the benefit of having counsel at pretrial bail hearings); Richard L. Cupp Jr. & Danielle Pollage, *The Rhetoric of Strict Products Liability Versus Negligence: An Empirical Analysis*, 77 N.Y.U. L. REV. 874, 874 (2002) (using empirical research to show that negligence jury instructions favor plaintiffs more than products liability instructions); Theodore Eisenberg et al., *Juries, Judges, and Punitive Damages: An Empirical Study*, 87 CORNELL L. REV. 743, 743 (2002) (comparing judges and juries based on empirical evidence of the rate of punitive damages awards and the relation to compensatory damage awards for both groups); Barry Friedman & Anna L. Harvey, *Electing the Supreme Court*, 78 IND. L.J. 123, 125 (2003) (employing empirical analysis to relate the ideological distance between the Supreme Court and Congress to the Court’s propensity to strike down legislation); Oona A. Hathaway, *Do Human Rights Treaties Make a Difference?*, 111 YALE L.J. 1935, 1939 (2002) (examining the relationship between human rights treaties and human rights practices); Michael Heise, *Mercy by the Numbers: An Empirical Analysis of Clemency and Its Structure*, 89 VA. L. REV. 239, 244 (2003) (using statistical analyses to explore the use of clemency); Michael H. Leroy & Peter Feuille, *When is Cost an Unlawful Barrier to Alternative Dispute Resolution? The Ever Green Tree of Mandatory Employment Arbitration*, 50 UCLA L. REV. 143, 143 (2002) (presenting empirical research on cost-shifting provisions in mandatory arbitration agreements for employment claims); Myron Moskovitz, *A Rule in Search of a Reason: An Empirical Reexamination of Chimel and Belton*, 2002 WISC. L. REV. 657, 697 (using empirical analysis to question the application of *Chimel* and *Belton*); Daniel M. Schneider, *Assessing and Predicting Who Wins Federal Tax Trial Decisions*, 37 WAKE FOREST L. REV. 473, 473 (2002) (analyzing the relationship between the social background of judges and the outcomes of federal tax trial decisions); Albert Yoon, *Love’s Labor Lost? Judicial Tenure Among Federal Court Judges: 1945–2000*, 91 CAL. L. REV. 1029, 1030 (2003) (showing that tenure trends for federal district and circuit judges remained stable from 1945 through 2000).

state of empirical legal scholarship is deeply flawed.”¹⁰ After examining over 300 works of empirical legal scholarship,¹¹ these experts in research methodology concluded that “serious problems of inference and methodology abound everywhere we find empirical research in the law reviews and in articles written by members of the legal community.”¹² If

10. Lee Epstein & Gary King, *The Rules of Inference*, 69 U. CHI. L. REV. 1, 6 (2002). Rhode asserts that “[t]he problem is not only the inadequate quantity of empirical work, but also the inadequate quality. Research by law students and professors with no formal training in social science methodology provides constant reminders of the limitations of armchair empiricism.” Rhode, *supra* note 7, at 1343. Some of the most common problems include “[s]loppy survey techniques, skewed samples, and sweeping generalizations from unrepresentative findings.” *Id.* See also Gerald N. Rosenberg, *Across the Great Divide (Between Law and Political Science)*, 3 GREEN BAG 2D 267, 268 (2000) (“[F]or the most part, [legal academics] lack the training to be contributors to empirical political science scholarship about law and courts.” (footnote omitted)); David E. Van Zandt, *Discipline-Based Faculty*, 53 J. LEGAL EDUC. 332, 332 (2003) (“Unfortunately, because of both their training and the lack of strong norms of peer review, the work of many law school faculty falls short of the standards that prevail in other disciplines.”). Cf. Mark A. Graber, *Law and Sports Officiating: A Misunderstood and Justly Neglected Relationship*, 16 CONST. COMM. 293, 304 (1999) (“Given the law review preference for bold theses and the tendency for other academic disciplines to recognize shades of grey, the quality of the non-legal scholarship in an essay submitted to a law review may have little or even an inverse relationship to the probability of a publication offer.”).

Epstein and King’s article elicited charged responses from legal scholars, several of whom agreed that empirical legal research could be improved but disagreed about the extent or details of the problem. See Frank Cross, Michael Heise & Gregory C. Sisk, *Above the Rules: A Response to Epstein and King*, 69 U. CHI. L. REV. 135, 135 (2002) (“Epstein and King devote the bulk of their article to an unremitting and excessive attack on the current state of empirical legal research methodology. Although some of their attacks are well aimed, on too many occasions their shots miss the targets they seek.”); Jack Goldsmith & Adrian Vermeule, *Empirical Methodology and Legal Scholarship*, 69 U. CHI. L. REV. 153, 153 (2002) (“At some level of generality, it is hard to disagree with the spirit of Epstein and King’s complaints We nonetheless reject much of Epstein and King’s indictment of legal scholarship.”); Richard L. Revesz, *A Defense of Empirical Legal Scholarship*, 69 U. CHI. L. REV. 169, 188 (2002) (acknowledging that some of Epstein and King’s criticisms are correct but adding that “empirical legal scholarship has a great deal to contribute to the understanding of law and legal institutions, and social scientists would benefit from paying close attention to the methodological innovations performed by legal scholars”).

11. See Lee Epstein & Gary King, *A Reply*, 69 U. CHI. L. REV. 191, 199 (2002) (discussing how they selected “three-hundred-plus articles” for consideration).

12. Epstein & King, *supra* note 10, at 15. As to the expert status of Epstein and King, both are professors of political science who have published original empirical research as well as work on research methodology. See generally GARY KING ET AL., *DESIGNING SOCIAL INQUIRY: SCIENTIFIC INFERENCE IN QUALITATIVE RESEARCH* (1994) (developing a unified approach to valid descriptive and causal inference for qualitative research); Lee Epstein et al., *Do Political Preferences Change? A Longitudinal Study of U.S. Supreme Court Justices*, 60 J. POL. 801 (1998) (tracking the Justices’ political preferences according to their conference voting records); Lee Epstein & Jeffrey A. Segal, *Measuring Issue Salience*, 44 AM. J. POL. SCI. 66 (2000) (employing a new method for measuring issue salience).

Concerns exist about doctrinal scholarship, as well. See, e.g., Rhode, *supra* note 7, at 1340 (“Yet too much conventional legal analysis is not done well. It exhaustively exhumes unimportant topics or replicates familiar arguments on important ones. Too little effort is made to connect law to life by assessing the real world consequences of analytic frameworks.”).

Epstein, King, and other critics of empirical legal research are right, then legal scholars should focus on producing better empirical research and not simply more of it.¹³

Much of this ostensible quality problem is said to arise from the fact that student-edited law reviews serve as the primary outlet for empirical legal research: if experts, rather than law students, selected manuscripts for publication and suggested needed revisions, then surely the quality of empirical legal research would improve.¹⁴ Epstein and King accordingly

13. Epstein and King offer a wide-ranging critique of empirical legal research as a collective body of work. More common are criticisms directed at particular empirical studies. See generally Ryan Goodman & Derek Jinks, *Measuring the Effects of Human Rights Treaties*, 14 EUR. J. INT'L L. 171 (2003) (commenting on Hathaway, *supra* note 9); Oona A. Hathaway, *Testing Conventional Wisdom*, 14 EUR. J. INT'L L. 185 (2003) (responding to the Goodman and Jinks critique); Richard Lempert, *Juries, Hindsight, and Punitive Damages Awards: Failure of a Social Science Case for Change*, 48 DEPAUL L. REV. 867 (1999) (commenting on Reid Hastie & W. Kip Viscusi, *What Juries Can't Do Well: The Jury's Performance as a Risk Manager*, 40 ARIZ. L. REV. 901 (1998)); Robert J. MacCoun, *The Costs and Benefits of Letting Juries Punish Corporations: Comment on Viscusi*, 52 STAN. L. REV. 1821 (2000) (commenting on W. Kip Viscusi, *Corporate Risk Analysis: A Reckless Act?*, 52 STAN. L. REV. 547 (2000)).

14. See, e.g., Peter A. Appel, *Intervention in Roman Law: A Case Study in the Hazards of Legal Scholarship*, 31 GA. J. INT'L COMP. L. 33, 56–57 (2002) (discussing how faculty involvement in the law review article selection process could help to avoid author errors); Arthur D. Austin, *The "Custom of Vetting" as a Substitute for Peer Review*, 32 ARIZ. L. REV. 1, 4–5 (1990) ("Academics had to fess up to a more ignominious scandal; there is no peer review system for the articles that law professors publish in law reviews. As a consequence, their articles do not receive objective and qualified criticism—and respectability."); Randall R. Bovbjerg, *Medical Malpractice: Research and Reform*, 79 VA. L. REV. 2155, 2186 n.135 (1993) ("Relying on legal scholarship for secondary empirical data is especially troublesome because legal publications typically lack relevant peer review. Most law journals are good about requiring proof that cited material exists, but they are not as good about clarifying its value for readers."); Roger C. Cramton, *"The Most Remarkable Institution": The American Law Review*, 36 J. LEGAL EDUC. 1, 9 (1986) (arguing that law reviews are less timely and of a lower quality because of the "lack of continuity resulting from the annual turnover of editors, falloff in interest of third-year editors who are not elected to officer positions, limited scholarly perspective, and inexperience in legal research, writing, and editing"); Heise, *supra* note 6, at 814 n.39 ("Almost all academics, as well as a surprisingly large number of law professors, find the absence of blind peer-review at most law reviews, certainly the student-edited ones, almost scandalous."); Posner, *supra* note 9, at 1324 ("Doctrinal scholarship may have been (may be) dull and limited, but it is useful and it is conducted under conditions that ensure minimum quality. Those conditions—a large professional audience; a common academic culture; continuity with teaching, judging, and performance as a student; and law review editing—are missing from interdisciplinary legal scholarship . . ."); Richard A. Posner, *The Future of the Student-Edited Law Review*, 47 STAN. L. REV. 1131, 1136 (1995) ("[L]aw review editors generally lack the competence to select and improve [nondoctrinal] scholarship."); David A. Rier, *The Future of Legal Scholarship and Scholarly Communication: Publication in the Age of Cyberspace*, 30 AKRON L. REV. 183, 210–11 (1996) (arguing for "greater reliance on faculty reviewers and editors" as part of an effort to "improve the value of legal scholarship to its readers"); Van Zandt, *supra* note 10, at 339 ("[E]ven placement in one of the very top student-edited journals is suspect; the quality of articles in those journals varies much more than it does in the top peer-reviewed journals of other disciplines.");

Epstein and King summarize well the concerns about lack of peer review:

A third sign [of indifference to research as a social enterprise] is the legal

propose a modified system of editorial peer review for law reviews in which “the law review would publish only articles that have (1) been reviewed by at least one external expert in a double blind (or at least single blind) peer-review setting and (2) attained the approval of the [journal’s] editorial board.”¹⁵ Such a system would presumably “filter out at least some of the ‘junk’ law professors themselves accuse their own journals of publishing” and improve the status of the law schools whose scholarship model is seen by other branches of academia as “intellectually impoverished.”¹⁶

While this proposal probably holds intuitive appeal for many non-legal scholars who publish in peer-reviewed journals, Epstein and King offer little empirical support for the proposition that pre-publication expert review improves the quality of empirical scholarship.¹⁷ And as it turns out,

community’s refusal to subject articles submitted to some of its most prestigious outlets to any form of blind peer review, preferring instead to leave the refereeing task to law students. Most scholars in units outside of law schools are, when they hear of it, astonished at this organizational decision. For they have come to learn that while it is easy to fool oneself (or law students, as the case might be) into believing that one has produced an important research result, it is a good deal more difficult to ‘fool,’ however inadvertently, a community of experts spending their lives working on related problems.

Epstein & King, *supra* note 10, at 48 (footnote omitted).

Without some form of blind reviewing, separating the person from the product is difficult. Also problematic is that students (and indeed any one person) may lack the expertise necessary to evaluate the submissions that cover complex and technical areas of the law or employ sophisticated statistical or qualitative methods. Finally, the lack of blind peer review in most law journals puts legal academics at a distinct disadvantage vis-à-vis the rest of the university.

... [T]he lack of peer review (among other features of this “unique” system) makes it difficult for scholars in other units to take legal work seriously—especially since their colleagues do not “count” non-peer-reviewed articles when it comes time for tenure, promotions, salary raises, and other perks. That others do not take legal research seriously is, of course, not our point; what is central is that peer review has, at times, important benefits.

Id. at 125–26.

15. Epstein & King, *supra* note 10, at 128. Posner has similarly recommended that law reviews “focus on doctrinal scholarship” and “give serious consideration to having every plausible submission of a non-doctrinal piece refereed anonymously by one or preferably two scholars who specialize in the field to which the submission purports to contribute.” Posner, *supra* note 14, at 1136. See also Rhode, *supra* note 7, at 1360 (recommending that law schools “support more specialized peer-refereed reviews”).

16. Epstein & King, *supra* note 10, at 130.

17. See Cross et al., *supra* note 10, at 147–48 (“Epstein and King certainly have not established the necessary inferences to support their proposal, and they ignore the considerable literature criticizing aspects of the peer-review process. Indeed, the peer-review process itself looks insupportable by the very rules of inference established by Epstein and King.” (footnote omitted)). In a later article, Epstein and King make clear that their proposals for reform to

the evidence on this point is less than definitive, leading some legal scholars to express skepticism about the utility of peer review.¹⁸

empirical legal scholarship, including the adoption of peer review, are based on supposition rather than testing:

[T]hese recommendations are based only on our *hypothesis* that implementing them would improve empirical analyses in the law. We obviously are not certain that any of our ideas will work as intended at any particular law school, and we have conducted no analyses to evaluate them. Such studies surely should be done. At the same time, our experience in other disciplines suggests support for the general direction of these proposals.

Lee Epstein & Gary King, *Building an Infrastructure for Empirical Research in the Law*, 53 J. LEGAL EDUC. 311, 312 (2003). Elsewhere, I imply that peer review improves empirical research without discussing how that might be so. See Gregory Mitchell, *Taking Behaviorism Too Seriously? The Unwarranted Pessimism of the New Behavioral Analysis of Law*, 43 WM. & MARY L. REV. 1907, 1929–31 (2002). This Essay seeks to correct my earlier oversight on this point.

18. See Frank B. Cross, *The Naïve Environmentalist*, 53 CASE W. RES. L. REV. 477, 486 (2002) (“Peer review is demonstrably unreliable at screening research for validity. It tends to be infected by ideological biases and replicate the preferences of the editor and reviewers. Simply because something is peer-reviewed does not make it true, nor does the absence of peer review make information false.” (footnotes omitted)); Bernard J. Hibbitts, *Last Writes? Reassessing the Law Review in the Age of Cyberspace*, 71 N.Y.U. L. REV. 615, 666 (1996) (arguing that faculty editing is an “inherently conservative force” because the process of peer review and selection will lead to the publication of pieces that fit into “generally accepted norms and conform with the ordinary style expectations of editors and especially peer reviewers”); Bernard J. Hibbitts, *Yesterday Once More: Skeptics, Scribes and the Demise of Law Reviews*, 30 AKRON L. REV. 267, 292–93 (1996) (arguing that because of “many well-documented shortcomings: poorly- or arbitrarily-selected reviewers; reviewer anonymity, partiality, fallibility, or overwork; a systematic bias against innovation; lengthy delays; unavailability of reviews to general readers; and even occasional editorial dismissal of peer verdicts,” quality control through peer review may not be much better than quality control by students (footnotes omitted)); Lars Noah, *Medicine’s Epistemology: Mapping the Haphazard Diffusion of Knowledge in the Biomedical Community*, 44 ARIZ. L. REV. 373, 397 (2002) (“As in other scientific disciplines, editorial peer review has long served an important quality control function in biomedical publications. It has a number of shortcomings, however, that may limit its utility as a mechanism for validating the information that appears in print.” (footnotes omitted)); Effie Chan, Note, *The “Brave New World” of Daubert: True Peer Review, Editorial Peer Review, and Scientific Validity*, 70 N.Y.U. L. REV. 100, 129 (1995) (“[E]ditorial peer review practices in place at different scientific journals are so unregulated and widely disparate that editorial peer review cannot be viewed as a monolithic indicator of scientific validity. The quality of editorial peer review at any journal depends largely on the individuals who referee its articles.”).

I do not hold the view that the costs of peer review outweigh its benefits. In fact, I share the view of Ann Weller, who conducted the most comprehensive review of the empirical evidence on peer review to date and concluded that “editorial peer review is messy and does not always work as it should, but it is essential to the integrity of scientific and scholarly communication.” ANN C. WELLER, EDITORIAL PEER REVIEW: ITS STRENGTHS AND WEAKNESSES 322 (2001). This view is reflected in an editorial by Drummond Rennie, Deputy Editor of the Journal of the American Medical Association.

Once again, in this issue of The Journal, we publish studies that fail to show any dramatic effect, let alone improvement, brought about by peer review. Yet, despite this, it continues to be the experience of editors that peer review is extraordinarily effective, sometimes in saving the reputations of the authors. Why? It makes good sense that

Furthermore, the likelihood that law reviews will move to some form of editorial peer review any time soon seems slight at best.¹⁹

If we grant the importance of gaining knowledge about the legal system through empirical research but also grant the importance of doing sound empirical legal research so that we gain reliable knowledge,²⁰ two

editors would want to enlist the services of those more expert in a particular subject than themselves. And there are powerful reasons why editors might wish to spread the responsibility for unfavorable decisions about manuscripts. But there is another important factor. Peer review represents a crucial democratization of the editorial process, incorporating and educating large numbers of the scientific community, and lessening the impression that editorial decisions are arbitrary.

Drummond Rennie, *Fourth Internal Congress on Peer Review in Biomedical Publication*, 287 JAMA 2759, 2759 (2002) (footnotes omitted). Any publication biases associated with a peer-review system are not likely to be worse than publication biases already present within legal scholarship. Moreover, any delays or reductions in the publication of empirical legal research caused by pre-publication expert review may actually benefit rather than harm the larger system of legal scholarship, particularly given the applied nature of much empirical legal research, by allowing time for additional and better evidence to accumulate. Nevertheless, I recognize that reasonable people can disagree about the costs and benefits of peer review and that there is great resistance to the adoption of a system of peer review for empirical legal scholarship published in law reviews. Hence, the proposal advanced below is a second-best approach to improving empirical legal scholarship in light of the infeasibility of a move to peer review.

19. Perhaps the best evidence of the improbability of near-term reforms that will diminish student control over the editorial and selection process is the lack of any movement in that direction over the years despite the numerous calls for greater faculty control. For instance, Roger Cramton's dire prediction, in 1986, about the "doubtful future of the student-edited review" in the face of growing competition from faculty-edited reviews, Cramton, *supra* note 14, at 10, remains unfulfilled almost twenty years later.

Epstein and King recognize that "switching wholesale to the full blind-peer-review model . . . is infeasible," Epstein & King, *supra* note 17, at 317, and Dean Spitzer summarizes well the difficulties in moving toward even the modified form of peer review that Epstein and King advocate:

There would be significant costs in making such a transition. The most obvious is the time and effort involved in any significant institutional innovation. Less obvious are the possible political costs. The law reviews are regarded as belonging to the students. A dean who tried to persuade the existing editorial board to agree to such a transformation would risk being perceived as unfriendly to student rights. There are enough flash points with students without trying to transform the law review. I would need to be convinced that the benefits from making the transformation were larger and more certain before I would risk the costs.

Matthew Spitzer, *Evaluating Valuing Empiricism (at Law Schools)*, 53 J. LEGAL EDUC. 328, 330 (2003) (footnote omitted). Moreover, there is evidence of a high degree of support for the student-run law review system among judges, practicing lawyers, and even faculty. See Max Stier et al., *Law Review Usage and Suggestions for Improvement: A Survey of Attorneys, Professors, and Judges*, 44 STAN. L. REV. 1467, 1504 (1992) ("Our results suggest that radical change is neither necessary nor desired: Student selection and editing of law review articles are quite popular among all segments of the legal community, and the members of that community find the selected articles themselves to be useful.").

20. See, e.g., Julius G. Getman, *Contributions of Empirical Data to Legal Research*, 35 J. LEGAL EDUC. 489, 489 (1985) ("Empirical study has the potential to illuminate the workings of the legal system, to reveal its shortcomings, problems, successes, and illusions, in a way that no

questions arise. First, are advocates of peer review, including a majority of the U.S. Supreme Court,²¹ justified in their belief that peer review is a key ingredient in good empirical research, or are law professors who publish empirical research in student-edited law reviews justified in their relative lack of concern about peer review? Second, if peer review does confer some benefits on empirical research, are there other, more feasible ways to provide similar benefits to the system of empirical legal scholarship?

I argue here that peer review is an important ingredient in good empirical research, but not (only) because peer review serves some quality-checking function, which is the function so often emphasized in discussions of peer review.²² Rather, I argue that the primary benefit of peer review lies in its objectivity-forcing function: peer review compels the disclosure of important information about empirical research using a common methodological language so that the research may be subjected to critical scrutiny.²³ Thus, while peer review may directly improve the quality of

amount of library research or subtle thinking can match.”); Russell Korobkin, *Empirical Scholarship in Contract Law: Possibilities and Pitfalls*, 2002 U. ILL. L. REV. 1033, 1055 (“Empirical research will usually fail to reach a definitive conclusion, but it can make a valuable contribution to scholarly knowledge by pointing in the direction of a certain conclusion, even if it must rely on future studies to further develop the thesis and push it toward a conclusive set of results.”); Craig Allen Nard, *Toward a Cautious Approach to Obeisance: The Role of Scholarship in Federal Circuit Patent Law Jurisprudence*, 39 HOUS. L. REV. 667, 691–92 (2002) (advocating “cautious obeisance” in applying empirical research to patent law, despite the fact that it “can lead to decisionmaking that is more reflective of facts on the ground”); Rachael N. Pine, *Speculation and Reality: The Role of Facts in Judicial Protection of Fundamental Rights*, 136 U. PA. L. REV. 655, 656–57 (1988) (asserting that courts abdicate their duty to safeguard fundamental constitutional rights “[w]hen justice is blind to the fruits of scientific and social scientific research”).

21. See *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 594 (1993) (“The fact of publication (or lack thereof) in a peer reviewed journal thus will be a relevant, though not dispositive, consideration in assessing the scientific validity of a particular technique or methodology on which an [expert] opinion is premised.”). Chief Justice Rehnquist and Justice Stevens did not join that part of the majority opinion in *Daubert* that embraced peer review as one of the factors to consider in assessing the scientific validity of expert testimony. See *id.* at 598–601.

22. That is, peer review is often seen as a way to eliminate errors in research design, data analysis, and the inferences from data. See, e.g., JOHN ZIMAN, *REAL SCIENCE: WHAT IT IS, AND WHAT IT MEANS* 42 (2000) (“Peer review of contributions to the primary research literature is the principal social mechanism for quality control in academic science.” (footnote omitted)); Ikka Niiniluoto, *Measuring the Success of Science*, 1 PSA: PROC. BIENNIAL MEETING PHIL. SCI. ASS’N. 435, 436 (1990) (“The best method of ‘quality control’ in science is still *peer review* in its different variants (referees of journals, expert assessment in academic appointments, evaluation groups, etc.).”).

23. Cf. M.J. Peterson, *Community and Individual Stakes in the Collection, Analysis, and Availability of Data*, 28 PS: POL. SCI. & POL. 462, 462 (1995) (“The peer review process, the community’s main mechanism for encouraging quality work, cannot operate unless researchers explain their procedures of data collection and analysis in detail sufficient for others to understand how the project was carried out or even duplicate it from scratch for themselves.”). Viewed from this perspective, peer review serves an information-forcing function of a special kind: the information must be disclosed in a common statistical and methodological language

empirical research by catching some errors in research design and data analysis, peer review should be viewed most fundamentally as a mechanism for the enforcement of scientific norms and conventions designed to foster publicity and transparency in methods and results, replication and extension of research findings, and critical review in general. By forcing research to be amenable to intersubjective testing and review, peer review confers (a form of) objectivity on empirical research, and it is this objectivity that lends special credence to scientifically produced knowledge.²⁴ From this perspective, objectivity is a necessary condition for science, and peer review is a sufficient, but not a necessary, condition for objectivity.²⁵

Viewing peer review as primarily a means to objectivity rather than as a guarantor of authenticity or verity in research findings suggests an alternative approach to improving empirical legal scholarship that may be more feasible than a move to peer review: law reviews can force objectivity into empirical legal scholarship by adopting a set of stringent disclosure requirements for reports of original empirical research, including disclosure of detailed information about methodology, data analysis, and the availability of raw data for replication and review.²⁶ Adherence to such disclosure norms would make empirical legal research more amenable to intersubjective review and testing and would go far toward making this body of research a more objective, respected, and productive form of

that is most useful to other scientists.

24. See, e.g., DAVID L. HULL, *SCIENCE AS A PROCESS* 347 (1988) ("To count as scientific, a finding must be replicable."); Alvin I. Goldman, *Science, Publicity, and Consciousness*, 64 *PHIL. SCI.* 525, 525 (1997) ("An old but enduring idea is that science is a fundamentally 'public' or 'intersubjective' enterprise. According to this thesis, the core of scientific methodology is interpersonal rather than private."); Olaf Helmer & Nicholas Rescher, *On the Epistemology of the Inexact Sciences*, 6 *MGMT. SCI.* 25, 27 (1959) ("[I]t is *objectivity*, i.e., the intersubjectivity of findings independent of any one person's intuitive judgment, which distinguishes science from intuitive guesswork however brilliant."); Peter Railton, *Marx and Objectivity of Science*, 2 *PSA: PROCEEDINGS OF THE BIENNIAL MEETING OF THE PHIL. OF SCI. ASS'N* 813, 815 (1984) ("[O]bjective inquiry uses procedures that are intersubjective, and independent of particular individuals or circumstances—e.g., its experiments are reproducible, its methods are determinate, its criteria are effective, and it makes no essential use of introspective or subjectively privileged evidence in theory assessment."). I discuss in more detail below objectivity and its relation to science and scientific progress, and I argue that adherence to publicity and transparency in research leads cumulatively to more accurate and reliable knowledge and is what separates scientific from pseudoscientific inquiry. See *infra* Part I.A.

25. Treating peer review, in all its practiced forms, as sufficient for objectivity in empirical research overstates the case. A better view would be to label peer review, *if well done*, as a sufficient condition for objectivity.

26. The proposed disclosure requirements would be modeled after publication rules for psychological research and replication rules within political science and would be codified in *THE BLUEBOOK: A UNIFORM SYSTEM OF CITATION* (Columbia Law Review Ass'n et al. eds., 17th ed. 2000) [hereinafter *THE BLUEBOOK*]. For details, see *infra* Part II.

scientific dialogue.²⁷ The prospects for this alternative proposal seem greater than the prospects for imposition of peer review because this alternative would not require the surrender of student control over the law review or the recruitment of numerous experts to perform article reviews.²⁸

27. In proposing that law review editors impose stringent disclosure requirements on empirical works, this Essay turns on its head the complaint that law review editors edit with too heavy a hand, by arguing that law review editors' considerable attention to detail may be used to improve reports of empirical legal research. This Essay seeks to provide law review editors with guidelines that can be used to ensure that proper disclosures are made, or, at the least, can help editors to decide whether to take on the task of publishing a report of empirical research. For examples of law professors' complaints about the editorial practices of law reviews, particularly with respect to style edits, see Afton Dekanal, *Faculty-Edited Law Reviews: Should the Law Schools Join the Rest of Academe?*, 57 UMKC L. REV. 233, 236 (1989) ("For many—and probably most—journals, over-editing has become the order of the day, and the practice does not seem to be abating."); James Lindgren, *Reforming the American Law Review*, 47 STAN. L. REV. 1123, 1128 (1995) ("It isn't unusual for editors to try to rewrite almost every sentence."); Carol Sanger, *Editing*, 82 GEO. L.J. 513, 513 (1993) ("At its best, law review editing, like editing elsewhere in the academic and literary worlds, results in a piece improved in style, structure, and content. Too often, however, law review articles are not so much improved as simply changed, sometimes hundreds of times within a single manuscript."); Reinhard Zimmerman, *Law Reviews: A Foray Through a Strange World*, 47 EMORY L.J. 659, 676 (1998) ("From the perspective of an author, particularly a European author, the process of editing is, as a rule, uncommonly annoying."); Laura F. Rothstein & Mark A. Rothstein, *Law Reviews Suffer from Lack of Peer Review*, LEGAL TIMES, Jan. 6, 1986, at 10 ("Zealous students have a tendency to over-edit articles, rewriting the authored articles in their own styles for no real reason.")

Lawrence Friedman asserts that all of this editing is for naught:

Law review editors are supposed to enforce tight, concise writing. But in fact, legal scholarship suffers enormously from bloat. Very few articles are tightly written. They might have tight *sentences*, but the piece itself goes on and on. And on. Many articles have a kind of hopeless obesity.

Lawrence M. Friedman, *Law Reviews and Legal Scholarship: Some Comments*, 75 DEN. U. L. REV. 661, 663 (1998). The proposal advanced in this Essay, if implemented, should lead to measurable improvements in the depth and breadth of information disclosed about empirical legal research. Thus, while the length of empirical articles might increase under this proposal, the hope is that such lengthening would be seen as a healthful rather than pointless gain.

28. Most of what I say here is consistent with the recommendations of Epstein and King, who also advocate better disclosure in empirical legal scholarship and the public availability of data for replication. They maintain that "[g]ood empirical work adheres to the *replication standard*: another researcher should be able to understand, evaluate, build on, and reproduce the research without any additional information from the author." Epstein & King, *supra* note 10, at 38. However, this rule does not actually require anyone to replicate the results reported in an article or book. Rather, "it only requires that researchers provide information—in the article or book or in some other publicly available or accessible form—sufficient to replicate the results in principle." *Id.* (footnote omitted). See also Epstein & King, *supra* note 17, at 319 ("We recommend that law reviews, at a minimum, require documentation of empirical data with as much specificity as they do for textual documentation This means simply making it possible for any reader to traverse the chain of empirical evidence amassed to support the conclusions published."). The goal here is to further discuss and justify the need for better disclosure in empirical legal scholarship and to come up with a more immediate, more feasible means to this end than the primary vehicle proposed by Epstein and King, a move to a modified system of peer review.

In addition to its greater feasibility than peer review, the proposal advanced here has other attractive features. First and foremost, the propagation of strict disclosure requirements may indirectly improve the quality of empirical legal research. Because the disclosure requirements would direct the researcher to crucial decision points in the design of a study and analysis of collected data, these requirements would compel the researcher to justify publicly the choices that were made at these crucial decision points. The researcher who fails to consider how her chosen methods compare to accepted norms for research design and data analysis, and who is thus subsequently ill-prepared to defend any deviations from these accepted norms, decreases her chances of publication in light of these norms and increases her chances of professional embarrassment should the research be published.²⁹ In short, strict disclosure requirements may encourage the researcher to assume a third-person perspective on her research to anticipate and avoid possible criticisms of her work.

Furthermore, switching the focus from the quality-checking function commonly associated with peer review to the need for an objectivity-forcing mechanism for empirical research refines one of the main arguments against peer review, namely, that editorial peer review and its costs are unnecessary because empirical truth will ultimately win out in the marketplace of ideas, where well-done studies are sorted from poorly-done studies after publication.³⁰ This argument assumes that the free publication of empirical research undertaken from different perspectives, without more, is a sufficient condition for reliable knowledge to be gained, and it ignores the essential role that publicity and transparency play in the facilitation of scientific dialogue intended to lead to greater knowledge. If empirical claims are going to compete on the basis of their scientific merit, rather than the identity or standing of the authors who make the claims, there

29. Cf. Lee Sigelman, *Foreword*, in COMMITTEE ON PUBLICATIONS, AMERICAN POLITICAL SCIENCE ASSOCIATION, *STYLE MANUAL FOR POLITICAL SCIENCE* 5, 8 (revised ed. 2001) [hereinafter *STYLE MANUAL FOR POLITICAL SCIENCE*] (“[W]hen you present your work clearly, you run the risk of bringing its deficiencies out into the open for all to see.”). Much of Epstein and King’s original article on empirical legal research is devoted to a discussion of the methodological and inferential norms commonly followed within the social sciences. See Epstein & King, *supra* note 10, at 14. According to Epstein and King, “[t]oo much legal scholarship ignores the rules of inference and applies instead the ‘rules’ of persuasion and advocacy. These ‘rules’ have an important place in legal studies, but not when the goal is to learn about the empirical world.” *Id.* at 9. For additional practical advice on how to conduct an empirical study and document its methodology, see generally Jonathan Nagler, *Coding Style and Good Computing Practices*, 28 PS: POL. SCI. & POL. 488 (1995) (outlining methodological rules for social science researchers).

30. See Goldsmith & Vermeule, *supra* note 10, at 156 (“Epstein and King’s complaint elides a critical possibility: the contest of ‘particular versions’ of truth ventilated by legal articles that are tendentious when taken separately may, at the systemic level, produce increasingly accurate approximations of truth, as scholar-advocates criticize the work of opposing camps.”).

needs to be disclosure of the foundation for the empirical claims in a common language adequate to permit critical evaluation and extension. Such disclosure allows us to move beyond a cacophony of subjective opinions on the meaning of disparate findings to agreement on which beliefs about the world are better or more justified in light of the evidence.³¹

The remainder of this Essay defends these introductory arguments. In Part I, I first defend the view that objectivity in science arises from the publication of empirical claims in reproducible terms that permit critical dialogue, and I briefly discuss the mechanisms that scientific communities put in place to foster full disclosure. After laying this foundation for the importance of disclosure in empirical research, I compare the disclosure norms in empirical legal scholarship to the disclosure norms in social scientific disciplines to illustrate that empirical legal scholarship fails to endorse the norms of publicity and transparency endorsed by the social sciences. I then propose, in Part II, a set of specific disclosure rules designed to increase the objectivity of empirical legal scholarship, and I argue that these rules should be institutionally imposed on empirical legal research for two reasons: (1) few legal scholars and law review editors possess the training or expertise in research methodology that would inform them of the disclosures that should be made to facilitate critical dialogue and replication; and (2) the systematic disclosure of information across studies will enable the quantitative synthesis, or meta-analysis, of research results, which is a crucial step in the development of social scientific knowledge.³²

31. In addition to public disclosure of evidence in a specific and intersubjectively accessible language, the premise that scientific dialogue and agreement can lead to reliable knowledge, or justified (true) belief, presumes, at a minimum, the existence of some standards for evaluating evidence for its truth value. I consciously avoid debate on this latter point because a resolution on this point is not essential to the Essay, although I am sympathetic to arguments about the disunity of scientific method that contend that there is no single scientific method nor a consensus definition of scientific rationality. See, e.g., Rachel Laudan & Larry Laudan, *Dominance and the Disunity of Method: Solving the Problems of Innovation and Consensus*, 56 PHIL. SCI. 221 *passim* (1989) (pro-pluralism); George A. Reisch, *Pluralism, Logical Empiricism, and the Problem of Pseudoscience*, 65 PHIL. SCI. 333 *passim* (1998) (anti-pluralism). Furthermore, as a practical matter, social scientists generally employ many of the rules of inference that Epstein and King have already discussed at length to evaluate the quality of evidence and the relation between hypotheses and evidence, once the means for testing hypotheses and the resulting evidence are made public. See generally Epstein & King, *supra* note 10 (describing the rules of inference and their application).

32. Meta-analysis “allows the combining of numerical results from a few or many studies, the accurate estimate of descriptive statistics and the explanation of inconsistencies as well as the discovery of moderators and mediators in bodies of research findings.” R. Rosenthal & M.R. DiMatteo, *Meta-Analysis: Recent Developments in Quantitative Methods for Literature Reviews*, 52 ANN. REV. PSYCHOL. 59, 61 (2001). As discussed below, meta-analysis can only be performed on research reports that disclose certain bits of crucial information about research

I. THE NEED FOR DISCLOSURE IN EMPIRICAL LEGAL SCHOLARSHIP

A. *The Centrality of Publicity and Transparency to the Objectivity and Progress of Science*

Non-epistemic, personal values may influence empirical research in many ways, from the choice of research project to the manner of presentation of data, and honorable intentions cannot fully guard against the intrusion of personal biases and unintentional errors into the research process.³³ The economic and political setting in which empirical research occurs may likewise influence the conduct of empirical research,³⁴ and unreliability in testing techniques and equipment may lead to variable results.³⁵ Given these possible sources of error and interpretive influences, few today would suggest that empirical inquiry provides unbiased, unmediated snapshots of the world as it really exists, that empirical inquiry provides “objective” knowledge of this sort.³⁶

Yet there is another important sense in which empirical inquiry, under certain conditions, may still be said to lead to objective knowledge: “to talk of the ‘objectivity of scientific knowledge’ in one sense is to talk of the fact that such knowledge is in some way independent of any particular individual, that it transcends the whim of the individual”³⁷ From this perspective, publicity and transparency in empirical inquiry play a crucial role in the objectivity of knowledge because these features of empirical research permit the communication of empirical claims in a form that others can check for their reliability:

When we strive to be “objective,” we try to recognize, and if

design, the data collected, and analysis of the data. See *infra* notes 56–57 and accompanying text.

33. See, e.g., Ernan McMullin, *Values in Science*, 2 PSA: PROC. BIENNIAL MEETING PHIL. SCI. ASS’N. 3, 3 (1982) (“[T]he claim that science is value-laden might no longer even seem controversial, among philosophers of science, at least, who have become accustomed to seeing the pillars of positivism fall, one by one.”).

34. For a discussion of the influence of economic and political interests on empirical research, see ZIMAN, *supra* note 22, at 67–82 (describing historical transformation from what Ziman calls “academic science” to “post-academic science”).

35. See, e.g., William Bechtel, *Aligning Multiple Research Techniques in Cognitive Neuroscience: Why Is It Important?*, 69 PHIL. SCI. S48, S48 (2002) (“The conception that demonstrating convergence between results procured with different techniques serves to provide epistemic support for each of them stems in part from recognition that research techniques are fallible.”).

36. Cf. Kosso, *supra* note 3, at 245–46 (“Science is reliable, we might think, because its claims must be tested against the objective facts of observations. But by now many philosophers have conceded to a certain amount of theory dependence in observation and its role as an objective standard is threatened.”).

37. Brian Carr, *Popper’s Third World*, 27 PHIL. Q. 214, 216 (1977). See also *id.* at 217 (“[H]owever we ultimately describe scientific objectivity, that science transcends the individual whim is a datum from which philosophy must start.”).

possible to eliminate, the errors and prejudices in what we say. We expose our own ideas to our colleagues in order to eliminate personal prejudices and distortions. In order to discover the prejudices of our group, one method is to expose our ideas to other groups who may not share the prejudices. Another method is to imagine alternative positions which other people might defend, and meet the criticisms which would arise. The search for objectivity involves the use of such methods in striving for a consensus so fully justified that any social group (actual or possible) will either assent to it, or can be persuaded to make changes which they themselves see as progressive, and which will bring them to that consensus.³⁸

“[T]he essence of [this] aperspectival objectivity is communicability, narrowing the range of genuine knowledge to coincide with that of public knowledge.”³⁹

The public knowledge that results from “critical discussion”⁴⁰ among researchers acquires special credence or reliability because filtering empirical claims through multiple perspectives increases the likelihood that these claims will reflect feedback from the objects of study rather than unintentional error, wishful thinking due to subjective idiosyncrasies, or politically-motivated outcomes.⁴¹ As Deirdre McCloskey notes, this view gives priority to agreement about what factual and inferential conclusions

38. R.G.A. Dolby, *In Defence of a Social Criterion of Scientific Objectivity*, 4 SCI. STUD. 187, 189 (1974). See also sources cited *supra* note 24 (discussing objectivity).

39. Lorraine Daston, *Objectivity and the Escape from Perspective*, 22 SOC. STUD. SCI. 597, 600 (1992). See also PETER MEDAWAR, *PLUTO'S REPUBLIC* 46 (1982) (declaring that scientific reasoning is “a dialogue between two voices, the one imaginative and the other critical; a dialogue, as I have put it, between the possible and the actual, between proposal and disposal, conjecture and criticism, between what might be true and what is in fact the case”).

40. See Karl Popper, *Replies to My Critics*, in *THE PHILOSOPHY OF KARL POPPER* 961, 1025 (Paul. A. Schilpp ed., 1974) (“I do not know of anything more ‘rational’ than a well-conducted critical discussion.”).

41. See Railton, *supra* note 24, at 818. According to Railton, inquiry does not have to be free of all value and bias to yield objective knowledge “if there nonetheless exist mechanisms that would operate to make one’s factual presuppositions more factual over time, or that would shape values in such a way that the norms governing inquiry come to approximate norms that would, if followed permit or encourage this sort of self-correction.” *Id.* Railton goes on to assert that “although we cannot, even in principle, have direct access to the objects of inquiry, there may yet exist mechanisms of belief-formation that incorporate feedback from the object to the inquiring subject.” *Id.* How reliable this feedback is depends on the repetitiveness or lawfulness and strength of the phenomenon or causal relationship being studied, but we must assume some minimal level of redundancy or order to assume some meaningful feedback for predictive or explanatory purposes. Cf. Herbert A. Simon, *Black Ravens and a White Shoe*, 42 BRIT. J. PHIL. SCI. 339, 341–42 (1991) (“We conclude that a tolerable theory of confirmation that does not trip over white shoes, and that has something to say about the character of science, can be built on the foundation of a fairly weak hypothesis that the world is in some sense redundant and hence lawful, at least not *wholly* random.”).

are warranted by particular calculations and comparisons:

The social character of scientific knowledge does not make it arbitrary, touchie-feelie, mob-governed, or anything else likely to bring it into disrepute. It is still, for instance, "objective," if that is a worry. In vulgar usage the objective/subjective distinction beloved of Western philosophy since Descartes means discussable/undiscussable. But even in a sophisticated sense "objectivity" has a necessarily social definition: we know that the yield of corn in the Middle Ages was objectively low because we converse with people who agree with our evidence and our calculations and our standard of comparison validating the word "low."⁴²

If skeptical minds agree that particular methods of inquiry yield particular bits of evidence about the nature of some object under investigation, then the evidence may be said to have some "objective" basis in reality.⁴³

However, it should be emphasized that it is not the fact of agreement itself that bestows objectivity, but rather the means to agreement that a particular observation or inference offers good evidence for an empirical proposition. When a researcher displays her results publicly and transparently, the evidence itself takes precedence and may convince even those predisposed to disagree that a certain view of things is better than an

42. DEIRDRE N. MCCLOSKEY, *THE RHETORIC OF ECONOMICS* 108–09 (David J. Depew ed., 2d ed. 1998). I do not take McCloskey to be taking a particular stand on the philosophical issue of whether agreement is sufficient for justified true belief, but rather to be making the practical point about how knowledge advances in the social sciences. For a critique of agreement as the grounds for justified true belief, see ALVIN I. GOLDMAN, *KNOWLEDGE IN A SOCIAL WORLD* 29 (1999) ("Many contemporary writers tend to confuse justification with interpersonal agreement But this view elevates agreement to an exaggerated epistemic position. An ability to elicit agreement is neither a necessary nor a sufficient condition of justification.").

43. The proposition in the text derives its force from a corollary proposition: "if anyone can show that you are mistaken, it is your opponents." HULL, *supra* note 24, at 348. See also *id.* at 435 ("[I]f science had to depend solely on individual scientists proving their own ideas wrong, it would be in real trouble. The most important testing that occurs in science is one scientist testing the views of another.").

The critical dialogue may take a variety of practical forms, from comments on manuscripts circulated before publication, critical review during the editorial peer-review process, post-publication critical comments about the research report whether the critique itself is published or not, peer review of grant applications based on research, discussions at conferences and scholarly presentations, direct attempts at replication, and perhaps most importantly through what Jonathan Adler calls "*implicit* replication, which simply involves the idea of new research building upon old." Jonathan E. Adler, *Testimony, Trust, Knowing*, 91 J. PHIL. 264, 267 (1994). See also Michael J. Hones, *Reproducibility as a Methodological Imperative in Experimental Research*, 1 PSA: PROC. BIENNIAL MEETING PHIL. SCI. ASS'N. 585, 595 (1990) ("In all cases, however, it must be emphasized that this methodological imperative [of reproducibility] does not place a great deal of importance upon the mere repetition of an experiment, but rather places great emphasis upon the reproduction of well-established results in different experimental contexts or situations.").

alternative view. That is, the agreement follows from the evidence, which follows from the application of particular methods of observation and analysis to a particular problem, and so the evidence, rather than the fact of agreement, is the basis for belief. However, if a researcher cannot display her results in such a way that others may critically evaluate the results or replicate the results themselves if they so choose, then the researcher's evidence can be no basis for a justified belief regardless of whether like-minded others agree.⁴⁴ By publicly displaying her results, a researcher makes it possible for others to demonstrate publicly the error in those results or the robustness of the evidence offered. This mutual public dialogue should lead to increasing levels of trust in the surviving, evolving evidence.⁴⁵

It is important to emphasize also that in this process mere publicity about the results of empirical inquiry is not enough: a researcher must make definite claims about the interconnection of particular methods of inquiry and particular observations that result from these methods so that others may demonstrate that this relation between methods and outcomes exists. Failure to specify the details of an empirical investigation leaves the initial researcher too much "wobble room" when faced with supposedly disconfirming evidence, for it allows the initial researcher to argue that critics failed to replicate some crucial aspect of the original methodology or failed to appreciate some important qualification on the empirical results. Eventually the original researcher must commit to a definite public position on the relationship between specific methods and specific results if the researcher's claims are to be given any respect or credence within the community of researchers who study the same object.⁴⁶

44. See, e.g., Gualtiero Piccinini, Epistemic Divergence and the Publicity of Scientific Methods 13, at http://philsci-archive.pitt.edu/archive/00000650/00/method_publicity_new_new_3.doc (last visited Nov. 14, 2004) ("By the present account, the publicity principle is an epistemic norm meant to exclude from science all methods that, reliable as they may appear, should not be trusted because either not all investigators can apply them to all pertinent questions or . . . the methods yield different answers.") (on file with the North Carolina Law Review).

45. Or, as David Hull puts it, "[s]cience is a social process in which scientists evaluate and criticize each other's work, leading to successive improvement." HULL, *supra* note 24, at 361–62.

46. See *id.* Hull lists several ways to fail in science. One is not to publish at all: "[a]nother is to publish in ways calculated to get other scientists to ignore or reject your work." *Id.* Yet another is "to write in a verbose, opaque style. Numerous scientists have suffered because either they were unable to write in a clear and effective manner or else they did not care to." *Id.*

The greater the social and political interest in empirical research, the more important this public commitment to definite methods and circumscribed results becomes, because powerful interests may exploit vague claims to serve their interests or dismiss unsubstantiated (and even substantiated) results that conflict with their interests. See Warren, *supra* note 4, at 36 (relating experiences from empirical bankruptcy research that lead her to conclude that "data that have political support and a strong public relations campaign will be used over and over regardless of their accuracy, while data that do not support the prevailing view—good or bad—will be

Historically, communities of researchers with common epistemic interests have developed mechanisms to encourage full disclosure and intelligibility in research reports so that empirical claims may be subjected to testing and review by others within the community, with the larger goal of developing impersonal evidence and reliable knowledge about the common objects of study.⁴⁷ “The deployment of instruments to replace qualitative appraisals, the use of experimental controls and double-blind experiments, practices of replication and peer review—almost every methodological maxim has as part its *raison d’être* the goal of insulating the findings of the researchers from their preferences.”⁴⁸ Those epistemic communities that advance knowledge claims using these objectivity-forcing mechanisms fall within the traditional domain of science, whereas those epistemic communities that fail to play by these meta-rules, such as creationists and astrologers, do not.⁴⁹

attacked”). See also Railton, *supra* note 24, at 823 (“[W]e should expect less objectivity—and ultimately less warrant and knowledge—in those areas of inquiry where dominant preconceptions and interests are less likely to prompt change-oriented activity that would promote genuine feedback and challenge preconceptions. This is famously the case in the social sciences.”).

47. At least since the nineteenth century, that is. For discussions of the evolution of the concept of objectivity, see generally Peter Dear, *From Truth to Disinterestedness in the Seventeenth Century*, 22 SOC. STUD. SCI. 619 (1992); Daston, *supra* note 39.

I do not mean to imply that altruistic or epistemic values alone fuel the critical give-and-take that may lead to more reliable knowledge. Selfish pursuit of fame and fortune may be sufficient to motivate critical scrutiny of other researchers’ work. *E.g.*, HULL, *supra* note 24, at 342 (“One reason why cheating is likely to be uncovered in science is that it is in the self-interest of individual scientists to check work that threatens their own.”); *id.* at 353 (“Another motive which may seem even less admirable than wanting credit for one’s contributions but which is equally efficacious is to desire to refute those scientists with whom one disagrees.”).

48. Noretta Koertge, *The Zero-Sum Assumption and the Symmetry Thesis*, 29 SOC. STUD. SCI. 777, 778 (1999) (footnote omitted). See also ZIMAN, *supra* note 22, at 87 (“In every branch of science . . . there are elaborate procedures for reducing the effects of subjectivity in empirical research.”).

49. Ziman emphasizes the role of collective scrutiny in establishing a scientific discipline:

[F]or an item of information to be acceptable as a potential contribution to science, it has to reach a minimum standard of credibility and relevance. What is more, in accordance with the norm of criticism, it has to be presented in a form capable of undergoing further communal tests before it counts as “scientific knowledge” in the fullest sense [E]very scientific discipline has its own criteria of “scientificity.” But what they all have in common is this lengthy period of expert scrutiny, much of it conducted in public. Researchers naturally seek results of the kind that are most likely to survive this process relatively unscathed.

ZIMAN, *supra* note 22, at 85.

Kitcher distinguishes the scientist from the pseudo-scientist by the former’s willingness to discuss the evidence and its logical relation to a theory and the latter’s unwillingness to recognize evidence or arguments that might destabilize preferred positions:

The primary division is a psychological one between *scientists* and *pseudo-scientists*. The behavior of creation scientists indicates a kind of inflexibility, deafness, or blindness. They make an objection to some facet of evolutionary biology. Darwin’s

First among the objectivity-forcing mechanisms employed by traditional scientific communities are “[r]elatively rigid standards for reporting results, including the quantification of almost everything possible,”⁵⁰ with an emphasis on the details necessary for others to simulate one’s methods to check for similar results.⁵¹ Placing these details into published reports, rather than conveying the information by word of mouth, standardizes the information communicated, expands and democratizes the universe of possible critics, protects the author in the case of a priority dispute about recognition for a finding, and provides a fame-based incentive to perform research. The publication of the research report raises objectivity concerns of its own, however, for unless the rigid reporting standards are met in the report, the report cannot further scientific dialogue.

This informational quality concern led publishers of research reports to adopt a second objectivity-forcing mechanism in the form of editorial

defenders respond by suggesting that the objection is misformulated, that it does not attack what Darwinists claim, that it rests on false assumptions, or that it is logically fallacious. How do creation scientists reply? Typically, *by reiterating the argument*. Anyone who has followed exchanges in this controversy or has read the transcripts of a series of debates sees that there is no adaptation to any of the principal criticisms.

PHILIP KITCHER, *THE ADVANCEMENT OF SCIENCE* 195 (1993). *See also* HULL, *supra* note 24, at 343 (“Perhaps the claims made by creation scientists are testable, but creation scientists themselves actually do little or nothing by way of genuine test. More than this, when others expose their views to tests, creation scientists ignore the results, ‘refusing to allow their position to be falsified.’” (citation omitted)).

Thagard provides a complementary definition of pseudoscience:

A theory or discipline which purports to be scientific is *pseudoscientific* if and only if:

- (1) it has been less progressive than alternative theories over a long period of time, and faces many unsolved problems; but
- (2) the community of practitioners makes little attempt to develop the theory towards solutions of the problems, shows no concern for attempts to evaluate the theory in relation to others, and is selective in considering confirmations and disconfirmations.

Paul R. Thagard, *Why Astrology is a Pseudoscience*, 1 PSA: PROC. BIENNIAL MEETING PHIL. SCI. ASS’N. 223, 227–28 (1978). Thagard finds astrology to be a pseudoscience under this definition: “What makes astrology pseudoscientific is not that it lacks periods of Kuhnian normal science, but that its proponents adopt uncritical attitudes of ‘normal’ scientists despite the existence of more progressive alternative theories.” *Id.* at 228.

50. Theodore M. Porter, *Quantification and the Accounting Ideal in Science*, 22 SOC. STUD. SCI. 633, 647 (1992). *See also* K. Brad Wray, *A Defense of Longino’s Social Epistemology*, 66 PHIL. SCI. S538, S547 (1999) (“Consensus plays a crucial role in ordering and organizing our observation reports so that they can function as data.”).

51. David Hull, *Openness and Secrecy in Science: Their Origins and Limitations*, 10 SCI. TECH. & HUMAN VALUES 4, 8 (1985) (“If a scientist wanted to be treated seriously and to be remembered as anything but an unappreciated precursor, he had to present his views in ways calculated to convince his contemporaries.”).

peer review. As David Hull explains, the Royal Society of London initiated a system of pre-publication expert review for reports to be published in its journal, *Philosophical Transactions*, because the secretary of the Society “did not know enough in all the various areas then being investigated to pass knowledgeable judgment on all of them,” and so he sought the assistance of outside experts to help authenticate the research reported.⁵² Thus, peer review became the first step in the process of subjecting empirical claims to intersubjective scrutiny, while also serving to ensure that discoveries were published in a form intelligible to other investigators who may seek to test or build on the reported work.⁵³

Scientific disciplines employ other objectivity-forcing mechanisms,⁵⁴ but publicity and transparency in empirical research are most fundamental to the scientific process: if we can never be sure about objective “truth” in a metaphysical sense, we can still achieve more objective knowledge by engaging in critical dialogue about the reliability of empirical claims with others in our epistemic community. In this view, it is not simply enough to place one’s empirical claims into the relevant marketplace of ideas in any form, but rather the methodological grounding for one’s empirical observations must be stated in a form that is accessible and reproducible by

52. HULL, *supra* note 24, at 323–24. See also Hull, *supra* note 51, at 7 (“[W]hen the Royal Society bestowed its imprimatur, it wanted some assurance that the work in question was not errant nonsense As a result, [Secretary Oldenburg] began to rely on the advice of outside experts to help him decide which communications were worthy of publication.”).

53. See Robert A. Lineberry & Nita A. Lineberry, *Our Brother’s Keeper: Authenticity, Accountability, and the Social Science Quarterly Project*, 28 PS: POL. SCI. & POL. 484, 485 (1995). According to the Lineberrys:

Replication is essentially about two things: authenticity and accountability. Authenticity means that the work of the author is essentially accurate; accountability means that it is essentially fed through a larger community of scholars—the peer review process—and found generally satisfactory, interesting, or important. There is no requirement that every scholar in the area agree with the methods or the sources, but there is a requirement that the methods or the sources be known.

Id.

54. Particularly important, and complementary to the rigid reporting standards, are use of statistics and mechanical devices. Researchers turned to “statistical methods, the more mechanical the better, to standardize their results in a form immediately accessible to others.” Daston, *supra* note 39, at 612 (footnote omitted). See also *id.* at 609 (“As Theodore Porter has argued, certain forms of quantification have come to be allied with objectivity not because they necessarily mirror reality more accurately, but because they serve the ideal of communicability, especially across barriers of distance and distrust.” (footnote omitted)). And researchers moved to the use of mechanical instruments and devices, such as telescopes, microscopes, and cameras, to “battle[] the general, all-too-human tendencies to aestheticize, anthropomorphize, judge, interpret, or in any other way ‘tamper’ with the givens of nature.” Lorraine Daston, *The Moral Economy of Science*, 10 OSIRIS 2, 20 (1995). Thus, any researcher who employs an instrument of the same specifications should be capable of making the same observations as the original researcher, provided that adequate information is provided about the instrument and how it was used.

others and definite observational claims must be made so that the linkage between methods and outcomes may be tested. Absent such disclosure, there can be no scientifically rational basis for sorting the good empirical studies from the bad.

The mandate for full disclosure in empirical research applies with particular force to the social sciences due to special difficulties in accumulating knowledge about social objects of inquiry. For a host of reasons, individual empirical studies of human behavior in social settings provide very limited information about the nature of behavior.⁵⁵ However, when research reports provide detailed information on methods, data, and statistical analyses of data, it is possible to combine the findings of individual studies using meta-analytic or quantitative synthesis techniques to arrive at a more comprehensible and reliable understanding of the nature and strength of relations among variables.⁵⁶ Without adequate disclosure of underlying research information, such meta-analysis is not possible, and the

55. See, e.g., John E. Hunter & Frank L. Schmidt, *Cumulative Research Knowledge and Social Policy Formulation: The Critical Role of Meta-Analysis*, 2 PSYCHOL. PUB. POL'Y & L. 324, 341 (1996) ("Meta-analysis has explicated the critical role of sampling error, measurement error, and other artifacts in determining the observed findings and statistical power of individual studies. It has shown that, contrary to widespread belief, no single primary study can provide more than tentative evidence on any issue.").

The complexity of human behavior does not provide a particularly useful explanation for the slow accumulation of knowledge in the social sciences relative to that in the physical and natural sciences because many objects of study in the latter fields involve great complexity, as well. The complications I primarily have in mind are methodological in form, including the highly reactive nature of social scientific objects of study; difficulty controlling for different intentions, preferences, and beliefs among subjects; the physical and ethical limitations on the types of experiments that can be performed on humans; the cost and difficulty of obtaining large samples of persons and situations and, concomitantly, the relatively weak power and generalizability of many social science experiments; the heavy reliance on statistical significance testing; the multiple ways in which abstract behavioral and social concepts may be operationalized for purposes of concrete empirical testing; and in general the strong *ceteris paribus* limitations on social scientific findings.

56. See Rosenthal & DiMatteo, *supra* note 32, at 61 ("Meta-analysis allows the combining of numerical results from a few or many studies, the accurate estimate of descriptive statistics and the explanation of inconsistencies as well as the discovery of moderators and mediators in bodies of research findings."); Frank L. Schmidt, *Statistical Significance Testing and Cumulative Knowledge in Psychology: Implications for Training of Researchers*, 1 PSYCHOL. METHODS 115, 123 (1996) ("Applications of meta-analysis to accumulated research literatures have generally shown that research findings are not nearly as conflicting as we had thought and that useful general conclusions can be drawn from past research."). Schmidt, one of the strongest proponents of meta-analysis, characterizes the use of meta-analysis as crucial to the scientific status of the social sciences: "[i]t means that the behavioral and social sciences can attain the status of true sciences; they are not doomed forever to the status of quasi-sciences or pseudosciences." *Id.* For a good example of the informational gains that can be made using meta-analysis, see F.D. Richard et al., *One Hundred of Years of Social Psychology Quantitatively Described*, 7 REV. GEN. PSYCHOL. 331 (2003) (using meta-analytic techniques to synthesize over 25,000 social psychology studies involving approximately eight million participants). For a discussion of criticisms of meta-analysis, see Rosenthal & DiMatteo, *supra* note 32, at 66–68.

ability of a research report to contribute to the systematic development of a body of knowledge is lost.⁵⁷

B. *Disclosure Norms in Social Scientific Research*

Within the social sciences, strong norms exist about the information that should be contained in research reports, and these norms reflect the importance of publicity and transparency in rendering research capable of intersubjective testing and review. The guiding principle is that a research report should disclose “sufficient detail to permit reviewers to understand and evaluate what has been done and . . . to permit other scholars to carry out similar analyses on other data sets.”⁵⁸ This guiding principle, which may be referred to as the replication norm of disclosure,⁵⁹ explicitly

57. See Rosenthal & DiMatteo, *supra* note 32, at 64 (“It is fair to suggest that no appropriately collected data from a well-designed study should ever be wasted. Meta-analysis allows the combination of results from studies with samples so small that they never achieve statistical significance.”).

The following information is needed for meta-analytic purposes: (a) specific information about the demographic and any special characteristics of the research respondents and information on how the respondents were selected; (b) disclosure of the key variables or interventions studied and how tests of relationships between variables or for the effect of an intervention were operationalized; (c) specific information about the research design employed and sample sizes for all conditions of the study (e.g., was an experimental design used and, if so, was a between-subjects, within-subjects, or mixed design utilized, and how many subjects participated in each experimental condition?); (d) the time frame in which the data was collected; and (e) specific statistical information needed in the calculation of effect-size statistics and their variances (the effect-size statistic serves as the key data generated from a meta-analysis; this statistic provides information about the direction of an effect, the magnitude of an effect, or ideally both, with respect to the effect of one or more variables on one or more other variables). See MARK W. LIPSEY & DAVID B. WILSON, PRACTICAL META-ANALYSIS 16–23 (2001) (discussing the criteria used for deciding whether to include an individual study within a meta-analysis); *id.* at 34–37 (discussing the role of effect size in meta-analysis). See also Rosenthal & DiMatteo, *supra* note 32, at 69–70 (describing the basic steps in performing a meta-analysis, including a discussion of the information needed from individual studies).

58. AMERICAN POLITICAL SCIENCE REVIEW, *Instructions to Contributors, General Considerations*, at <http://www.apsanet.org/apsrinst.pdf> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review). The physical sciences follow the same rule: “the means by which the investigator gathered his or her own evidence bearing on the question or hypothesis is described in detail sufficient to enable another investigator to replicate the research.” STYLE MANUAL COMMITTEE, COUNCIL OF BIOLOGY EDITORS, SCIENTIFIC STYLE AND FORMAT: THE CBE MANUAL FOR AUTHORS, EDITORS, AND PUBLISHERS 589 (6th ed. 1994). King identifies a replication standard, almost universally accepted among quantitative analysts, which requires published results to include at least enough information for a third party to recreate the results without more from the author. “The replication standard does not actually require anyone to replicate the results It only requires sufficient information to be provided—in the article or book or in some other publicly accessible form—so that the results could in principle be replicated.” Gary King, *Replication, Replication*, 28 PS: POL. SCI. & POL. 444, 444 (1995). See also Harriet Zuckerman, *Norms and Deviant Behavior in Science*, 9 SCI. TECH. & HUMAN VALUES 7, 7 (1984) (“[T]he principled requirement that scientific work be reproducible is a powerful mechanism of social control in science.”).

59. Herrnson unpacks the concept of replication to distinguish between the tasks of

governs submissions to the flagship journals within economics, political science, and psychology.⁶⁰

reanalysis, by means of replication or verification, and secondary analysis:

Replication is not the same as *reanalysis*, *verification*, or *secondary analysis*. The four terms have very different meanings.

A *reanalysis* studies the same problem as that investigated by the initial investigator; the same data base as that used by the initial investigator may or may not be used. If different, independently collected data are used to study the same problem, the reanalysis is called a *replication*. If the same data are used, the reanalysis is called a *verification*. In a *secondary analysis*, data collected to study one set of problems are used to study a different problem. Secondary analysis frequently, but not necessarily, depends on the use of multipurpose datasets. Data sharing is essential for all verifications and all secondary analyses; it may or may not be involved in replications.

Paul S. Herrnson, *Replication, Verification, Secondary Analysis, and Data Collection in Political Science*, 28 PS: POL. SCI. & POL. 452, 452 (1995) (citation omitted) (quoting COMM. ON NAT'L STATISTICS, ISSUES AND RECOMMENDATIONS, in SHARING RESEARCH DATA, at 9 (Stephen E. Fienberg et al eds. 1993)). I use the shorthand "replication norm" to refer simply to the notion that empirical researchers should endeavor to disclose sufficient information to allow other researchers to engage in reanalysis or to engage in secondary analysis, as those terms are described by Herrnson, with respect to the evidence and claims presented in the research report.

60. The submission guidelines for the *American Economic Review*, published by the American Economic Association, expressly state that it is "the policy of the American Economic Review to publish papers only if the data used in the analysis are clearly and precisely documented and are readily available to any researcher for purposes of replication. Details of the computations sufficient to permit replication must be provided." AMERICAN ECONOMIC REVIEW, *Submissions*, at <http://www.aeaweb.org/aer/submissions.html> (last visited Dec. 28, 2003) (on file with the North Carolina Law Review). The submission instructions for the *American Political Science Review*, published by the American Political Science Association, contain a similar prescription in favor of disclosure sufficient to permit replication. See AMERICAN POLITICAL SCIENCE REVIEW, *supra* note 58. The American Psychological Association imposes similar guidelines. See AMERICAN PSYCHOLOGICAL ASSOCIATION, PUBLICATION MANUAL OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION xxvi (4th ed. 1994) [hereinafter APA PUBLICATION MANUAL] ("The first principle is that researchers need to describe the details of what they did, with whom they did it, how they measured it, and what they found at an appropriate level of specificity—and one that enables others to replicate the research.").

Interestingly, neither the publication guidelines for the journals published by the American Sociological Association ("ASA") nor the *ASA Style Guide* contains express reference to the replication norm of disclosure. See AMERICAN SOCIOLOGICAL ASSOCIATION, STYLE GUIDE (2d ed. 1997); AMERICAN SOCIOLOGICAL ASSOCIATION, *Preparation Checklist for ASA Manuscripts*, at <http://www.asanet.org/pubs/asaguidelinesnew.pdf> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review). Given the reliance on peer review for these journals and the likely expectation of education in sociological research, perhaps explicit citation of the replication norm for sociological publications is seen as unnecessary.

The author instructions for *Sociological Methodology*, a journal published under the auspices of the ASA, do list "expository clarity" as a factor considered in selection of manuscripts, but the instructions do not expressly direct authors to include information sufficient for replication purposes. See SOCIOLOGICAL METHODOLOGY, *Author Guidelines*, at <http://blackwellpublishing.com/submit.asp?ref=0081-1750> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review). The submission guidelines for *The Sociological Quarterly*, which is not published by the ASA, do indicate that clarity of presentation and strength of evidence are positive factors in selection of manuscripts, but they do not expressly endorse the replication

The editorial peer review process employed by social science journals fosters compliance with the replication norm of disclosure in two ways. First, during the review process, referees and editors may request that the author disclose additional information about methods and results for inclusion in the report.⁶¹ Second, the expectation of peer review encourages the voluntary, pre-emptive disclosure of methodological and data analysis information by authors to increase the likelihood that a submitted manuscript will receive positive reviews; a research report that fails to disclose important methodological information or that conveys this information poorly is likely to be rejected for publication in a peer-

disclosure norm. See THE SOCIOLOGICAL QUARTERLY, *TSQ Submission Information*, at <http://www.ucpress.edu/journals/tsq/edsub.htm> (last visited Nov. 14, 2004) (“In every case, preference will be given to cutting-edge sociological theory and research manuscripts which display originality, clear arguments, persuasive evidence, intelligent analysis, and clear writing.”) (on file with the North Carolina Law Review).

This state of affairs for sociology journals is not unique. A recent study of political science journals found that few “had a replication policy clearly stated on the [journal] webpage or in the instructions printed in the journal itself.” Nils Petter Gleditsch & Claire Metelits, *The Replication Debate*, 4 INT’L STUD. PERSP. 72, 74 (2003). Thus, the findings of this study suggest that compliance with the replication norm often occurs through voluntary compliance on the part of the author or through requests during the manuscript review process. See *id.* at 76 (“Overall, the survey does not seem to provide much encouragement for those who favor a strong replication requirement. Data-replication policies seem to have been strengthened only slightly over the past five years. Journals that proclaim a replication policy often fail to implement or enforce it.”).

61. The publication manuals for both political science and psychology research make clear that peer reviewers may demand additional methodological details during the review process and that lack of clarity is grounds for a “revise and resubmit” decision. See APA PUBLICATION MANUAL, *supra* note 60, at 305 (discussing how manuscripts that fail to convey their messages clearly will be “returned to the author for revision prior to further editorial consideration”); *id.* at 298 (“Researchers must make their data available to the editor any time during the review and production process if questions arise with respect to the accuracy of the report. Otherwise, the submitted manuscript can be rejected.”); STYLE MANUAL FOR POLITICAL SCIENCE, *supra* note 29, at 11 (“As part of the review process, authors may be asked to submit additional documentation if procedures (for example, techniques employed in data collection or analysis) are not sufficiently clear; the review process works most efficiently if such information is given in the initial submission.”). See also WELLER, *supra* note 18, at 173 (“The few studies that looked at the value of the review process from the author’s perspective found that authors felt that review did not result in substantive changes, but that it did help with structuring conclusions, clarifying data, and writing style.” (citation omitted)); Edward B. Portis & Jon R. Bond, *Comment*, 28 PS: POL. SCI. & POL. 461, 461 (1995) (“[A] good deal of the review process typically is concerned with the adequacy of data, and prospective authors often must supply additional information and answer questions about their data and the methods used to collect it to satisfy reviewers and editors”); Paula A. Rochon et al., *Comparison of Review Articles Published in Peer-Reviewed and Throwingaway Journals*, 287 JAMA 2853, 2855 (2002) (“As expected, peer-reviewed journal articles were of superior methodologic and reporting quality relative to articles published in throwingaway journals.”); Robert J. Sternberg, *Tacit Agreements Between Authors and Editors*, 8 BEHAV. & BRAIN SCI. 746, 747 (1985) (“Only an extreme optimist would expect a submitted article to be accepted the first time around Any article—whether or not it has been published—can be improved, and it is considered fair game to let the author have one or two cracks at making the article better.”).

reviewed journal.⁶²

Although some fields within the social sciences rely on the ability of authors and manuscript reviewers to discern the particular disclosures needed to comply with the general replication norm, the American Psychological Association (“APA”) provides explicit, detailed directions about the disclosures that should be made in reports of psychological research. These instructions direct authors to make clear the hypotheses they sought to test and the means of testing, including detailed disclosure about data collection and any experimental or quantitative tests conducted on the data. Specifically, the APA Publication Manual instructs authors first to introduce the problem being studied, place the problem into the context of prior research, and provide a “formal statement of your hypotheses” and “a definition of the variables” used to test the hypotheses.⁶³ The author should then provide detailed information about data gathering (the “Method” section of a research paper should report on the means of recruitment and characteristics of participants, the experimental materials or other apparatuses used, and the actual procedural steps followed during data collection) and data analysis (the “Results” section should describe the statistical analyses conducted on the data and the statistical results obtained, including detailed information about descriptive and inferential statistics).⁶⁴ With respect to data analysis, the Publication Manual encourages the reporting of effect-size information, and at a minimum the research report should contain sufficient information for other interested researchers to calculate an effect-size measure, namely, test statistics and sample size information.⁶⁵ Additionally, authors must disclose their institutional affiliations and any other circumstances that could be perceived to create a conflict of interest, acknowledge

62. See WELLER, *supra* note 18, at 50 (reviewing studies of reasons for rejection by peer-reviewed journals and noting that “poor presentation or poor writing” is the most frequently cited reason for rejection of manuscripts); Douglas P. Peters & Stephen J. Ceci, *Peer-Review Practices of Psychological Journals: The Fate of Published Articles, Submitted Again*, 5 BEHAV. & BRAIN SCI. 187, 190 (1982) (reporting from a study of editorial peer review that “[p]erhaps the most serious objections that reviewers had about the manuscripts were directed toward the studies’ designs and statistical analyses”).

Some contend that referees place too much emphasis on methods and data analysis. See Robert Hogan, *The Insufficiencies of Methodological Inadequacy*, 5 BEHAV. & BRAIN SCI. 216, 216 (1982) (“Academic psychology seems peculiarly prone to what medieval scholars called the fallacy of dogmatic Methodism—that is, when a problem is analyzed by the proper method, truth will somehow inevitably emerge.”).

63. See APA PUBLICATION MANUAL, *supra* note 60, at 11–12 (directing that this information be contained in the “Introduction” section of the paper).

64. See *id.* at 12–18.

65. See *id.* at 18 (“You are encouraged to provide effect-size information, although in most cases such measures are readily obtainable whenever the test statistics (e.g., *t* and *F*) and sample sizes (or degrees of freedom) are reported.”).

contributions by non-authors, and provide information on how the authors may be contacted with inquiries.⁶⁶ Finally, authors who seek to publish in APA journals must state within the article or certify to journal editors that they complied with APA ethical principles in the conduct of research on humans or other animals.⁶⁷

Notwithstanding the general replication norm and more specific rules for disclosure such as those within psychology, important details about methods and data analysis may be omitted from the final, published research report following even rigorous peer review. The possibility of imperfect compliance with the replication norm explains the existence of another, complementary norm: researchers should not only make disclosures sufficient to allow others to replicate their research, but they should also freely share their data and calculations with others.⁶⁸ Indeed, the scientist who refuses to share her data or disclose omitted methodological details after reasonable requests may face ridicule, and even charges of fraud or obfuscation of results.⁶⁹

66. See *id.* at 164–65.

67. The APA Publication Manual requires authors to certify that they followed Principles 6.06–6.20 of the “Ethical Principles” with respect to conducting research with humans and animals before their articles can be published in APA journals. See *id.* at 298. Failure to follow these standards can be grounds for rejecting a manuscript for publication or for retraction of a published article. *Id.*

68. See Stephen J. Ceci, *Scientists’ Attitudes Toward Data Sharing*, 13 SCI. TECH. & HUMAN VALUES 45, 51 (1988) (“Moreover, based on an analysis of answers to several related questions, it was clear that scientists in all fields endorse the principle of data sharing as a desirable norm of science.”). However, compliance with this complementary norm is not perfect either. See *id.* (noting that while eighty-seven percent of respondents reported that they routinely respond to colleagues’ requests for their published findings or data, fifty-nine percent of respondents also claimed that their colleagues were not apt to share data).

69. See, e.g., PETER MEDAWAR, *THE THREAT AND THE GLORY: REFLECTIONS ON SCIENCE AND SCIENTISTS* 71–75 (1959) (recounting how Medawar and his collaborators discovered research fraud by William Summerlin through their efforts to replicate Summerlin’s skin graft experiments with mice and their unmet requests to Summerlin for details about his methods). A recent high profile case within social psychology illustrates the fraud-control value of attempts at replication and requests for additional disclosure. Following failed attempts to replicate the published results of work by Karen Ruggiero and a request for data disclosure, Ruggiero resigned her professorship at the University of Texas at Austin and retracted published results because of improper data manipulation. See Bridget Murray, *Research Fraud Needn’t Happen at All*, 33 MONITOR ON PSYCHOLOGY, at <http://www.apa.org/monitor/feb02/fraud.html> (Feb. 2002) (reporting that Ruggiero’s research was called into question “when others tried to replicate it. Following the allegations, she resigned her assistant professor position at the University of Texas at Austin and submitted retractions to two journals—one of them APA’s *Journal of Personality and Social Psychology*.”) (on file with the North Carolina Law Review); Christopher Chow, *U.S. Government Sanctions Harvard Prof. for Falsifying Research*, at http://www.academia.org/campus_reports/2002/january_2002_3.html (Jan. 2002) (“The research was first exposed as fraudulent when one of her assistants, David M. Marx, became suspicious after Ruggiero refused to show him her raw research data. When Marx asked Harvard to investigate further, she admitted to using “invalid data” in her research studies at Harvard.”) (on file with the North Carolina Law Review); Findings of Scientific Misconduct, 66 Fed. Reg. 64,266 (Dep’t of Health

Recently, a few journals within political science adopted a more formalized approach to the post-publication sharing of data and other detailed research information.⁷⁰ This policy makes the publication of data sets along with the information necessary to utilize a data set a condition of publication, in the hope that this public archiving of data will improve both the quality of the original research report and the ease with which

& Human Servs. Dec. 12, 2001) (notice of final action) (reporting findings of research fraud), available at <http://grants1.nih.gov/grants/guide/notice-files/NOT-OD-02-020.html> (on file with the North Carolina Law Review). Consider also the case of history professor Michael Bellesiles, who resigned his position at Emory University after questions were raised about the data forming the basis for his award-winning book, *Arming America*. See Florence Olsen, *Historian Resigns After Report Questions His Gun Research*, CHRON. HIGHER EDUC., Nov. 8, 2002, at A17. See also James Lindgren, *Falling From Grace: Arming America and the Bellesiles Scandal*, 111 YALE L.J. 2195 *passim* (2002) (citing the large numbers of errors which supported Bellesiles's research as evidence of the seriousness of the situation).

70. In 2003, the editors of four international relations journals (*Journal of Peace Research*, *International Studies Quarterly*, *International Interactions*, and *Journal of Conflict Resolution*) issued a joint statement that:

Authors of quantitative empirical articles must make their data available for replication purposes. A statement of how that is done should appear in the first footnote of the article. Required material would include all data, specialized computer programs, program recodes, and an explanatory file describing what is included and how to reproduce the published results. This material must be posted by the month of publication, except when, with agreement of the Editor, the deadline is extended to accommodate special need of an author to employ the data for subsequent publications. Information that must remain confidential—such as that which would identify survey respondents—should be removed. All files should be sent electronically to the Managing Editor for posting on a website maintained by the journal for the purpose. In addition, authors may send the material to www.icpsr.umich.edu, and any other sites they wish to use.

Nils Petter Gleditsch et al., *Editors' Joint Statement: Minimum Replication Standards for International Relations Journals*, 4 INT'L STUD. Q. 105, 105 (2003). Currently, the *Journal of Conflict Resolution* and the *Journal of Peace Research* include a data sharing policy similar to the one above within their online submission guidelines. See JOURNAL OF CONFLICT RESOLUTION, *Submission Requirements*, at <http://www.yale.edu/unsy/jcrsubmit.htm> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); JOURNAL OF PEACE RESEARCH, *Notes for Authors* ¶ 18, at http://prio.no/files/file41388_jpr_notes_for_authors.pdf (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); INTERNATIONAL INTERACTIONS, *Instructions for Authors*, at <http://www.tandf.co.uk/journals/authors/giniauth.asp> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review). However, the current editor of *International Studies Quarterly* indicated in personal communication that the data archiving requirement would soon be made an explicit part of that journal's online submission instructions. E-mail from Steven Poe, Editor in Chief, *International Studies Quarterly*, to Gregory Mitchell, Assistant Professor of Law, Florida State University College of Law (Jan. 28, 2004, 15:06 EST) (on file with the North Carolina Law Review). The *Style Manual for Political Science* encourages, but does not require, that authors who publish in the *American Political Science Review* make their data sets available in a public archive. See STYLE MANUAL FOR POLITICAL SCIENCE, *supra* note 29, at 44–45.

This move to a more formal data sharing policy resulted largely from the efforts of Gary King. See King, *supra* note 58, at 444; *Symposium on Replication in International Studies Research*, 4 INT'L STUD. PERSP. 72 (2003); *Symposium on Verification/Replication*, 28 PS: POL. SCI. & POL. 443 (1995).

replication and extension can be undertaken.⁷¹ A corollary benefit for authors who comply with this policy is the greater attention that their publications and data may receive.⁷² This move toward public archiving of data as a condition of publication recognizes that post-publication requests for disclosure serve as only a weak complement to the replication norm: authors die and become impossible to contact for other reasons, making it difficult at times to replicate a study or determine whether important information is missing from a research report if the data and research information are not within the public domain.

C. *Disclosure Norms in Legal Research*

As compared to the more established empirical research fields within the social sciences, the replication norm and its concomitants find little expression within the publication system for empirical legal research. The manual for uniform citation practice in legal scholarship, *The Bluebook*, contains no explicit endorsement of the general replication norm and contains no special rules about the information that should be disclosed when reporting original empirical work. Likewise, the leading law reviews in their instructions to authors do not expressly endorse the replication norm or the public archiving of data.⁷³ Although silent on the replication norm, the Association of American Law Schools' "Statement of Good Practices" does indicate that law professors should voluntarily disclose information that might be seen as an influence on scholarly conclusions:

A law professor has a responsibility to preserve the integrity and

71. See, e.g., Bruce Bueno de Mesquita, *Getting Firm on Replication*, 4 INT'L STUD. PERSP., 98, 99–100 (2003) (arguing that data archiving would improve the publication process by "speeding up manuscript reviews by eliminating some revise-and-resubmit decisions, [and] providing better information for referees to make more decisive recommendations to editors. Additionally, we can reduce errors in published research and facilitate replication tests designed to probe the robustness of findings.").

72. One recent study of articles published in the *Journal of Peace Research*, which has a formal data-sharing policy, found that publicly archiving the data reported in an article seemed "to increase the popularity of the article. An author who makes data available is on average cited twice as frequently as an article with no data but otherwise equivalent credentials, including degree of formalization." Nils Petter Gledistch et al., *Posting Your Data: Will You Be Scooped or Will You Be Famous?*, 4 INT'L STUD. PERSP., 89, 92 (2003).

73. See, e.g., COLUMBIA LAW REVIEW, *Submissions*, at <http://www.columbia-lawreview.org/information/submissions.cfm> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); HARVARD LAW REVIEW, *Guidelines for Submitting Manuscripts*, at <http://www.harvardlawreview.org/manuscript.shtml> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); MICHIGAN LAW REVIEW, *Submissions*, at <http://students.law.umich.edu/mlr/submissions.html> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); UNIVERSITY OF CHICAGO LAW REVIEW, *Submissions*, at <http://lawreview.uchicago.edu/submissions/index.html> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); YALE LAW JOURNAL, *Submissions*, at <http://www.yale.edu/yalelj/submissions.html> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review).

independence of legal scholarship. Sponsored or remunerated research should always be acknowledged with full disclosure of the interests of the parties. If views expressed in an article were also espoused in the course of representation of a client or in consulting, this should be acknowledged.⁷⁴

However, The Bluebook does not expressly incorporate this disclosure norm, nor does consensus exist among law professors as to the particular information that should be disclosed to satisfy this norm.⁷⁵ In short, the publication guidelines for legal scholarship provide little express direction to empirical legal researchers with respect to their disclosure obligations.

Notwithstanding this silence on disclosure norms, the compulsive footnoting practice within legal scholarship may serve as a salutary measure for disclosure purposes.⁷⁶ If the primary purpose of footnotes is “to show support for a legal or factual proposition or argument,” then it is reasonable to conclude that footnotes to a research report will detail the basis for empirical claims contained within the research report.⁷⁷ Unfortunately, absent clear directions on what methodological and statistical information should be disclosed as support for empirical claims, footnotes written and monitored by professors and student editors who often lack special training in empirical research offer little guarantee that

74. American Association of Law Schools, *Statement of Good Practices by Law Professors in the Discharge of Their Ethical and Professional Responsibilities* (adopted by Executive Committee Nov. 17, 1989) at <http://www.aals.org/ethic.html> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review).

75. See William R. Slomanson, *Legal Scholarship Blueprint*, 50 J. LEGAL EDUC. 431, 441 (2000) (reporting on debate within the legal academy on the level of disclosure with respect to funding sources for research); Richard Lippitt, Comment, *Intellectual Honesty, Industry and Interest Sponsored Professorial Works, and Full Disclosure: Is the Viewpoint Earning the Money, or Is the Money Earning the Viewpoint?*, 47 WAYNE L. REV. 1075, 1075 (2001) (“[T]he requirement for complete and total disclosure of the full nature of the sponsoring party’s support remains largely undefined, leaving to each individual scholar’s discretion what degree of disclosure he wishes to adhere to.”); see also Ronald K.L. Collins, *A Letter on Scholarly Ethics*, 45 J. LEGAL EDUC. 139, 141–42 (1995) (arguing for a mandatory, detailed disclosure of financial and other outside interests that might give rise to an appearance of conflict of interest); Michael Sean Quinn, “*Scholarly Ethics*”: A Response, 46 J. LEGAL EDUC. 110, 113 (1996) (arguing that “Collins’s call for mandatory full disclosure is beset by a series of epistemological deficiencies”).

76. A statement such as this surely calls for a footnote. Therefore: see, e.g., Arthur D. Austin, *Footnote Skulduggery and Other Bad Habits* (footnotes omitted from title), 44 U. MIAMI L. REV. 1009, 1011 (1990) (stating that law journal footnotes are no longer “a painful hangover from the composition of the main event of the text; the ‘barking’ from the cellar of the page has taken over. Authors have recognized that discerning, intelligent—or unethical—manipulation of footnotes can be a significant factor in achieving promotion, tenure, and status.” (footnotes omitted)).

77. THE BLUEBOOK, *supra* note 26, at 4; cf. ANTHONY GRAFTON, *THE FOOTNOTE: A CURIOUS HISTORY* vii (1997) (“[Footnotes] are the humanist’s rough equivalent of the scientist’s report on data: they offer the empirical support for stories told and arguments presented. Without them, historical theses can be admired or resented, but they cannot be verified or disproved.”).

law review reports of empirical research will comply with the replication norm.⁷⁸ This dearth of expertise in empirical research is significant not only because it suggests low levels of voluntary compliance with disclosure norms before publication, but also because it suggests that few within the audience for empirical legal research will possess the expertise needed to enforce the disclosure norms after publication by requesting information, critiquing the results, and refining prior research.

In sum, at least four characteristics of the law review system for publication of empirical legal scholarship suggest cause for heightened concern about the disclosures associated with empirical legal research, as compared to the disclosures associated with empirical research published in social science journals. First, flagship law reviews and The Bluebook do not insist on compliance with the replication norm and its concomitants.⁷⁹ Second, law reviews do not employ a formal system of pre-publication review of empirical research by experts in empirical methods to govern the disclosures contained within research reports. Third, law professor authors and law review editors rarely possess the special training or experience in empirical research that would permit them to determine on their own what disclosures should be made to adhere to the replication norm. Fourth, few members of the primary audience for empirical legal research possess the expertise in empirical research that would enable them to enforce the replication norm post-publication.

Of course, identifying these causes for concern does not guarantee that

78. Cf. Austin, *supra* note 76, at 1028–29 (arguing that there is considerable doubt that student editors are capable of comprehending and evaluating articles submitted by writers (including law professors) who are experts in other disciplines because “[w]hen footnotes are technical ‘it is less likely that a randomly selected student editor will be able to detect outrageous *non sequiturs*, let alone subtler analytic failures that might seem obvious to *cognoscenti*.’” (footnotes omitted)).

Whereas the great majority of investigators and manuscript referees within the social sciences receive special training in empirical research methods, relatively few law professors and law review editors possess such training. See, e.g., Carl N. Edwards, *In Search of Legal Scholarship: Strategies for the Integration of Science into the Practice of Law*, 8 S. CAL. INTERDISC. L.J. 1, 2–3 (1998) (“Unfortunately, although interdisciplinary tools have been made increasingly accessible to lawyers, the typical J.D. curriculum provides no preparation in the skills needed to determine substantive facts beyond legal doctrine, nor in the scientific content and analytic methods necessary to assess and support factual conclusions.” (footnote omitted)); Goldsmith & Vermeule, *supra* note 10, at 166 (“[R]ecent years have seen an increasing (but still small) number of empirically trained scholars enter the legal academy.”).

79. Interestingly, neither the *Journal of Legal Studies* nor the recently-launched *Journal of Empirical Legal Studies* expressly requires compliance with the replication norm. See JOURNAL OF LEGAL STUDIES, *Guidelines*, at <http://www.journals.uchicago.edu/JLS/guidel.html> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review); JOURNAL OF EMPIRICAL LEGAL STUDIES, *Author Guidelines*, at <http://www.blackwellpublishing.com/submit.asp?ref=1740-1453> (last visited Nov. 14, 2004) (on file with the North Carolina Law Review). Both journals utilize peer review, however, which likely ensures adequate disclosure of information about methods and results in most of the empirical articles that these journals publish.

disclosures within empirical legal scholarship fall short of some ideal mark or that the level of actual disclosure in empirical legal research differs from the level of actual disclosure in other fields within the social sciences. Although Epstein and King present some suggestive evidence to support the view that empirical legal scholarship fails to comply with the replication norm,⁸⁰ and some of my own work suggests that legal scholars at times fail to disclose important information about their empirical inquiries,⁸¹ the present Essay cannot answer the questions of how widespread failures to comply with the replication norm may be or whether the frequency of such failures exceeds that found in the social sciences generally. In any event, it would make little sense to criticize legal scholars for failing to meet some previously unspecified benchmark for disclosures in empirical legal scholarship. Given the importance of disclosure to the system of empirical research, however, it does make sense to argue that aspirational benchmarks for disclosure should be established. Therefore, in the following Part, I put forward a proposal designed to foster publicity and transparency in empirical legal research without the need for peer review or other potentially costly changes to the system of legal scholarship.

II. A PROPOSAL FOR INSTITUTIONALLY-IMPOSED DISCLOSURE REQUIREMENTS

Before explicating the proposed disclosure rules, a threshold question must be addressed: what counts as empirical research to which these disclosure rules should apply? Empirical research means different things to different legal scholars, with the phrase often reserved for studies that employ quantitative methods of some sort,⁸² but the basic point of

80. See Epstein & King, *supra* note 10, at 38 (“Good empirical work adheres to the *replication standard*: another researcher should be able to understand, evaluate, build on, and reproduce the research without any additional information from the author Unfortunately, the present state of legal scholarship nearly always fails this most basic of tests.”); *id.* at 131 (stating that the quantitative or qualitative data analyzed in empirical research within legal scholarship is not typically stored, nor is the data readily accessible from the authors, law reviews, or public sources, making it impossible to replicate the published studies).

81. See Gregory Mitchell, *Case Studies, Counterfactuals, and Causal Explanations*, 152 U. PA. L. REV. 1517, 1578–79 & nn.150–51 (2004) (discussing lack of disclosure with regard to how evidence was selected to construct stories about the collapse of Enron Corporation).

82. See, e.g., Heise, *New Empiricism*, *supra* note 9, at 820–21 (“For purposes of this Article, when I speak of empirical legal scholarship I refer only to the subset of empirical legal scholarship that uses statistical techniques and analyses.”); Craig Allen Nard, *Empirical Legal Scholarship: Reestablishing a Dialogue Between the Academy and Profession*, 30 WAKE FOREST L. REV. 347, 349 (1995) (“In other words, there has been a lack of empirical legal scholarship; that is, scholarship based on a detailed statistical study and analysis from which one could draw conclusions and formulate or reformulate policy.” (footnotes omitted)); Peter H. Schuck, *Why Don’t Law Professors Do More Empirical Research?*, 39 J. LEGAL EDUC. 323, 323 (1989) (defining empirical research as “statistical studies, i.e., those that involve the application of

separation between empirical and non-empirical research is the role that observations play in the research: empirical research makes factual claims about states of the world, particularly causal relationships within the world, that are explicitly founded on direct observations of the world or inferences from observations; non-empirical research does not pretend that its claims about the world are founded on anything other than imagination, supposition, or logic.⁸³ The particular purpose behind obtaining empirical

statistical techniques of inference to large bodies of data in an effort to detect important regularities (or irregularities) that have not previously been identified or verified. Properly understood, of course, empirical research embraces much more than statistical studies.”); *see also* Gene R. Shreve, *Conflicts Empiricism*, 37 WILLAMETTE L. REV. 249, 251–53 (2001) (contrasting “commonplace exercises of empiricism” with “scientific empiricism”); David M. Trubek, *Where the Action Is: Critical Legal Studies and Empiricism*, 36 STAN. L. REV. 575, 579–85 (1984) (discussing different meanings attached to empiricism within legal scholarship).

83. The definition of empirical research offered here accords with the definition recently offered by Korobkin. *See* Korobkin, *supra* note 20, at 1035 (defining empiricism as “any attempt to collect and analyze a set of data for more than anecdotal purposes, whether or not the analysis is quantitative and even if the data set is not a particularly systematic or a clearly representative subset of the population in which the author is ultimately interested” (footnotes omitted)); *see also* Shari Seidman Diamond, *Empirical Marine Life in Legal Waters: Clams, Dolphins, and Plankton*, 2002 U. ILL. L. REV. 803, 804–07 (providing a similar description of empirical legal research); Epstein & King, *supra* note 10, at 2–3 (“What makes research empirical is that it is based on observations of the world—in other words *data*, which is just a term for facts about the world.”); *cf.* JOHN HENRY SCHLEGEL, AMERICAN LEGAL REALISM & EMPIRICAL SOCIAL SCIENCE 21 (1993) (defining empirical legal research as encompassing “what Charles E. Clark called ‘fact’ or ‘field,’ as distinguished from ‘library,’ research. Such research was usually, but not exclusively, seen as research into present social, economic, or legal conditions or practices and as attempting to quantify relationships, though not to require hypothesis formulation and testing.”).

I do not include introspection as one of the sources of claims found in non-empirical research because there is serious dispute about the proper role of introspection in empirical psychological research (i.e., to what extent can introspection be a valid form of observation or data for social scientific purposes?). *Compare* Goldman, *supra* note 24, at 544 (“I see no reason to abandon the current cognitive science practice of relying on introspection (with all due caution). In particular, neither the traditional publicity thesis nor the fall-back publicity thesis provides grounds for requiring cognitive scientists to abandon their reliance on introspection.”), *with* Daniel C. Dennett, *Who’s On First? Heterophenomenology Explained*, 10 J. CONSCIOUSNESS STUD. 19, 23 (2003) (“[S]cientists have always recognized the need to confirm the insights they have gained from introspection by conducting properly controlled experiments with naïve subjects. As long as this obligation is met, whatever insights one may garner from ‘first-person’ investigations fall happily into place in ‘third-person’ heterophenomenology.”).

Further, note that many non-empirical works of legal scholarship proceed from important empirical assumptions. Although the arguments in these non-empirical works may depend importantly on these empirical assumptions, it is the presentation of arguments premised on empirical assumptions, rather than the presentation of original empirical research meant to give rise to or alter empirical assumptions, that is the centerpiece of non-empirical scholarship. Of course, many works of legal scholarship will make both empirical claims and non-empirical arguments. To the extent the empirical claims supposedly represent the findings of original empirical research, the essay would fall within the parameters of the proposal advanced here.

The most difficult works to classify are papers where “soft” empirical claims are used to support an argument, but where advancement of the empirical claims is not the main thrust of the paper. For example, arguably the present Essay falls into this hard-to-classify category, because

data will vary with the research project, but the aim of the empirical research will generally be description (“Who won the 2000 presidential election?”), explanation (“Why did Bush prevail over Gore in the 2000 presidential election?”), or prediction (“Who will win the next presidential election?”).⁸⁴

The primary concern here is with the original reports of empirical research, by which I mean scholarly works that report for the first time factual observations about the world obtained through some deliberate data-gathering or data-analysis process carried out by the authors of the research report for the purpose of making fact-based claims. The factual observations may take a variety of forms, from relatively unmediated descriptions of phenomena and summary descriptions of collections of phenomena to inferences about causal relations or the characteristics of a population. The data may be gathered using experimental or non-experimental techniques, and the inferences and conclusions drawn from the data may be based on quantitative or qualitative data analysis techniques. Thus, empirical research as defined here encompasses the first published reports of results from laboratory and field experiments, survey research, interviews, passive observational research, case studies, and historical and other archival research.⁸⁵

Original reports of empirical research, as opposed to secondary works drawing on the original report, constitute the primary concern because the original report is typically intended to be the main vehicle whereby factual

it contains observations about the disclosure norms within social scientific and legal research. Accordingly, the sources of these observations are disclosed.

84. Explanation and prediction typically receive greater prominence than description in discussions of the aims of empirical research. See, e.g., JON ELSTER, *NUTS AND BOLTS FOR THE SOCIAL SCIENCES* 3 (1989) (“The social sciences, like other empirical sciences, try to explain two sorts of phenomena: events and facts To explain an event is to give an account of why it happened.” (footnote omitted)); JOHN MONAHAN & LAURENS WALKER, *SOCIAL SCIENCE IN LAW* 48 (4th ed. 1998) (identifying three generic goals of social scientists using the empirical approach: “they wish to predict when the event being studied will occur; they wish to have the ability to control whether the event occurs; and they wish to understand what causes the event to occur”).

85. Four general methodologies may be employed in empirical legal research: experiments and simulations, survey and interview research, field studies or observational studies, and nonreactive studies. See JOHN BREWER & ALBERT HUNTER, *MULTIMETHOD RESEARCH: A SYNTHESIS OF STYLES* 13–14 (1989). Nonreactive research includes “unobtrusive observational techniques” and the study of “artifacts, archives, official statistics, and other natural byproducts of past social life.” *Id.* at 14. Diamond offers examples of a variety of different empirical research methods. See Diamond, *supra* note 83, at 806–07 (discussing case studies, quantitative archival research, interview research, laboratory experiments, observational studies, and field experiments); see also Thomas E. Willging, *Past and Potential Uses of Empirical Research in Civil Rulemaking*, 77 *NOTRE DAME L. REV.* 1121, 1126 (2002) (“Empirical research designs encompass experimental research, quasi-experimental research, observational studies, and case studies. Research methods include surveys and focus groups. Empirical research can take place in the field, in a laboratory, or even in a library setting.”).

observations are made available for public consumption in a comprehensible and comprehensive fashion.⁸⁶ In other words, the original research report should convey the information needed by those who may rely on the researcher's factual observations and the inferences drawn from these observations or who may seek to test the validity or generality of these observations or inferences.

With respect to the particular information that should be contained in an original research report, one approach would be simply to incorporate the general replication norm of disclosure into The Bluebook or law review submission guidelines. However, because we cannot rely on law professor authors and law review editors to discern what specific disclosures should be included to meet the replication norm, a better approach is to specify a set of well-defined, easily-implemented, mandatory rules to guide disclosure in empirical legal research reports. Such disclosure rules, which ideally would be incorporated into The Bluebook for the benefit of both authors and editors, should clearly specify the information that must be disclosed as a condition of publication of empirical research in a law review so that authors and editors without special training in empirical research can comply with the rules.

This second approach mirrors the approach taken by the APA with respect to disclosure in reports of psychological research, and in fact the APA Publication Manual provides excellent guidance on what the disclosure rules for empirical legal scholarship should look like.⁸⁷ In addition, guidelines for conducting meta-analysis indicate the information that should be disclosed in individual studies to ensure the greatest

86. Indeed, as Ziman notes, the research report is of at least equal importance to the underlying research and is a crucial step in the scientific process:

A major consequence of my present thesis about the nature of Science is that the "literature" of a subject is quite as important as the research work that it embodies. An investigation is by no means completed when the last pointer reading has been noted down, the last computation printed out and agreement between theory and experiment confirmed to the umpteenth decimal place. The form in which it is presented to the scientific community, the "paper" in which it is first reported, the subsequent criticisms and citations from other authors and the eventual place that it occupies in the minds of a subsequent generation—these are all quite as much part of its life as the germ of the idea from which it originated or the carefully designed apparatus in which hypothesis was tested and found to be good. To describe scientific research work only up to the moment when each paper is published is like attempting to describe a human community by depicting the life of each individual up to the age of puberty, without reference to those years of maturity and responsibility that follow. A progenitor of a scientific paper is like a parent, whose early influence is decisive in the character of the child, but who cannot determine the career of his offspring in the adult world.

J.M. ZIMAN, PUBLIC KNOWLEDGE: AN ESSAY CONCERNING THE SOCIAL DIMENSION OF SCIENCE 103 (1968).

87. See *supra* notes 63–67 and accompanying text.

collective use of data subsequent to initial publication.⁸⁸ Together these sources suggest the following mandatory disclosure rules for reports of original empirical legal research:

(1) In the introductory sections of the paper, the author shall disclose the primary purpose of the empirical investigation that was undertaken, including a statement of the problem to be studied, the phenomena to be described, and/or specific hypotheses or theoretical propositions to be tested. The study should be situated within the larger body of empirical inquiry into the same or related phenomena. The introduction should provide an overview of the research plan utilized to study the particular question at issue and should explain how the research plan logically relates to the empirical question to be answered.

(2) In a section entitled "Method," the author shall disclose sufficient information to allow another investigator to evaluate one's methods and verify one's results, including disclosure of the following information:⁸⁹

(a) The basic research design employed and a description of all variables studied.

(b) A description of the sample of observations obtained. This description should include a statement of the overall sample size (N) and subsample sizes (n's) if the observations are broken down into subgroups (e.g., numbers of participants in each experimental condition). The procedure for collecting observations should be disclosed, including the use of any data sampling techniques and the identity of any archives used in the research. Relevant distinguishing characteristics of different data sources should also be disclosed. For example, if human participants serve as the source of data, major demographic characteristics of the participants should be reported, and any additional distinguishing characteristics that may be relevant to the investigation should be disclosed. Describe the time period during which observations were obtained from survey, experimental, and/or field research. Finally, describe any data sources that did not provide complete data or that had to be eliminated after initiation of the study and explain why complete data could not be obtained (e.g., if respondents refused to

88. See *supra* note 57.

89. A good rule to keep in mind for this section is that offered by the APA's Publication Manual: "Remember that the Methods section should tell the reader *what* you did and *how* you did it in sufficient detail so that a reader could reasonably replicate your study." APA PUBLICATION MANUAL, *supra* note 60, at 14–15.

answer particular survey questions, disclose the particular questions at issue and the number of respondents refusing to answer).

(c) A description of any apparatuses, instruments, or other tangible materials employed in the study. The specifications of any special devices, instruments, or questionnaires utilized in the study should be provided. Relevant portions of any written materials should be reproduced in an appendix to the research report.

(d) A step-by-step description of the procedure employed in execution of the research. This description should include instructions to participants in the study, detailed information about specific experimental manipulations, and detailed information about any coding decisions required to quantify observations for statistical analysis purposes. Disclose the identity of persons who obtained the data and whether they were blind to the purposes of the study. With respect to any data coding involved in the study, disclose the number and identity of data coders, whether they were blind to the purposes of the study, and a measure of inter-rater reliability. Finally, include information about any randomization or other control procedures used in the study, as well as any deception that was necessary for purposes of the study.

(3) In a section entitled "Results," the author shall describe the data collected and the results of statistical analyses conducted on the data, including the following information:

(a) Report descriptive statistics as appropriate, including measures of central tendency and associated measures of variability.

(b) Report inferential statistics as appropriate, including information about the magnitude or value of the inferential test, the associated degrees of freedom, the probability level for the reported statistics, the direction of the effect, and a measure of effect size.

(c) Briefly relate the particular descriptive and inferential statistics to the questions that motivated the study as discussed in the introduction.

(d) Describe in detail any missing data or data that could not be used for statistical analysis purposes.

(4) In the concluding sections of the paper, the author should relate the empirical findings to the original purpose of the study as discussed in the introduction, including a clear statement of the

rejection or acceptance of any empirical hypotheses after testing, and the author should discuss limitations on the validity and generalizability of the empirical findings.

The first three rules above address the basic information that should be disclosed for replication and meta-analytic purposes, and the fourth rule is designed to reduce improper extrapolations from an empirical study. The following additional rules address non-essential information for replication purposes but seek information that may otherwise be important to the research process or to enforcement of the replication norm:

(5) In the initial footnote of the paper, the author shall provide information on how interested persons may contact the author for additional information about the study. For a multiple author work, the primary contact person for informational inquiries shall be designated. If data from the study have been made available in a public archive, then readers should be informed as to how to access the data. It shall be presumed that the author's data, data coding materials, and data analysis results (redacted as necessary to preserve the privacy interests of data sources) are available for review and use by others unless the author expressly indicates otherwise in the initial footnote. Data should be made freely available to other investigators absent legal restrictions on sharing of the data.⁹⁰

(6) In the initial footnote, the author shall disclose any sources that provided funding for the empirical investigation, institutional affiliations of the author, and any other information that may be perceived as creating a potential conflict of interest.⁹¹

90. The approach to data archiving is hortatory rather than mandatory and mirrors the approach taken by the American Political Science Association. See *STYLE MANUAL FOR POLITICAL SCIENCE*, *supra* note 29, at 44–45. The fear is that a mandatory data-archiving policy at this stage in the development of empirical legal scholarship might be seen as too costly to authors and editors and thus might discourage the conduct or publication of empirical legal research.

Note that the data-sharing directive applies with equal force to quantitative and qualitative studies. See generally Miriam A. Golden, *Replication and Non-Quantitative Research*, 28 PS: POL. SCI. & POL. 481 (1995) (arguing that the replication standard imposed on quantitative work should be extended to qualitative work as well because the believability of both types of studies is equally important).

91. A basic justification for disclosure of potential conflicts of interests is that it may increase scrutiny of research and reveal the influence of bias. See, e.g., David B. Resnik, *Conflicts of Interest in Science*, 6 PERSP. ON SCI. 381, 396 (1998) (“Disclosure can play a key role in promoting objectivity in research: if a scientist discloses a conflict of interest, his peers may have some reasons to be skeptical of his research and subject it to more careful scrutiny.”). However, if full disclosure is made pursuant to the first four rules set out above, then the scientific community should have sufficient information to critically evaluate a study and its claims. In such a case, the disclosure of conflicts information adds nothing of particular scientific

(7) If the research involved human or animal subjects, the researcher must certify in the initial footnote to the paper or that data was collected in accordance with the ethical principles of the American Psychological Association or in compliance with the rules and regulations of the institutional review board at the researcher's affiliated institution.⁹²

In interpreting these rules, authors and law review editors should look to the APA Publication Manual for detailed guidance on how to make proper disclosures. These rules offer a first attempt at developing a system of publication that encourages full disclosure in empirical legal scholarship, and the hope is that these rules will serve as a platform for discussion about whether full disclosure in empirical legal scholarship is desirable and, if so, what rules should be put in place to best achieve this goal.

CONCLUSION

Both the demand for, and supply of, empirical legal research seem to be on the rise. The increased interest in empirical legal research presents a wonderful opportunity to develop new and reliable knowledge about a host of legal phenomena to inform legal policy and enrich legal theory, but success in this regard depends importantly on the manner in which the research is made public. If full advantage is to be taken of the critical dialogue among researchers that leads to reliable knowledge, then the methods and results underlying empirical claims must be made public in detailed, reproducible terms. This Essay proposes one set of rules that might be applied by law reviews to achieve this end. The proposed rules should be capable of easy application by law review editors with the assistance of researchers, and the information to be disclosed under these rules should be at the ready disposal of researchers. Adherence to such rules might well make empirical legal scholarship a more respected and valuable voice in social scientific dialogue at little or no cost.

value and may in fact lead to distrust in a study for the wrong reasons, namely, via a belief that the researcher was influenced by powerful interests regardless of whether the researcher employed sound methods. Nevertheless, imposing a disclosure duty with respect to potential conflicts of interest may serve a disciplining effect on researchers and lead to greater care in anticipation of greater scrutiny of the empirical claims.

92. For the APA's ethical standards, see American Psychological Association, *Ethical Principles of Psychologists and Code of Conduct*, 57 AM. PSYCHOL. 1060 *passim* (2002).