

Michigan Law Review

Volume 113 | Issue 7

2015

A Simple Theory of Complex Valuation

Anthony J. Casey

University of Chicago Law School

Julia Simon-Kerr

University of Connecticut School of Law

Follow this and additional works at: <https://repository.law.umich.edu/mlr>



Part of the [Evidence Commons](#), [Judges Commons](#), and the [Litigation Commons](#)

Recommended Citation

Anthony J. Casey & Julia Simon-Kerr, *A Simple Theory of Complex Valuation*, 113 MICH. L. REV. 1175 (2015).

Available at: <https://repository.law.umich.edu/mlr/vol113/iss7/2>

This Article is brought to you for free and open access by the Michigan Law Review at University of Michigan Law School Scholarship Repository. It has been accepted for inclusion in Michigan Law Review by an authorized editor of University of Michigan Law School Scholarship Repository. For more information, please contact mlaw.repository@umich.edu.

A SIMPLE THEORY OF COMPLEX VALUATION

Anthony J. Casey* & Julia Simon-Kerr**

Complex valuations of assets, companies, government programs, damages, and the like cannot be done without expertise, yet judges routinely pick an arbitrary value that falls somewhere between the extreme numbers suggested by competing experts. This creates costly uncertainty and undermines the legitimacy of the court. Proposals to remedy this well-recognized difficulty have become increasingly convoluted. As a result, no solution has been effectively adopted and the problem persists. This Article suggests that the valuation dilemma stems from a misconception of the inquiry involved. Courts have treated valuation as its own special type of inquiry distinct from traditional fact-finding. We show that reintroducing fundamental principles of fact-finding can provide a simpler and more accurate method of complex valuation.

Our conclusion rests on the premise that valuations are nothing more than exercises in routine fact-finding. Valuation is not an ethereal question with no right answer. Rather, valuation is a process of inferring the value that a relevant community places on an asset. This basic point has been ignored in practice and received almost no attention in the academy. Recognizing this foundational point can both restore the legitimacy of the process and reduce the costs of uncertainty and biased testimony. We demonstrate that a return to traditional evidentiary rules, including attention to burdens of proof, will discourage courts from resorting to ad hoc calculations and will encourage courts to arrive at valuations through vetted methodologies that are shown to be reasonably accurate and, most importantly, supported by the record. We further show that this will lead to an improvement in the quality of information provided by expert witnesses.

TABLE OF CONTENTS

INTRODUCTION	1176
I. JUDICIAL VALUATION TODAY	1184
A. <i>A Theoretical Void</i>	1184
B. <i>The Current Practice</i>	1188
C. <i>The Costs</i>	1194
1. <i>Legitimacy</i>	1194
2. <i>Uncertainty and the Cost of Contracting</i>	1196
II. A NEW (OLD) THEORY OF VALUATION	1198

* Assistant Professor of Law, The University of Chicago Law School.

** Associate Professor of Law, The University of Connecticut School of Law. We thank Mathilde Cohen, Florian Ederer, James Kwak, Alexandra Lahav, Saul Levmore, Jennifer Mnookin, Anthony Niblett, Peter Siegelman, James Stark and workshop participants at Albany Law School for helpful comments and discussion. Sarah Nudelman and Thomas Malinowsky provided excellent research assistance. The Jerome F. Kutak Faculty Fund provided research support.

A. <i>Foundation</i>	1199
B. <i>Implementation</i>	1206
III. IMPLEMENTATION IN VARIOUS AREAS	1211
IV. LIMITATIONS ON APPLYING THE SIMPLE THEORY	1214
CONCLUSION	1218

INTRODUCTION

California's prison population reached nearly 200 percent of capacity over an eleven-year period leading up to 2009.¹ Among the physical indignities and deficiencies in medical care associated with such overcrowding, "as many as 54 prisoners" shared a single toilet.² In proceedings designed to identify a remedy for this conceded Eighth Amendment violation, the state of California argued that a reduction to 145 percent of capacity over two years would be constitutionally adequate.³ The plaintiffs, meanwhile, identified a reduction to 130 percent of capacity as the minimum needed to "allow the state sufficient room to run their medical system."⁴ A three-judge panel concluded that California had to reduce its prison population to 137.5 percent of the prison's design capacity within two years.⁵ The court explained that it arrived at this number because it was "halfway between the cap requested by plaintiffs and the wardens' estimate of the California prison system's maximum operable capacity."⁶ The U.S. Supreme Court upheld this decision.⁷

In 2011, Daniel Bruckner, the owner of thirty-six parcels of rental property, ran into difficulties meeting his tax burden and filed for personal bankruptcy.⁸ Bruckner owed money to Fannie Mae in connection with three of his multimillion-dollar properties.⁹ In bankruptcy proceedings, both Bruckner and Fannie Mae introduced expert testimony on the value of the properties at issue.¹⁰ The bankruptcy court determined that each property's value was exactly halfway between the values proposed by the competing experts.¹¹ The court's stated rationale for these valuations was that "where there [are] two appraisers, both of whom are competent . . . I've . . . on some occasions

1. *Brown v. Plata*, 131 S. Ct. 1910, 1923–24 (2011).

2. *Id.* at 1924.

3. *Coleman v. Schwarzenegger*, 922 F. Supp. 2d 882, 964, 967–69 (E.D. Cal. 2009).

4. Transcript of Plaintiff's Closing Argument at 2914, *Coleman v. Schwarzenegger*, 922 F. Supp. 2d 882 (E.D. Cal. 2009) (Nos. C 01-1351, S-90 0520), 2009 WL 8413213 (explaining that the 130 percent figure originated in internal state documents and was supported by numerous experts).

5. *Coleman*, 922 F. Supp. 2d at 1003.

6. *Id.* at 969–70.

7. *Brown*, 131 S. Ct. 1910.

8. *Fed. Nat'l Mortg. Ass'n v. Bruckner*, 489 B.R. 93, 95–96 (E.D. Wis. 2012).

9. *Id.* at 95.

10. *Id.* at 102.

11. *Id.*

gone somewhere in the middle.”¹² The bankruptcy court’s ruling was upheld on appeal.¹³

These seemingly disparate examples illustrate a common phenomenon that arises when courts face the task of valuing complex assets, entitlements, and claims. In such cases, it has become routine for courts to eschew expertise and valuations grounded in research and mathematical models in favor of the middle ground. To the extent that judges attempt to be scientific in finding an alternative to numbers proposed by experts, they generally employ a mathematical technique most judges have mastered by the sixth grade—averaging. Judges seek compromise because they are often confronted with skewed valuations from biased experts. While middle ground outcomes are palatable solutions, they have no inherent claim to legitimacy or accuracy in any given complex valuation case. In addition, despite courts’ assertions to the contrary, it is generally possible to find an objective value for an asset using best practices in an area or industry. Typically, that value will be neither a random number in between the two expert opinions nor the exact average of dueling expert figures. This is especially true given that experts currently have every incentive to inflate or deflate their valuations knowing that courts will generally come out somewhere near the middle.

This Article contends that the most accurate valuations in complex valuation cases will, of necessity, come from the use of state-of-the-art valuation techniques introduced by highly trained experts. In most cases, therefore, a judge should—consistent with the traditional notion of evidentiary burdens—choose one of the valuation methodologies offered by the parties’ experts, or find that the party with the burden of proof has failed to meet that burden. If a judge reaches a valuation without support in the record, the valuation has no legal or factual basis and should not be upheld on appeal. This Article proposes that the solution to the valuation quagmire is not first principles of division, but rather first principles of fact-finding.

It is no secret that courts are ill equipped to perform complex valuations—at least on their own.¹⁴ As a result, valuation has become its own industry within the world of complex litigation, in both civil and criminal

12. Transcript of Hearing at 182, *In re Bruckner*, No. 12-20027 (Bankr. E.D. Wis. June 11, 2012), ECF No. 218.

13. *Fed. Nat’l Mortg. Ass’n*, 489 B.R. at 103.

14. See, e.g., John W. Hill et al., *Increasing Complexity and Partisanship in Business Damages Expert Testimony: The Need for a Modified Trial Regime in Quantification of Damages*, 11 U. PA. J. BUS. L. 297, 336 (2009) (“Most often, judges are not experts in financial theory or valuation methodologies. This had [sic] led to frequent compromises in order to make decisions in a reasonably efficient manner”); Stephen J. Leacock, *The Anatomy of Valuing Stock in Closely Held Corporations: Pursuing the Phantom of Objectivity into the New Millennium*, 2001 COLUM. BUS. L. REV. 161, 167–68 (2001) (“Very often, judges are not experts in financial theory and as a result, courts have very frequently struck a compromise . . . [with] no conceptual, theoretical or intellectually convincing basis”).

contexts.¹⁵ This industry reaches a wide range of legal disputes. Courts routinely rely on experts to assist them in valuing corporations,¹⁶ financial assets,¹⁷ tax liability,¹⁸ tort and civil rights damages,¹⁹ and even the costs or benefits of entitlements such as public education.²⁰ Because the valuation process is embedded in our traditional adversarial system, it often requires courts to assess the merits of competing experts who may function more as advocates than informative experts.²¹

In general, the use of experts in litigation creates a set of legal and philosophical dilemmas that have—as Judge Learned Hand pointed out—troubled courts, lawyers, and scholars for centuries.²² Complex valuation cases introduce an added dimension: they require mathematical models. Experts identify the best methodology for assessing value, as well as the variables that must be determined for the methodology to be successful. The experts then perform the ultimate mathematical analysis.²³ But despite the variability of expert quality and statistics themselves, courts regularly respond to complex valuation cases by assigning a value that often falls at an arbitrary point somewhere in between the experts' high and low values.²⁴ The experts'

15. See, e.g., *In re 3dfx Interactive, Inc.*, 389 B.R. 842 (Bankr. N.D. Cal. 2008) (using competing expert valuations to determine if fair market value was paid for assets); *Bernier v. Bernier*, 873 N.E.2d 216 (Mass. 2007) (providing an example of expert valuation to determine value of business during divorce proceedings); *State v. Zapien*, No. 19845-6-III, 2002 Wash. App. LEXIS 386, at *4 (Wash. Ct. App. Mar. 5, 2002) (making use of a valuation expert to determine value of stolen property in criminal trial). We focus primarily on civil courts in this paper. The analysis carries over to the criminal context, with the caveat that the different burden of proof changes some of the practical outcomes discussed in Part II.

16. See, e.g., *In re Nat'l Student Mktg. Litig.*, 598 F. Supp. 575 (D.D.C. 1984) (using expert testimony to value entity involved in a merger); *In re Chemtura Corp.*, 439 B.R. 561 (Bankr. S.D.N.Y. 2010); see also *Albert Trostel & Sons Co. v. Notz*, 679 F.3d 627 (7th Cir. 2012) (affirming district court's order, which relied on expert valuations).

17. See, e.g., *Tractebel Energy Mktg., Inc. v. AEP Power Mktg., Inc.*, 487 F.3d 89 (2d Cir. 2007) (assessing valuations from experts offered by both parties to determine the amount owed on a contract).

18. See, e.g., *Estate of Thompson v. Comm'r*, 499 F.3d 129, 135 (2d Cir. 2007); *Ferrari v. Comm'r*, 931 F.2d 54 (4th Cir. 1991); *Estate of Litchfield v. Comm'r*, 97 T.C.M. (CCH) 1079 (2009); *Willow St. Assocs. v. Bd. of Tax Assessment Review*, 798 A.2d 896 (R.I. 2002) (using experts to determine accuracy of assessed property value for tax purposes).

19. See, e.g., *Sherrod v. Berry*, 629 F. Supp. 159 (N.D. Ill. 1985).

20. See, e.g., *Abbott v. Burke*, 971 A.2d 989 (N.J. 2009).

21. See, e.g., Samuel R. Gross, *Expert Evidence*, 1991 Wis. L. Rev. 1113, 1119–25 (1991); Christopher Tarver Robertson, *Blind Expertise*, 85 N.Y.U. L. Rev. 174, 176–78 (2010); Keith Sharfman, *Valuation Averaging: A New Procedure for Resolving Valuation Disputes*, 88 MINN. L. Rev. 357, 358–60 (2003).

22. Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40 (1902) (tracing the history and evolution of the treatment of expert testimony).

23. See *infra* Section I.B.

24. See, e.g., Douglas G. Baird & Donald S. Bernstein, *Absolute Priority, Valuation Uncertainty, and the Reorganization Bargain*, 115 YALE L.J. 1930, 1953 (2006) (“In the absence of a settlement, [judicial appraisal in bankruptcy] ‘splits the baby’ based on the judge’s determination of value, which may depart from what either the senior investor or the junior investor

models set the outer limits and may provide an ex post justification of the final judicial valuation.²⁵ But they often play little role as actual analytical tools to guide the court in reaching that value.²⁶

This state of affairs is concerning to courts, scholars, and practitioners alike. Some have argued that it lacks legitimacy and fails the requirements of the rule of law.²⁷ That can have major consequences for our justice system as a whole.²⁸ Others have highlighted its negative practical consequences. They suggest it creates incentives for experts to exaggerate their value estimates. This leads to an arms race among litigants.²⁹ One might expect this to result in litigants abandoning experts as a useless expense altogether. But our system's sticky procedural rules require a party to put at least *something* into evidence to make each part of its case. While litigants can introduce market information, tax returns, and other data pertaining to the value of assets, without more, there is nothing to translate those raw numbers into a valuation. Admissible expert testimony fills that evidentiary void.³⁰ Moreover, the party with the weak case has every incentive to introduce the skewed evidence. And the party on the other side, knowing that courts tend to average the evidence, will respond in kind. There is a de facto penalty for presenting reasonable evidence. In the extreme scenario, expert testimony becomes an

thinks the business is worth.”); Robertson, *supra* note 21, at 191 (arguing that splitting the difference does not resolve problem of offsetting expert biases); Kenton K. Yee, *Dueling Experts and Imperfect Verification*, 28 INT’L REV. L. & ECON. 246, 248, 254 (2008) (describing a game theoretic model of expert valuation in which the judge is precommitted to “splitting the baby”).

25. Yee, *supra* note 24, at 254.

26. The judge may not view the number as arbitrary, but to the extent that expertise beyond the court's skills is required to conduct the valuation it is hard to see how a number chosen in this way will be anything but arbitrary unless it is simply an average of the two numbers. See Hand, *supra* note 22, at 55; Sharfman, *supra* note 21, at 370.

27. See, e.g., Gross, *supra* note 21, at 1146.

28. See *infra* notes 102–105 and accompanying text for more on the rule of law and the perils of illegitimacy.

29. See, e.g., Gross, *supra* note 21, at 1132, 1136; Robertson, *supra* note 21, at 191; Sharfman, *supra* note 21, at 359; see also *In re Appraisal of Shell Oil Co.*, No. 8080, 1990 Del. Ch. LEXIS 199, at *14 (Del. Ch. Dec. 11, 1990) (noting that it was no surprise in our system that the experts' testimonies were flawed), *aff'd sub nom. In re Shell Oil Co.*, 607 A.2d 1213 (Del. 1992). To be sure, the problem exists in other expert contexts as well. But the considerations may be different. See *infra* Part III.

30. And often it is the *only* thing put into evidence. Parties may introduce data and other evidence that support a valuation when analyzed. But often the relevance and foundation of that evidence cannot be established without the expert testimony. See, e.g., *Kent v. Flickinger*, 453 F.2d 955, 958 (10th Cir. 1972) (“[N]o expert testimony [was] in the record from which a separate valuation . . . could possibly have been made.”); *Am. Nat’l Bank & Trust Co. of Chi. v. Bone*, 333 F.2d 984, 988–89 (8th Cir. 1964) (“The Trustee’s claim that his cross-examination of some of the witnesses establishes the valuation . . . is without merit. The Trustee offered no expert testimony”); *In re IBM Credit Corp.*, 731 S.E.2d 444, 451 (N.C. Ct. App. 2012) (rejecting a “hybrid” valuation proposal because it was not supported by expert testimony); *Bettinger v. Bettinger*, 396 S.E.2d 709, 725 (W. Va. 1990) (“There is little doubt that in valuing interest in pension and profit sharing plans or the value of a business or property which have been found to be marital assets, expert witnesses are needed.”).

uninformative process that imposes a cost on litigants and courts and creates no social value.³¹

Thus, parties will continue to employ skewed experts. And they will continue to have incentives to choose the most extreme experts that a court will accept as qualified under *Daubert*.³² These bad incentives deepen the legitimacy problem as experts—and the lawyers and courts that rely on them—lose public trust.³³

In addition to skewed incentives and legitimacy problems, the current use of experts creates a transaction cost of uncertainty (or risk).³⁴ If experts provide no useful valuation information to courts, and judges have no expertise themselves, judicial valuations will have no relation to actual value. This disconnect can make transactions more costly in three ways. First, in some cases uncertainty can be costly itself *ex ante*.³⁵ Second, once the parties have entered into a transaction, their subsequent behavior will be distorted by the uncertainty. Litigation that produces arbitrary results gives the party with the weak position the possibility to recoup value from a judgment in its favor without suffering losses from an adverse judgment.³⁶ Third, uncertainty skews the incentives of parties to use litigation as a dispute-resolution mechanism. If other more accurate mechanisms are available, the party with the better case will steer away from litigation, while the party with the worse case will steer toward litigation. That may distort the parties' choice of dispute-resolution mechanism.³⁷

31. See *Kleinwort Benson Ltd. v. Silgan Corp.*, No. 11107, 1995 WL 376911, at *9 (Del. Ch. June 15, 1995) (finding a need to appoint a neutral expert to assess the parties' experts and imposing the cost of that expert on the parties); Barry M. Wertheimer, *The Shareholders' Appraisal Remedy and how Courts Determine Fair Value*, 47 *DUKE L.J.* 613, 623, 630–31 (1998).

32. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993). *Daubert* establishes a "gatekeeping" role for the trial judge, who must determine whether the expert has scientific or other specialized knowledge that will assist the trier of fact in understanding the evidence or determining a relevant fact. Under *Daubert*, trial judges consider factors such as whether the expert's methodology has been sufficiently tested, has been subjected to peer review and publication, has a low known or potential error rate, is subject to standards controlling its operation, and has achieved general acceptance in the relevant scientific community. *Id.* at 593–94.

33. Gross, *supra* note 21, at 1135 (describing cycle of contempt for the expert witness system, leading good experts to opt out and reinforcing the perception by all involved that experts are hired guns).

34. Here we use "uncertainty" to encompass both the concept of risk and uncertainty. We unpack the important distinction between the two in Section I.C.2 below.

35. See, e.g., Richard Craswell & John E. Calfee, *Deterrence and Uncertain Legal Standards*, 2 *J.L. ECON. & ORG.* 279 (1986). We discuss this below in Section I.C.1.

36. See *infra* Section I.C.2. See generally Sharfman, *supra* note 21 (noting that parties can manipulate the process by offering dueling experts, which allows courts to arbitrarily decide on a middle ground rather than impose all of the losses on the weaker party).

37. To the extent litigation has social value as a dispute-resolution mechanism, we should be concerned with this distortion. See *infra* Section I.C.2. Especially where the alternative mechanism is self-help, there is good reason to think that litigation has social value. See Adam B. Badawi, *Self-Help and the Rules of Engagement*, 29 *YALE J. ON REG.* 1 (2012); cf. Owen M. Fiss, Comment, *Against Settlement*, 93 *YALE L.J.* 1073 (1984) (arguing that civil lawsuits benefit the public more than settlements).

Some have embraced a judicially determined valuation that falls somewhere between the experts' numbers as a feasible solution to the problem of self-serving expert testimony.³⁸ According to this legal realist perspective, many judges effectively follow the practice of splitting the difference, and many appeals courts have long been willing to uphold arbitrary judicial findings in this context despite significant doctrinal hurdles.³⁹ Those who are more skeptical have proposed modifications to how expert testimony is employed. One of the most popular proposed solutions is the court-appointed expert.⁴⁰ This suggestion—which fundamentally changes the role of the judge and the advocates in determining complex facts—has gone largely unheeded by judges themselves, and so court-appointed experts remain a novelty.⁴¹

This Article suggests a more fundamental solution that moves in the opposite direction. Rather than separating complex valuation from the

38. See, e.g., Sharfman, *supra* note 21, at 370–71 (proposing a valuation averaging process for arriving at a compromise value between those suggested by experts).

39. See, e.g., *Swope v. Siegel-Robert, Inc.*, 243 F.3d 486 (8th Cir. 2001) (finding no clear error after district court chose value within range of expert valuations where shareholders dissenting to merger sued over valuation); *Laird v. United States*, 556 F.2d 1224, 1241 (5th Cir. 1977) (“[A] compromise figure—roughly midway between the positions of the parties—in no way diminishes the validity of that valuation.”); *United States v. 1,162.65 Acres of Land*, 498 F.2d 1298, 1301 n.5 (8th Cir. 1974) (“[W]here the totality of the evidence supports the award it will be upheld notwithstanding the fact it is outside the range of all the experts’ valuations.”); *Colonial Fabrics, Inc. v. Comm’r*, 202 F.2d 105, 108 (2d Cir. 1953). One court went as far as reversing a district court for not using its discretion to conduct its own judicial valuation. See *Tractebel Energy Mktg., Inc. v. AEP Power Mktg., Inc.*, 487 F.3d 89, 112 (2d Cir. 2007).

40. This is proposed as a solution for the problem of self-serving experts more generally and not just in the valuation context. See, e.g., Joe S. Cecil & Thomas E. Willging, *Accepting Daubert’s Invitation: Defining a Role for Court-Appointed Experts in Assessing Scientific Validity*, 43 EMORY L.J. 995, 1009 (1994) (suggesting that court-appointed experts are useful both in leading to appropriate decisions on the merits and encouraging settlement); Ellen E. Deason, *Court-Appointed Expert Witnesses: Scientific Positivism Meets Bias and Deference*, 77 OR. L. REV. 59, 93 (1998) (“[T]he most helpful contribution a court-appointed expert can make to a rational decision is to analyze the conflicts between the party experts.”); Donna Tumminio, *Breaking Down Business Valuation: The Use of Court-Appointed Business Appraisers in Divorce Actions*, 44 FAM. CT. REV. 623 (2006) (describing how appointed appraisers are less costly, more efficient, and lead to increased settlements, and should be used when party witnesses would produce large disparities in valuation). *But see* Sophia Cope, Comment, *Ripe for Revision: A Critique of Federal Rule of Evidence 706 and the Use of Court-Appointed Experts*, 39 GONZ. L. REV. 163, 195 (2004) (stating that court-appointed experts are a second-order solution and that their use should be more limited as judges develop a more sophisticated understanding of the scientific methods used by experts).

41. *In re Joint E. & S. Dist. Asbestos Litig.*, 830 F. Supp. 686, 693 (E.D.N.Y. & S.D.N.Y. 1993) (“A recent survey of trial judges conducted through the Federal Judicial Center revealed that use of court-appointed experts under Rule 706 is relatively infrequent and that most judges ‘view the appointment of an expert as an extraordinary activity that is appropriate only in rare instances.’” (quoting JOE S. CECIL & THOMAS E. WILLGING, COURT-APPOINTED EXPERTS: DEFINING THE ROLE OF EXPERTS APPOINTED UNDER FEDERAL RULE OF EVIDENCE 706 5 (1993))). Other proposed solutions include blind experts, outside intermediaries, and formulaic combinations of divergent expert valuations. See Sharfman, *supra* note 21.

traditional adversarial process, we propose to reunite it with the legal principles and safeguards of basic fact-finding. There is no fundamental difference between inferring an evidentiary “fact” from the competing testimony of various eyewitnesses, and inferring the market value of an asset from data and the competing testimony of financial experts. Though the factors to be considered may vary, both situations require a judge⁴² to measure the credibility of witnesses who are testifying about circumstances beyond the judge’s knowledge and expertise. And both require the judge to make factual inferences based on those credibility determinations. And yet courts, lawyers, and academics have constructed a false distinction between these two types of inquiries. They are preoccupied with the purportedly unscientific nature of valuations and the experts who conduct them, even though valuation determinations involve the familiar process of drawing factual inferences from evidence.

The conventional view that differentiates these two processes both overcomplicates the judge’s role in the complex valuation and idealizes the truth-finding role of the judge in the traditional case.⁴³ Consider a car accident in Chicago: the fact finder has no more prior knowledge of what happened at Adams Street and Michigan Avenue at 9:00 p.m. on a Tuesday than she does about the value of a clean-energy company at the time it filed for bankruptcy.⁴⁴ In the first case, the judge must assess the value of competing eyewitness testimony or circumstantial evidence. In the second, she must assess the value of competing expert models. Neither inference is more or less “factual” than the other. And neither answer is more or less entitled to the label “truth.”

We suggest the divergence stems from a theoretical and doctrinal vacuum. In this vacuum, the system has embraced an artificial and unnecessary distinction between valuation based on expert testimony and run-of-the-mill fact-finding. By filling that vacuum, we provide a reasoned and practical theory for complex valuation. We argue that complex valuation cases are similar to cases that involve run-of-the-mill fact-finding. Courts must hear testimony, review documents, weigh credibility, and make findings of fact that are consistent with the record. Here, as in other areas, procedural mechanisms such as burdens of proof, limitations on admissible evidence, and the basic requirement that verdicts be supported by the evidence should protect the integrity of the judgment.

42. For simplicity and because most complex valuations occur before them, we focus on judges as fact finders throughout most of this article. See *infra* Part IV for the distinctions involved when a jury is doing the fact-finding.

43. On the interaction between truth and expert testimony, see Hand, *supra* note 22, at 55.

44. In the bankruptcy of the energy company Calpine Corporation, for example, the parties asserted valuations ranging from \$11.9 billion to \$25.5 billion. The valuation dispute turned on expert models and the predictions about various inputs into those models. Ultimately, the case settled. Anthony J. Casey, *The Creditors’ Bargain and Option-Preservation Priority in Chapter 11*, 78 U. CHI. L. REV. 759, 801–02 n.167 (2011) (discussing the details of the Calpine valuation dispute).

As a practical matter, treating valuation questions as traditional questions of fact places greater emphasis on experts and their models. Viewing complex valuation as an enterprise in traditional fact-finding will limit courts to reaching valuations produced by a vetted methodology, not through a judge's back-of-the-envelope math or Excel manipulation.

Typically—though not always—this means that a judge must adopt one of the valuation methodologies offered by the parties' experts. If the judge is satisfied with none of the proffered methodologies, she must instead find that the party with the burden of proof has failed to meet that burden. This does not mean that judges have no role in valuations other than to choose one expert's number or the other. Rather, judges must scrutinize the relevance of the methodologies being applied and engage in fact-finding on the credibility and the integrity of the variables going into the models being used.

Furthermore, by limiting themselves to valuations supported by the factual record (the data, the experts, and their models) and by invoking the burden of proof in cases in which they are unpersuaded by either expert, judges will improve the incentives of litigants and their experts. This outcome is akin to that achieved by final-offer arbitration mechanisms such as "baseball arbitration."⁴⁵ At the risk of losing everything, the party with the burden of proof will put on an expert with better credentials and a more reasonable approach who can explain her methodology and justify her choice of variables.⁴⁶ In response, the other side will have every incentive to present its own highly qualified, reasonable expert. Because the parties have better incentives to put forth reasonable experts, the range of outcomes will narrow around the accurate value. The ultimate valuation should become more accurate in the sense that it better reflects current best practices for valuing a particular asset and uncertainty problems will be diminished. In turn, the court's ultimate decision will be easier to review and the valuation itself will have a legitimacy that is lacking under the current arbitrary regime.

This Article proceeds in three parts. Part I presents the problem of unprincipled judicial valuation and its costs. Part II sets forth our proposal to return complex valuation to the traditional fact-finding process and explores the theoretical grounding and the practical applications of the approach.

45. The essential idea behind baseball arbitration is that each party makes one proposal or a final offer. The arbitrator must then choose one of the two offers without discretion to pick an intermediate value. If the arbitrator is instructed to pick the more reasonable offer, this creates an incentive for the parties to make the offers reasonable. Henry S. Farber, *An Analysis of Final-Offer Arbitration*, 24 J. CONFLICT RESOL. 683, 683–84 (1980); Amy Farmer & Paul Pecorino, *Bargaining with Informative Offers: An Analysis of Final-Offer Arbitration*, 27 J. LEGAL STUD. 415, 415–16 (1998).

46. See *Kohler Co. v. United States*, 468 F.3d 1032, 1037 (7th Cir. 2006) ("The [IRS] could have justified a more modest estimate yet one well above \$11.1 million, but clinging stubbornly to its untenable valuation it suggested no alternative to \$19.5 million. It played all or nothing, lost all, so gets nothing.").

Part III explores broader implications of this analysis beyond complex valuation, as well as its limitations.

I. JUDICIAL VALUATION TODAY

Our primary objective in this Article is to show that the judicial approach to complex valuation⁴⁷ has strayed from first principles of fact-finding. The resulting state of affairs is a theoretically unjustifiable process that undermines judicial legitimacy and creates costly uncertainty.

A. A Theoretical Void

For the most part, courts and scholars have given lip service to the notion that complex valuation is a type of objective fact-finding. The largely unspoken assumption is that in complex valuations, as elsewhere, “the legal system[] aspir[es] toward truth.”⁴⁸ In keeping with this, contributors to the literature on reforming complex valuations have generally sought measures “that may help make our expert witnesses genuine contributors to the quest for truth.”⁴⁹

Relatedly, courts have a clear objective when they conduct valuations. Just as in the binary case in which a court must determine whether the defendant stole the wallet, in a complex valuation case the fact to be proved is apparent. As one bankruptcy judge described it, “in determining an asset’s value the ultimate goal remains . . . to determine as accurately as possible what the sale price would be.”⁵⁰ The goal of valuation is similarly straightforward in tax cases, in which the tax code typically requires the court to determine the fair market value of the asset being transferred. While the tax code provides simple formulae for determining that value in some circumstances, in other instances valuation depends on the hypothetical “value the transferred interest in question would command had it been sold.”⁵¹ There

47. There is no theoretical distinction between simple and complex valuation. Instead, they are best conceived of as occupying different positions on a spectrum of complexity. The value of a collection of cash, for example, is one of the simplest cases. The court will need only the factual testimony about precisely how much cash was in the collection. On the other end of the spectrum, the going-concern value of a corporation in bankruptcy can often require highly technical determinations that require the application of skills that are beyond the capacity of a court or traditional factual witness. We focus primarily on the more complex cases in this Article, but our ultimate proposal applies across the spectrum.

48. Robertson, *supra* note 21, at 182, 184 (arguing that, although there may not always be an “exogenous truth,” the assumption that there is one has instrumental value and should obtain in complex valuation cases).

49. Michael R. Devitt, *A Dip in the Hot Tub: Concurrent Evidence Techniques for Expert Witnesses in Tax Court Cases*, 117 J. TAX’N 213, 214 (2012).

50. Christopher S. Sontchi, *Valuation Methodologies: A Judge’s View*, 20 AM. BANKR. INST. L. REV. 1 (2012).

51. Jay A. Soled, *Transfer Tax Valuation Issues, the Game Theory, and Final Offer Arbitration: A Modest Proposal for Reform*, 39 ARIZ. L. REV. 283, 284–85 (1997).

is no doubt about the final objective—to determine the value an asset would have on the market.

Thus, complex valuation, although it is often directed at assets that will never be traded on a market, has a tangible goal: to find the closest approximation to what an asset is worth. That closest approximation is the value that the relevant community places on the asset at the relevant time. This approximation is the “accurate” value for the asset.

Consider a famous painting, for example. The painting is worth what the highest bidder would pay for it in an auction. That is a real number—a concrete fact. Until the auction, it is worth what one can reasonably predict it would fetch. There are two ways to identify that number. First, we could have an auction that sells the painting. But that option is impractical—especially if we are valuing it for purposes of an insurance payment after a fire, for example. Second, we could find someone who is an expert in determining what potential buyers are likely to pay for a rare painting and ask that expert what price the auction would likely produce.

In listening to the experts, of course, courts will often assess competing methodologies used within the relevant community to identify value. But that there are competing methodologies does not mean those methodologies do not provide evidence of what price the auction would produce. It is true that those methodologies may be the subject of intense debate and may change over time. But the same is true of methods for determining other facts. For example, scientific understanding of the reliability of eyewitness testimony has been anything but static over the last few decades. In any context, the legal system must grapple with conflicting evidence and the fact finder must decide on the best information introduced at the time. In the same way, at any given moment there is a “best” methodology that defines the value that the relevant community places on an asset. That best methodology combined with accurate data should produce an “accurate” valuation.

Even as valuations proceed on the assumption that courts will invoke the truth-seeking function of the judicial system in the service of identifying a particular value, however, courts seem to disclaim the notion that accuracy in complex valuations is even possible.⁵² Chief among such disclaimers is one often repeated in the tax courts: “The determination of the fair market value of property is a matter of judgment, rather than of mathematics.”⁵³ In other words, the consensus assumption that valuation is a truth-seeking enterprise like other fact-finding has meant little in practice, as courts have treated valuation (either explicitly or through some sleight of hand) as a unique type of inquiry that must be conducted outside the normal bounds of reasoned judicial fact-finding.

52. We lay out our argument in Section I.B for holding to the assumption that valuation is a way to arrive at a value that corresponds not to a random number selected by an inexperienced judge, but to the valuation produced by an expert applying an accepted valuation methodology.

53. *Buckley v. Comm’r*, 68 T.C.M. (CCH) 754, 758 (1994).

We suggest that this overlooked disjunction between the practice and the theory of valuation is key to understanding and resolving the breakdown of our system of complex valuations. Indeed, this very tension over whether complex valuations are questions of fact or of law bubbled to the surface in a recent debate at the U.S. Supreme Court. *Comcast Corp. v. Behrend* involved an antitrust class action alleging that Comcast was attempting to monopolize the cable market in Philadelphia.⁵⁴ In certifying the class, the district court found that only one of the plaintiffs' four theories of antitrust impact was capable of class-wide proof.⁵⁵ The Supreme Court granted certiorari to decide whether the district court needed to do a more in-depth inquiry at the certification stage in order to make a finding that the plaintiffs had admissible evidence that would make clear that damages could be awarded on a class-wide basis.⁵⁶ The Court held that because the plaintiffs' expert's damages model encompassed all four of the initial antitrust theories offered and did not identify the damages attributable to the one class-wide theory, it could not establish that the putative damages of the proposed class were susceptible to class-wide measurement.⁵⁷

In his majority opinion, Justice Scalia included this enigmatic language in a footnote:

The dissent is of the view that what an econometric model proves is a "question of fact" . . . [W]hile the data contained within an econometric model may well be "questions of fact" in the relevant sense, *what those data prove is no more a question of fact than what our opinions hold.*⁵⁸

Unsurprisingly, given the lack of judicial or scholarly attention to this particular question, the language was not supported by citation to precedent. Nor did the majority explain whether the reasoning applied to valuation models outside of the class certification context. It is possible that Justice Scalia was simply referring here to the *Daubert*-like inquiry that must be done before a model can be introduced for certification purposes. The ambiguity lies in the word "what."

To ask "what" the data prove is both to ask the general question of what the model is useful for (is it a legitimate damages model?) and to ask what output it provides (what specific damages number does it produce?).⁵⁹ By its plain language, the footnote may be read to state that valuation models themselves are opinions on legal questions, and can therefore be reviewed, overturned, or manipulated by courts at any level under their authority as interpreters of the law. Under a more moderate reading, the footnote may suggest simply that what a valuation model is capable of proving is not a

54. 133 S. Ct. 1426, 1430–31 (2013).

55. *Behrend v. Comcast Corp.*, 532 F. Supp. 2d 735, 741–43 (E.D. Pa. 2007).

56. *Comcast*, 133 S. Ct. at 1431.

57. *Id.* at 1434–35.

58. *Id.* at 1433 n.5 (emphasis added).

59. The dissent seems to reject the validity of all versions of interpreting this language. See *id.* at 1440 (Ginsburg, J., dissenting); *infra* note 60 and accompanying text.

question of fact, but is instead the type of legal conclusion that deserves no deference. Either way, the footnote is problematic because it embraces the notion that in conducting valuations judges may alter or discard mathematical models entirely.

Justice Ginsburg's dissent took issue with the majority's characterization of whether an expert's model-based valuation constitutes a fact:

The Court, however, concludes that "the model failed to measure damages resulting from the particular antitrust injury on which petitioners' liability in this action is premised." To reach this conclusion the Court must consider fact-based matters, namely what this econometric multiple-regression model is about, what it proves, and how it does so. And it must overturn two lower courts' related factual findings to the contrary.

. . . Here, the District Court found [the expert's] econometric model capable of measuring damages on a classwide basis, even after striking three of the injury theories. Contrary to the Court's characterization, this was not a legal conclusion about what the model proved; it was a factual finding about *how* the model worked. Under our typical practice, we should leave that finding alone.⁶⁰

This back-and-forth has thus far received little attention. Yet it is worth analyzing precisely because the Justices' dialogue begins to scrape away the veneer that has allowed the current system of valuation by judge to flourish. When read to suggest that valuation models themselves are simply legal opinions, Justice Scalia's point is problematic for the reasons Justice Ginsburg offers, however pithily. As we will show, what a valuation model needs to prove in order to satisfy a legal claim is a question of law; but the operation of that model and its technical ability to make that showing are questions of fact. As such, those questions require a fact finder to make a series of credibility judgments about everything from the expert's demeanor to her methodology, her choice of variables, and the way in which she combines those variables.

Read more moderately, Justice Scalia's claim is also problematic for reasons we discuss. Most importantly, the decision that a particular valuation model will indeed offer relevant legal proof involves so many intermediate factual findings (whether the model is well-designed, includes the right variables, and is an accepted one in the area, for example) that the preliminary judgments are inextricable from the ultimate legal conclusion. This means that credibility judgments about the expert testimony on the variables and the model itself cannot be separated—at least in the absence of a clear error—from the ultimate conclusion about whether the model offers a legally relevant fact.

We suggest here that the majority's rhetoric, which is inconsistent with the basic notion that expert-based valuation is no different from any other form of fact-finding, offers a descriptively accurate account of complex valuation in practice today. That current practice is problematic. And to the extent the Court's doctrine reinforces the mindset that complex valuations

60. *Id.* at 1439–40 (citations omitted).

are not factual inquiries, it pushes the judicial system further toward a view of complex valuation as theater and judges into the role of value arbiter rather than fact finder.⁶¹

In the remainder of this Part, we explore the current practices of courts and litigants in complex valuation cases. While others have described the problem of expert bias and exposed the degree to which judges routinely mediate between the extreme values presented by experts, we focus on the justifications for valuation by a judge. We show how the perception that valuations are fiction or opinion rather than fact has created an environment in which judges routinely engage in unprincipled and unpredictable intervention in the task of valuation. We then explore the social costs imposed by this state of affairs.

B. *The Current Practice*

[S]ince valuation is necessarily an approximation, it is not required that the value we determine be one as to which there is specific evidence, provided it is within the range of figures that properly can be deduced from the record.

—Silverman v. Comm’r, 538 F.2d 927, 933 (2d Cir. 1976)

Assigning value is a task the legal system confronts daily. Courts determine the worth of complex financial assets, entire corporations, and individual licenses in bankruptcy and tax proceedings. They judge how much lost or damaged limbs and lost years of work are worth in tort. And they determine the costs associated with constitutional entitlements, such as an adequate education or the funding necessary to meet the Eighth Amendment floor for prison conditions.⁶² Yet despite the frequency with which such cases are litigated and the gravity inherent in allocating large sums of money in these contexts, the legal proceedings associated with determining value are widely conceived of today as “the theater of valuation.”⁶³

Why the theater? As noted above, judges and commentators view complex valuation as its own species of subjective judicial determination, distinct from situations in which courts determine an objectively verifiable fact, such as who stole a wallet. This view appears to be founded on a false distinction.

61. The exact import of Justice Scalia’s *Comcast* language will be revealed only with time. The language is ambiguous and subject to multiple interpretations. Which interpretation prevails is beyond the scope of this Article, as it will depend on idiosyncratic judicial behavior. While the language may be ignored by courts below, or rejected as dicta by the Court itself, there can be no doubt that lawyers will invoke it when it is to their advantage. If taken wholesale, the reasoning may have implications beyond those discussed in this Article. As it is, courts treat complex valuations as sui generis hybrid problems. They treat them differently from other facts at the trial level, but the appellate review is still deferential. To follow the *Comcast* reasoning to its extreme, the validity, utility, and accuracy of a valuation model may become pure legal conclusions that are reviewed de novo. It is not certain how the trial court’s assessment of the credibility of the expert witness would fit into that analysis.

62. For examples of the varied cases where courts confront complex valuation, see *supra* notes 15–20.

63. See, e.g., 5 BORIS I. BITTKER & LAWRENCE LOKKEN, FEDERAL TAXATION OF INCOME, ESTATES AND GIFTS ¶ 135.5.1 (2d ed. 1993).

In the case of the wallet, the court's task is viewed as uncovering a fact that already exists. And no matter how carefully the court approaches its task, it is theoretically always possible that a subsequent revelation would show the court's decision to be incorrect. Valuation of complex assets or entitlements, by contrast, is not viewed as a quest for that kind of yes or no answer. This has led to the widespread view that while "the issues are largely if not wholly factual," conducting a valuation is "an extraordinarily open-ended process."⁶⁴ In the words of one bankruptcy court, "valuation is a malleable concept, tough to measure and tougher to pin down without a host of explanations, sensitivities and qualifiers."⁶⁵

Further contributing to the perception that valuing complex assets involves theater is the fact that in such cases courts are invariably presented with opposing experts who differ about everything from the assumptions that should be made to the methodology that should be used. And those choices matter. As one economist has noted, "[a]n inescapable feature of economic or financial testimony is that even slight changes of a few peripheral assumptions lead to substantial differences in valuation estimates."⁶⁶ Yet, rather than focusing attention on the substantive assumptions being made, the presence of dueling experts in every complex valuation case contributes to a perception that valuation is simply an exercise in relativism.⁶⁷ In a recent bankruptcy case, for example, the court described the task of valuation as "highly dependent on the perspectives and biases of those doing the measuring."⁶⁸

Courts have responded to the perception that complex valuation is a relative enterprise with an often cynical embrace of their own discretion.⁶⁹ In one frequently cited bankruptcy example, a judge handed down a decision valuing a company at the precise mathematical average of the values proposed by each side, while at the same time pointing out that it "is a total

64. *Id.* ¶ 135.5.2.

65. *In re Charter Commc'ns*, 419 B.R. 221, 236 (Bankr. S.D.N.Y. 2009).

66. Yee, *supra* note 24, at 246.

67. See Robertson, *supra* note 21, at 178 ("If every serious legal dispute devolves into a battle of hired-gun experts, the public may come to believe that 'there is no objectively correct scientific truth'" (quoting BRUCE D. SALES & DANIEL W. SHUMAN, EXPERTS IN COURT, RECONCILING LAW, SCIENCE, AND PROFESSIONAL KNOWLEDGE 144 (2005))).

68. *Charter Commc'ns*, 419 B.R. at 236; see also *Cavalier Oil Corp. v. Harnett*, 564 A.2d 1137 (Del. 1989), *affg* No. 7959, 1998 WL 15816 (Del. Ch. Feb. 22, 1988) (upholding the lower court's evaluation of the experts when one party's expert valued shares at \$44.45 each while the other party's expert valued the same shares at \$676.80 each); *Sieg Co. v. Kelly*, 512 N.W.2d 275, 278 (Iowa 1994) ("What we have here is the usual stand off inherent in stock valuation cases. Both parties believe their expert's stock valuation calculations are the 'correct' ones.").

69. See, e.g., *Fed. Nat'l Mortg. Ass'n v. Bruckner*, 489 B.R. 93, 102 (E.D. Wis. 2012) ("[N]either expert's opinion was entitled to more weight than the other's."); *Estate of Gallagher v. Comm'r*, 101 T.C.M. (CCH) 1702, 1711 (2011) ("Neither expert convinced us as to the accuracy of his analysis.").

absurdity that anybody could fix a value with that degree of precision.”⁷⁰ Other bankruptcy courts have referred to the “art of valuing a business,” explaining their decisions to deviate from formulae proposed by the experts with the observation that such valuations require “the exercise of well-informed judgment.”⁷¹

Corporate governance cases are no different. The case law is filled with cases of courts applying ad hoc methods to value assets, corporations, junk bonds, and the like.⁷² Tax courts similarly assert their broad discretion in complex valuation cases, offering a boilerplate justification for their freedom to deviate from expert findings in favor of their own judgment.⁷³ In his treatise on federal taxation, Boris Bittker wrote with understatement that “[j]udges sometimes relish the role of expert pro hac vice.”⁷⁴

Current valuation practice resembles a situation in which judges act as both fact finder and expert in order to justify, ex post, decisions that essentially mediate between the two poles presented by the parties (depicted in stylized form in Figure 1). Another recent bankruptcy proceeding, for example, involved valuing a 252-unit residential real estate development in Kentucky known as Colts Run that was owned by a bankrupt corporation. The bank and the corporation disputed the development’s value. The bank argued that the property was worth not less than \$17 million, while the debtor argued that the property was worth \$25 million.⁷⁵

In that case, the bankruptcy judge held a hearing at which she gathered the attorneys around her laptop in order to walk them through her valuation decision. She explained that in making her decision, she had “read all of the appraisals carefully,” looked at “all of [the] assumptions” made by the experts, and come up with her own value.⁷⁶ In doing so, the judge consulted an article describing property valuation techniques and concluded that

70. *Citibank, N.A. v. Baer*, 651 F.2d 1341, 1347 (10th Cir. 1980) (quoting district court opinion), *quoted in, e.g.*, Chaim J. Fortgang & Thomas Moers Mayer, *Valuation in Bankruptcy*, 32 UCLA L. REV. 1061, 1131–32 (1985); Sharfman, *supra* note 21, at 359.

71. *Charter Commc’ns*, 419 B.R. at 235.

72. *See Cede & Co. v. Technicolor, Inc.*, No. 7129, 2003 WL 23700218, at *2 (Del. Ch. Dec. 31, 2003, revised July 9, 2004), *modified*, 884 A.2d 26 (Del. 2005) (“Experience in the adversarial, battle of the experts’ appraisal process under Delaware law teaches one lesson very clearly: valuation decisions are impossible to make with anything approaching complete confidence This effort should, therefore, not be understood, as a matter of intellectual honesty, as resulting in *the* fair value of a corporation on a given date.”).

73. *See, e.g.*, *Buckley v. Comm’r*, 68 T.C.M. (CCH) 754, 759 (1994) (“We are not bound by the formulae and opinions proffered by an expert, especially when they are contrary to our judgment. Instead, we may reach a decision based on our own analysis of all the evidence in the record.”). (citations omitted)

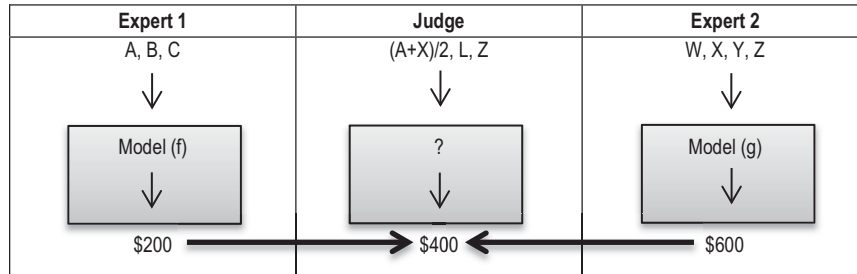
74. 5 BITTKER & LOKKEN, *supra* note 63, ¶ 135.5.1.

75. Amended Motion for Authority to Use Cash Collateral to Pay Allowed Administrative Claims at *6, *In re Colts Run, LLC*, No. 10-18071 (Bankr. N.D. Ill., May 19, 2011), 2011 WL 7148613.

76. Transcript of Proceedings at 4–5, *In re Colts Run, LLC*, No. 10-18071 (Bankr. N.D. Ill. Mar. 8, 2011), ECF No. 249.

“there really are no accepted principles, there are different approaches.”⁷⁷ From her reading, the judge apparently felt at liberty to choose her own values for the various factors that went into the valuation, such as effective gross income, other income, operating expenses, and cap rate, , and “plug[] them into the [Microsoft Excel] spreadsheets.”⁷⁸ The opinion does not explain which formulas the Microsoft Excel spreadsheets contained.

FIGURE 1
JUDICIAL APPROACH TO VALUATION



Despite acknowledging the maxim that “the income developed by one [valuation] method [must be] used with a cap rate derived by that same method,”⁷⁹ the judge admitted that in doing her own calculation, she “just could not delve into this and look at whether these definitions were consistent or not.”⁸⁰ Instead, the judge explained her own valuation methodology. She gave “half credit” to certain estimates of real estate taxes because, at least in one instance, she did not know what the part of the property being taxed, in this case a garage, was like.⁸¹ She also “went in the middle” between the two expert calculations of “effective gross income.”⁸² She then looked at operating income and again found herself “sort of in the middle between the bank and the debtor.”⁸³ Finally, with some of the irony that is a common feature of opinions dealing with complex valuations, the judge told the parties, “amazingly enough, I selected the cap rate [exactly halfway between the two competing appraisals].”⁸⁴

77. *Id.* at 5.

78. *Id.* at 3–4, 10–11.

79. *Id.* at 7.

80. *Id.*

81. *Id.* at 9–10.

82. *Id.* at 10.

83. *Id.* at 10–11.

84. *Id.* at 11.

This account is troubling.⁸⁵ Judges do not routinely acknowledge that they are ignoring basic mathematical principles and making random assumptions in the absence of information. In fact, when they do so, whether openly or not, it should be grounds for reversal.⁸⁶ Our justice system has mechanisms to deal with limited or absent information.⁸⁷ Picking a number out of a hat is not one of them. Yet in this bankruptcy case, the judge was well within the norm when she decided to do just that. The judge could, and did, take “heart on the [precedent] . . . that said I could go through there and pick and choose in terms of different assumptions that were made and what have you.”⁸⁸ In the end, after halving her variables without regard to their correlational integrity, the judge summarized her methodology: she input the variables and “went down that column and whatever the number came out to be, the number came out to be.”⁸⁹ In this case, that number told her that Colts Run was worth \$23,940,914.29.⁹⁰ Remarkably, if anything is out of the ordinary about this decision, it is that the judge took the time to explain her arbitrary reasoning in such detail.

The judgement in the *Colts Run* case would likely have been upheld whether or not the judge had explained her reasoning. Reviewing courts have consistently approved the idea that trial courts have near-total discretion when it comes to complex valuations.⁹¹ They have created a regime in which the lower courts are free to cherry-pick among the assumptions and methodologies offered by experts, or even to use none at all. For example, in reviewing a tax court valuation of a gift of closely held stock, the Second Circuit dismissed an argument by appellants that “the Tax Court’s use of a method of valuation different from that proposed by either their own or Commissioner’s experts deprived them of due process of law.”⁹² In explaining why the tax court was free to adopt its own valuation methodology rather than that offered by either side’s expert, the Second Circuit reiterated the surprising conclusion that a value arrived at by the tax court does not

85. For statistics on how common this practice is among bankruptcy judges, see Keith Sharfman, *Judicial Valuation Behavior: Some Evidence from Bankruptcy*, 32 FLA. ST. U. L. REV. 387, 396–99 (2005).

86. See, e.g., *Baba v. Holder*, 569 F.3d 79, 83 n.3 (2d Cir. 2009) (reversing immigration judge’s determination because the judge’s “gratuitous assumption” about a particular country was “rank unsupported speculation”); *Estate of Todisco v. Comm’r*, 757 F.2d 1, 4–5 (1st Cir. 1985) (reversing tax court finding because the lower court’s method for calculating gross profit percentage was “arbitrary and excessive” and based on an unsupported factual assumption).

87. Some elementary ways that the system addresses informational vacuums include burdens of production, discovery requests and conferences, or, if those fail, burdens of proof that punish the failure to produce information.

88. Transcript of Proceedings at 4–5, *In re Colts Run, LLC*, No. 10-18071 (Bankr. N.D. Ill. Mar. 8, 2011), ECF No. 249.

89. *Id.* at 5.

90. *Id.* at 4.

91. See *supra* note 39 and accompanying text. *But see Comcast Corp. v. Behrend*, 133 S. Ct. 1426 (2013).

92. *Silverman v. Comm’r*, 538 F.2d 927, 933 (2d Cir. 1976).

need to be “a figure as to which there is specific testimony, if it is within the range of figures that may properly be deduced from the evidence.”⁹³

What counts as a proper deduction from the record, in turn, is almost anything that is not obviously contravened by an actual document or, in rare cases, by precedent establishing that a particular methodology should be used. The leading tax treatise on valuation states that “decisions of the trier of fact on [valuations] are so rarely overturned on appeal that they are, for practical purposes, conclusive.”⁹⁴

The main rationale for allowing trial courts such latitude is the perception that valuations are “at best a process of weighing evidence of expert guesswork.”⁹⁵ Judicial guesswork has long been accepted in courts as an antidote to advocate experts who slant their results in one direction or another. As early as 1963, an article in the *Tax Law Review* described “the impression among the legal profession, accountants, estate managers, and others that valuation is essentially a process of ‘horse-trading’ in which each party takes an extreme position in the hope that the final compromise will be to his advantage.”⁹⁶

Courts often express frustration at what many judges conceive of as disingenuous and “overzealous effort[s]” to “infuse a talismanic precision” into expert valuations.⁹⁷ Some have famously accused the parties of playing charades with their valuation evidence and threatened them with choosing one side or the other’s valuation in toto unless they agree to settle—a threat which comes close to the solution proposed here.⁹⁸ Others, like the judge in *Colts Run*, have given up on the experts and conducted their own haphazard valuations. One bankruptcy judge adjusted the value of a license upward by 25 percent, while explaining, illogically, that “obviously it’s not within [my] capacity . . . to properly create an independent valuation, but I am impressed that there has to be some adjustment made to the valuation that [the plaintiff’s expert] suggested.”⁹⁹

In short, the idea that complex valuation is a fuzzy and most likely impossible enterprise has allowed courts to conceive of their role in the process as simply to mediate between the values presented by the parties in an attempt to resolve the dispute, rather than to achieve a procedurally legitimate, accurate, and predictable outcome.

93. *Id.* (quoting *Anderson v. Comm’r*, 250 F.2d 242, 249 (5th Cir. 1957) (internal quotation marks omitted), *cert. denied*, 356 U.S. 950 (1958)); *see also supra* note 39.

94. 5 BITTKER & LOKKEN, *supra* note 63, ¶ 135.5.2.

95. *Id.* (quoting *Andrews v. Comm’r*, 35 T.C.M. (CCH) 459 (1976)) (internal quotation marks omitted).

96. Chelcie C. Bosland, *Tax Valuation by Compromise*, 19 TAX L. REV. 77, 78 (1963).

97. *Buffalo Tool & Die Mfg. Co. v. Comm’r*, 74 T.C. 441, 452 (1980) (quoting *Messing v. Comm’r*, 48 T.C. 502, 512 (1967)) (internal quotation marks omitted).

98. *Id.* at 451 (“As the Court repeatedly admonished counsel at trial, the issue is more properly suited for the give and take of the settlement process than adjudication.”).

99. Transcript of Hearing at 7–8, *In re Airadigm Commc’ns, Inc.*, No. 06-10930 (Bankr. W.D. Wis. Oct. 3, 2006), ECF No. 235.

As discussed in more detail below, the problem here is not merely that judges lack “expertise.” A judge is at an informational disadvantage in all settings. An eyewitness has more information about the details of an accident, just as an expert has more information about the value of an asset. And both witnesses have complicated incentives to reveal the true information. One might imagine an alternate legal system designed in such a way that all players are forced to reveal perfect information. Our project is narrower. We examine how best to conduct complex valuation within our current adversarial system without starting from scratch.¹⁰⁰

C. *The Costs*

The preceding discussion suggests significant practical and theoretical problems with courts’ approaches to valuation. But more fundamentally the approach creates significant costs that could otherwise be avoided. They can be roughly divided into two categories: (1) legitimacy of the legal system and (2) uncertainty and the cost of contracting.

1. Legitimacy

Throughout this Article we discuss the “illegitimate” or “unprincipled” nature of the decisions that result from ad hoc judicial valuations. Those are loaded words that need to be unpacked. From a market transaction perspective, a judicial process understood to produce highly variable outcomes may be wasteful (as discussed below) but not necessarily illegitimate.¹⁰¹ The valuation produced would not come anywhere close to estimating true or actual value, but if that was priced into the transaction there might be little for the parties to complain of in the sense of fairness or legitimacy.

But the valuation of complex assets has been wrapped full fold into our adversarial justice system, creating additional legitimacy concerns. The justice system’s popularly accepted goal is to attempt to reach an accurate, or “truthful,” outcome.¹⁰² Many believe that the failure or success of this goal can have a significant impact on the public’s buy-in to our justice system.¹⁰³

100. To the extent one has little confidence in an asymmetrically informed judge to assess the credibility of any witness, that counsels for a new system entirely. We are not that skeptical.

101. See David Lewis, *The Punishment that Leaves Something to Chance*, 18 PHIL. & PUB. AFF. 53, 53–59 (1989) (theorizing about variable outcomes in punishments for successful and unsuccessful criminals).

102. Robertson, *supra* note 21, at 182 (“It goes without saying that outcome accuracy is an important concept in litigation. Some suppose that the truth has intrinsic value for the legal system, just as it does in the sciences. A reasonable degree of accuracy is also arguably necessary to make adjudication morally binding and legitimate. Aside from any such intrinsic value, however, the legal system’s truth-seeking function clearly has instrumental value. The substantive law exists to serve deterrence, compensation, and sometimes punishment; and the achievement of these purposes demands accuracy.” (footnotes omitted)).

103. See Tom Tyler, *Procedural Justice, Legitimacy, and the Effective Rule of Law*, 30 CRIME & JUST. 283 (2003) [hereinafter Tyler, *Procedural Justice*]. Much has been written on the importance of procedural justice to perceptions of fairness and legitimacy in the system. See, e.g.,

This conviction has deep roots in rule-of-law theories that hold that individuals' "reactions to legal authorities are based to a striking degree on their assessments of the fairness of the processes by which legal authorities make decisions."¹⁰⁴

This legitimacy theory suggests three potential problems with arbitrary judicial valuations embedded in our larger adversarial system. First, arbitrary judicial valuations send mixed signals that decrease public confidence in legal institutions. The systemic use of experts in complex valuation cases sends the formal message that experts provide valuable information. At the rates the experts charge, the public would assume as much. In some cases, testimony can go on for days using up enormous private and public resources. A judge or jury is then charged with determining the facts based on the expert's information. Yet lawyers and scholars complain that the process is an arbitrary theater—that experts are hired guns and that courts are incompetent referees.

That state of affairs is not invisible to the public as a whole. And it contradicts the formal message that experts are indispensable to complex valuations because those valuations strive for accuracy. All else equal, this will reduce faith that the system is fair and effective. By many accounts, that loss of faith will lead to more negative reactions to legal authority and less buy-in to our system generally. That will, in turn, destabilize and reduce the value of legal authority and institutions. The extent of this problem, if any, is an empirical question to which we do not have the answer. But, at a minimum, the proposition that random procedural mechanisms have a negative effect on buy-in to legal authority is consistent with existing evidence.¹⁰⁵

The second systemic problem, and perhaps a greater one from an individual actor's perspective, is that the subjective sense of the valuation's unfairness will reduce confidence in the market economy. By conducting valuation within the courts, the system sends the message that justice, which in this context will generally mean accuracy, is also a goal of judicial valuation. If arbitrariness were an intended part of the contract in every transaction, the market would embrace an explicitly arbitrary mechanism for dispute resolution—that is, a mechanism other than a formal legal process. Because that has not happened, a party at the outset receives the message that the process is designed to achieve a nonarbitrary, accurate outcome.

TOM TYLER, *WHY PEOPLE OBEY THE LAW* (2006) (finding people believe in legitimacy of authority when procedures used are perceived as fair more so than if the outcomes are perceived as just); Raymond Paternoster et al., *Do Fair Procedures Matter? The Effect of Procedural Justice on Spouse Assault*, 31 *LAW & SOC'Y REV.* 163, 170 (1997) ("[P]erceptions of procedural fairness affect perceptions of satisfaction with and legitimacy of legal authorities."); see also Owen M. Fiss, *The Allure of Individualism*, 78 *IOWA L. REV.* 965, 978 (1993) (arguing that participating in the justice system through representation of interests is the key to legitimacy). But see Louis Kaplow, *The Value of Accuracy in Adjudication: An Economic Analysis*, 23 *J. LEGAL STUD.* 307, 307 (1994) (arguing that accuracy rather than perceptions of procedural fairness is at the root of legitimacy in the legal system).

104. See, e.g., Tyler, *Procedural Justice*, *supra* note 103, at 284.

105. *Id.*

Sophisticated repeat players will know better. In theory, those sophisticated players can take advantage of their asymmetric knowledge and of unsophisticated counter parties who expect accuracy. More likely though, the public will become skeptical of all market transactions involving complex valuation. That will stifle valuable economic activity. In essence, the subjective sense of unfairness in valuations within the legal system will reduce confidence in the market economy just as a view of unfairness elsewhere reduces the credibility of the justice system generally.

A third legitimacy problem with arbitrary valuation is its effect on individual behavior. Much has been written about the way individuals view rules, norms, and unenforceable contract provisions.¹⁰⁶ Parties often adhere to contracts for nonmonetary behavioral reasons. Their word is worth something. A contract that has no enforceable penalty may still be followed simply because the party views following it as the right thing to do.¹⁰⁷ As the remedy for breach becomes completely arbitrary and the parties view that arbitrariness as endemic to the conflict-resolution system, they may come to see it as nothing more than an agreement to roll the dice. Knowing that the other party has the option to use arbitrary valuation to her benefit, one might be less likely to feel a moral obligation to perform. This reduces the value of moral obligation in enforcing contracts and makes contracting more expensive.¹⁰⁸

2. Uncertainty and the Cost of Contracting

When courts reach arbitrary results, they create risk and uncertainty¹⁰⁹ for any parties who expect that they might one day have to litigate a dispute. One view might be that this uncertainty has no cost at all. But there are several reasons why there is likely a cost to this uncertainty. First, in a world

106. See sources cited *supra* note 103.

107. Transcript of Ruling at 229, *In re Ancestry.com, Inc. S'holder Litig.*, No. 7988 (Del. Ch. Dec. 17, 2012), ECF No. 233 (“I think treating people with dignity and respect assumes there is a class of buyer out there that actually takes legal obligations seriously, that is not willing to play Chicago School efficient breach theory games just for fun.”); Douglas G. Baird & M. Todd Henderson, *Other People's Money*, 60 *STAN. L. REV.* 1309, 1323 (2008) (“[M]any directors want to do what they are supposed to do.”); Tess Wilkinson-Ryan & David A. Hoffman, *Breach Is for Suckers*, 63 *VAND. L. REV.* 1003 (2010).

108. Oliver Hart & John Moore, *Contracts as Reference Points*, 123 *Q.J. ECON.* 1 (2008); see also Ernst Fehr & Simon Gächter, *Fairness and Retaliation: The Economics of Reciprocity*, 14 *J. ECON. PERSP.* 159 (2000).

109. Whether uncertainty, risk, or ambiguity is the right term here is subject of great debate. See FRANK H. KNIGHT, *RISK, UNCERTAINTY AND PROFIT* 12–14 (1921); see also Daniel Ellsberg, *Risk, Ambiguity, and the Savage Axioms*, 75 *Q.J. ECON.* 643 (1961); Eric L. Talley, *On Uncertainty, Ambiguity, and Contractual Conditions*, 34 *DEL. J. CORP. L.* 755, 759 (2009) (“‘Risk’ refers to randomness whose probabilistic nature is extremely familiar and can be characterized with objective probabilities (such as the outcome odds that attend the roll of a fair die). ‘Uncertainty,’ in contrast, refers to randomness whose probabilistic behavior is extremely unfamiliar, unknown, or even unknowable.”). For our purposes, we will use them interchangeably. In this particular context, the analysis is not affected by the distinction.

in which most people and institutions are risk averse, risky and uncertain outcomes will push people out of the market.¹¹⁰

Second, uncertainty and risk often can create a lopsided benefit from litigation. Let's say that losing a case means that a plaintiff gets nothing, and winning the case means the plaintiff gets a random payout. A plaintiff with a valueless case benefits when payouts are more volatile. The payout cannot go below zero, and so the plaintiff gets all the upside from extreme valuation and none of the downside. That leads to opportunistic behavior.

This is well-recognized in the bankruptcy context. When a junior creditor pushes for a judicial valuation, it receives all of the upside of a high valuation and none of the downside.¹¹¹ For example, if a senior secured creditor is owed \$100, it gets to keep the entire company for all valuations between zero and \$100. But if the court values the company at \$200, the junior creditor gets half. If the court goes to \$400, the junior creditor gets 75 percent. The higher the court goes, the more the junior creditor stands to gain. This means that the more uncertainty or risk inherent in valuations, the more the junior creditor wins and the senior creditor loses.¹¹² The same situation will arise any time the judicial valuation has an asymmetric payout structure.¹¹³

This situation can be welfare destroying. By giving one party an incentive to sue, litigation costs are introduced into a transaction. Or, at the very least, a credible threat of litigation exists. That threat, in turn, provides a mechanism to extort value—"I won't sue you if you pay me the cost of litigation." The threat of this type of opportunistic behavior renders transactions less likely to occur in the first place.¹¹⁴

With these costs, the deal would be more valuable if both parties could commit not to exercise their litigation options. Such a commitment costs neither party in expected value¹¹⁵ and reduces the expected costs for everyone. But that requires opting out of the default of litigation and designing an

110. Insurance markets may solve this problem in some but not all cases. A risk-averse party can buy insurance that compensates her when a bad outcome occurs. But asymmetric information or other transaction costs render insurance a costly solution. See Michael Rothschild & Joseph Stiglitz, *Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information*, 90 Q.J. ECON. 629, 629 (1976).

111. See Baird & Bernstein, *supra* note 24, at 1956–57.

112. This is a form of the classic corporate finance "risk-shifting" problem. See Benjamin C. Esty, *A Case Study of Organizational Form and Risk Shifting in the Savings and Loan Industry*, 44 J. FIN. ECON. 57 (1997).

113. Delaware appraisal procedures account for this skewed option by imposing lower valuations on unsuccessful shareholders who seek appraisal in a merger. See, e.g., *Gearreald v. Just Care, Inc.*, No. 5233, 2012 WL 1569818, at *3 (Del. Ch. Apr. 30, 2012).

114. This is the classic problem of incomplete contracting and holdup that threatens all relationship-specific investment. See Benjamin Klein et al., *Vertical Integration, Appropriate Rents, and the Competitive Contracting Process*, 21 J.L. & ECON. 297 (1978); see also Oliver Hart & John Moore, *Incomplete Contracts and Renegotiation*, 56 ECONOMETRICA 755 (1988).

115. Even in the one-sided option case, that asymmetry would have been priced into the original transaction *ex ante*.

alternative valuation mechanism for all disputes, even those that are not opportunistic. In some cases, it may not be possible (or cost-effective) to write such a contract.

For example, in the bankruptcy context it is usually assumed to be almost impossible to bind all future creditors to a dispute-resolution mechanism. A debtor may have thousands of potential current and future creditors. Some will be sophisticated banks; others will be employees or small vendors; others will be involuntary tort creditors. Bankruptcy law assumes an inability to bring all of these creditors to the bargaining table and therefore imposes mandatory rules defining the relationships between the parties.¹¹⁶ The same would not be true of a bilateral deal between two large businesses. But even with those parties, varying rules on the enforceability of arbitration and forum selection clauses will come into play.

Relatedly, uncertainty and risk skew the incentives of parties to use litigation as a dispute-resolution mechanism. First, in the examples above, if there is a choice of mediation, arbitration, self-help, or some other resolution on the one hand, and litigation on the other, the expected accuracy of the mechanisms will affect the choice of mechanism. Parties with strong cases will prefer accurate mechanisms, while parties with weak cases will prefer inaccurate mechanisms. The choice of dispute-resolution mechanism becomes distorted based on which party controls the choice and the strength of its case. To the extent we think there is value in litigation, inaccuracy detracts from reliance on it and reduces its value. Moreover, the cases that are pushed toward litigation are pushed there precisely to take advantage of the inaccuracy of that system.

Second, uncertainty and risk will change the *ex ante* value of transactions for parties that expect to have stronger cases or expect to have less control over the dispute-resolution mechanism. A party that knows it is unlikely to control the choice of forum and dispute-resolution mechanism will require a higher price, or demand that alternative dispute-resolution provisions be added. A party that expects to adhere to the contract and have a stronger case will also seek to raise the price or require alternative dispute-resolution provisions. These attempts to contract around the valuation problem will affect the cost of the transaction.

II. A NEW (OLD) THEORY OF VALUATION

Doubtless many would attempt to strike some compromise somewhere in the middle. But a figure thus arrived at would itself be unreal, one never seen anywhere in the record.

—Colonial Fabrics, Inc. v. Comm’r, 202 F.2d 105, 108 (2d Cir. 1953)

The costs inherent in our existing valuation regime have not gone unrecognized in the courts or in the academy. There is a wide-ranging consensus among scholars and judges that the current approach to complex

116. THOMAS H. JACKSON, *THE LOGIC AND LIMITS OF BANKRUPTCY LAW* 23–24 (Beard Books 2001) (1986).

valuations is troubled.¹¹⁷ Evidence scholars have proposed solutions ranging from employing court-appointed experts¹¹⁸ to using accredited intermediaries or blind experts,¹¹⁹ to imposing restrictions that would require courts to assign values based on a formulaic approach to multiple expert valuations.¹²⁰ The solution need not be as complicated as these proposals suggest.

By unnecessarily overcomplicating the judicial approach to complex valuation, courts and academics have introduced frictions that make judicial fact-finding more artificial and less efficient. The view that valuation is unlike other fact-finding, that it is art rather than science, has led courts astray from the central task: finding of facts. By returning to first principles that are already assumed to govern in this area, we arrive at a straightforward and effective solution. That solution not only simplifies the judge's role but also serves to better align the incentives of litigants. And it harnesses the benefits of the adversarial system to arrive at more accurate outcomes. Accuracy, in turn, creates significant social value.

In this Part, we first address the theoretical and practical foundation for returning valuation to the process of traditional fact-finding. We then discuss how implementation would play out in practice.

A. Foundation

We have suggested that courts and many commentators accept judicial averaging in the valuation cases because they lack a principled theory of complex valuation, and they are unwilling to recognize that the simple theories we apply to traditional fact-finding apply with equal force in the valuation context. Commentators liken conducting valuations to an art not a

117. See, e.g., *In re Charter Commc'ns*, 419 B.R. 221, 235 (Bankr. S.D.N.Y. 2009) (describing the complexity of valuation proceedings in a large corporate bankruptcy and the subjective nature of valuation); Transcript of Hearing at 4, *In re Airadigm Commc'ns, Inc.*, No. 06-10930 (Bankr. W.D. Wis. Oct. 3, 2006), ECF No. 235 (“Valuation is always an inexact science”); Devitt, *supra* note 49, at 213 (“[E]xpert witnesses only perpetuate[] the enduring concerns of trustworthiness, partiality, and litigation [I]t is time to tinker a little with this process”); Robertson, *supra* note 21, at 177–79 (“[T]he litigation system has not yet found a way to provide factfinders with reliable and unbiased expert signals while still leaving the development of cases in the hands of the self-interested litigants.”); Sharfman, *supra* note 85, at 387–90 (arguing that one of the results of the “inherently imprecise” and “discretionary” nature of valuation in bankruptcy is the enactment of a prodebtor bias on the part of bankruptcy judges); Soled, *supra* note 51, at 283–84 (“[P]rolonged litigation [is often] marked by ‘Solomon-like’ pronouncements, as judges tend to split warring parties’ valuation differences.”); Kenton K. Yee, *Combining Value Estimates to Increase Accuracy*, 60 FIN. ANALYSTS J. 23, 23 (2004) (arguing that a plethora of valuation procedures yielding different valuations creates problems for courts and businesses in complex valuations).

118. Andrew MacGregor Smith, Note, *Using Impartial Experts in Valuations: A Forum-Specific Approach*, 35 WM. & MARY L. REV. 1241 (1994).

119. Robertson, *supra* note 21.

120. Sharfman, *supra* note 21, at 361.

science,¹²¹ and courts repeat the caveat that “[w]hen it comes to valuation, there is no revealed, objectively verifiable truth.”¹²² This, of course, suggests that there is a revealed and objectively verifiable truth about other factual determinations. The car accident happened at exactly 8:00 p.m. That is truth and science. The company is worth \$1 billion. That is art and subjective opinion.¹²³ That distinction is false and misunderstands the concept of valuation (or perhaps “truth”). If a camera is “known” with certainty not to have been tampered with and to have a perfectly calibrated time display, then eyewitness testimony about the time of the accident can be verified. In the same way, if an asset is being traded on a perfectly liquid market with no market failures, its value can be verified.¹²⁴ Yet those cases rarely exist; if they did, they would undoubtedly result in private settlements or plea bargains.

In the real world, valuation is essentially an exercise in determining what the relevant community, whether it is composed of financial investors or art lovers, collectively thinks an asset or claim is worth. The view held by that community is a fact that can be developed just like any other fact. To be sure, the true or intrinsic worth (if such a thing exists) may never be determinable. But that is not what valuation is about. The valuation of a company or asset is a measure of its monetary value to the relevant community. Art philosophers may debate the intrinsic worth of a Picasso painting, but the courts and valuation experts are really concerned with the value that a community of art collectors and critics place on it at a given moment in time. Similarly, the intrinsic worth of a company is different from its “value” in the sense that is important to the law.

Another bankruptcy case demonstrates this.¹²⁵ The court handling the bankruptcy of Iridium, a satellite phone company, was tasked with deciding whether Iridium was solvent at the time it made certain transfers.¹²⁶ The court had to decide whether Iridium had a positive net worth. In hindsight, Iridium was a worthless venture to build and sell expensive phones that

121. *E.g.*, Wertheimer, *supra* note 31, at 629; *see also*, 5 BITTKER & LOKKEN, *supra* note 63, ¶ 135.5.1 (noting that experts are often judged and their testimony weighed based on their demeanor rather than their models).

122. *Charter Commc'ns*, 419 B.R. at 236; *see also* *Weller v. ABC*, 283 Cal. Rptr. 644, 653 (Ct. App. 1991) (“[V]aluation . . . is an inexact science.”); *Lawson Mardon Wheaton, Inc. v. Smith*, 734 A.2d 738, 746 (N.J. 1999) (“There is no inflexible test for determining fair value, as ‘[v]aluation is an art rather than a science.’ ” (quoting Wertheimer, *supra* note 31, at 629)).

123. On the distinction between opinion and fact, see *Hand*, *supra* note 22, at 50 n.1 (noting that “[t]he expert is in effect not telling of facts at all” and dismissing as “frivolous” attempts to question the distinction in most practical cases).

124. In a perfect market with perfect information, no liquidity constraints, and no transaction costs the market price will define the asset’s value. *See* Jay W. Eisenhofer & John L. Reed, *Valuation Litigation*, 22 DEL. J. CORP. L. 37, 122 (1997) (“If a market for an asset exists, the value is equal to the market price of the asset”).

125. *In re Iridium Operating LLC*, 373 B.R. 283, 291 (Bankr. S.D.N.Y. 2007) (“[T]he public markets constitute a better guide to fair value than the opinions of hired litigation experts whose valuation work is performed after the fact and from an advocate’s point of view.”).

126. *Id.* at 290.

could not be used in buildings, cars, or cities with skyscrapers.¹²⁷ But the court found that it was solvent.¹²⁸ Why? Because at the time of the relevant transfers, the market thought it could overcome its products' technological limitations and become wildly profitable. The court relied heavily on the fact that the market continued to infuse capital and offer financing to Iridium.¹²⁹ The value of the business was not its intrinsic worth, but rather the value that the relevant market placed on its assets given the available information at the relevant time of the transfer.¹³⁰ On any given date, assets are worth what people will pay for them.

Thus, for valuation, evidence will be gathered and presented from which the community's view can be inferred. The relevant evidence, however, is farther from everyday experience and includes testimony about the existence and application of best practices that are often known only to those within the community—just as the events at the corner of Adams and Michigan are known only to those who were there at the time of the accident.

In determining the value of a complex asset, the appropriate methodology to use and the community best situated to determine the asset's value will vary (and often be controversial). The same is true, however, of traditional facts. The factual questions in complex valuation cases require weighing the merits of the methodologies for valuing the type of asset at issue and the variables necessary to calculate value using the best methodology. An expert model is like an eyewitness on the southeast corner of an intersection. The other model is a witness on the northeast corner. The fact finder hears evidence about the merits of the model just as she hears evidence about whether the sun was in the eyes of the eyewitnesses. As Chief Judge Kaye of the New York Court of Appeals explained in a school finance case, “[w]hen courts undertake to resolve a controversy that others have brought before them, they appropriately resort to the tools of the judicial trade—testimony, evidence and fact-finding.”¹³¹ Burdens of proof are another recourse of the fact finder in both complex valuation cases and those involving more traditional fact-finding. There is no theoretical difference between traditional facts and complex valuation; and we suggest there are several practical benefits to treating them the same.

When the eyewitness testifies that *she saw* the cars collide at 8:00 p.m.,¹³² the fact finder determines that the collision happened at 8:00 p.m. In exactly

127. See *id.* at 308–10.

128. *Id.* at 352 (finding Iridium had a “positive enterprise value”).

129. *Id.* at 296 (“[There is] strong evidence of a prepetition enterprise that had the ability to access the capital markets for debt and equity infusions.”).

130. Of course if someone is fraudulently hiding information, that makes the market valuation unreliable. But a court will, as the court in *Iridium* did, undertake a factual inquiry as to whether such fraud was present. See *id.* at 346–50.

131. *Campaign for Fiscal Equity, Inc. v. State*, 861 N.E.2d 50, 63 (N.Y. 2006) (Kaye, C.J., concurring in part and dissenting in part).

132. One might imagine a hypertechnical judge that would allow the witness to testify only that her watch said 8:00 p.m. For all she knows, the watch may have been off by a few minutes or more. That raises questions about the validity and foundation of the information

the same manner, the expert is not testifying that the company is worth \$1 billion. Rather the testimony is that her model suggests that the company is worth \$1 billion. Again, the fact finder determines that it is actually worth \$1 billion. The question we confront is whether a judge or jury can, based on either of these respective statements with no additional information, conclude that the accident happened at 9:30 p.m. or the company is worth \$600 million. There is no justification for tolerating the unfounded valuation determination but not the unfounded time determination.

The American legal system is premised on the idea that procedural protections should, at a minimum, produce principled outcomes.¹³³ To arrive at those outcomes efficiently and accurately, procedural and evidentiary rules require that judges hear testimony, look at documents and other physical evidence properly in the record, weigh credibility, and make findings of fact to which they apply the relevant law. Under the Rules of Evidence, parties can introduce qualified experts to assist the fact finder in cases where expertise is essential to understanding the controversy.¹³⁴ In the ultimate analysis, courts may not stray beyond the parameters of what is supported by the record.¹³⁵ If they do, their decisions should be reversed and/or remanded on appeal.¹³⁶ In addition, if a party bears the burden of proof and fails to introduce enough evidence to meet that burden, that party should not prevail.¹³⁷

Theoretically, there is no reason those basic safeguards should not apply in complex valuation cases. They guarantee, at a minimum, that the courts conduct valuations in a principled manner and that the ultimate valuation is clearly based on evidence in the record. Yet courts approaching complex valuation as an art rather than a science misperceive the nature of the evidence in complex valuation cases. If courts are seeking the “true” value of a company or, in other words, the best possible valuation for a company or asset that can be provided at a particular moment in time, then a complex

provided for by the watch. Most likely the testimony will be allowed and any questions about the foundation of the witness statement of time and the accuracy of her watch will be left for cross-examination.

133. William B. Rubenstein, *The Concept of Equality in Civil Procedure*, 23 CARDOZO L. REV. 1865, 1894 (2002) (“A host of procedural design choices and procedural rules, more or less implicitly, attempt to protect against outcome disparities.”).

134. FED. R. EVID. 702.

135. 21B CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., FEDERAL PRACTICE AND PROCEDURE § 5102.1 (2d ed. 2005) (“[C]ases must be decided solely on the basis of evidence produced in open court and subject to all of the procedural protections that make up the adversary system. This principle [is] known technically as ‘the principle of the exclusivity of the record’” (footnote omitted) (quoting Kenneth W. Graham, Jr., *The Right of Confrontation and the Hearsay Rule: Sir Walter Raleigh Loses Another One*, 8 CRIM. L. BULL. 99, 103 (1972))).

136. *Postal Tel. Cable Co. v. City of Newport*, 247 U.S. 464, 473 (1918) (“But the question arises, whether the basis of fact on which the state court rested in its decision . . . has any support in the record; for if not, it is our duty to review and correct the error.”).

137. *Kohler Co. v. United States*, 468 F.3d 1032, 1036–37 (7th Cir. 2006) (holding that when both parties put forward manifestly erroneous valuations, the IRS lost because it had the burden of production).

valuation cannot be produced without a coherent understanding of which variables are relevant and how to combine those variables to reach a value.

That understanding usually appears in the form of a mathematical model introduced by an expert. Courts lack the expertise to produce such models. Entire textbooks exist to explain valuation techniques to financial analysts with degrees in accounting, finance, or economics.¹³⁸ Decisions about which models to apply also require expertise. Financial analysts typically apply multiple techniques in any given valuation and may “run through more than one methodology when asked to value a company.”¹³⁹

This does not mean that the judge has no role. Instead, the judge must exclude unqualified experts, evaluate the credibility of the witnesses and the soundness of the facts or assumptions on which they base their valuations, and apply the burden(s) of proof. The judge must insist that an expert persuade the court that her methodology is superior and must be meticulous in questioning the variables in an expert’s model. The judge may even make intermediate findings of fact that may alter the final valuation. For example, if the judge is persuaded that a particular variable, such as depreciation, has been inflated or deflated by one or both experts, the judge may adopt a different number *so long as it is supported by the record*. The judge also has the option to determine that a burden of proof simply has not been met and direct an outcome accordingly.

Yet when it comes to deriving meaning from a set of factual variables, the judge is not free to create a new valuation model. The judge must instead rely on a model that appears in the record. Changing a valuation model is akin to changing a fact. Such models are internally coherent wholes created by experts. While different approaches may apply to a particular valuation, and it is a matter of expert opinion which approach is best and how to design the model, each approach requires its own formula in the record from which a valuation is derived from a set of variables.

To give an analogy, a case in which two valuation models are introduced is like a case in which two witnesses testify. One witness says that the robbery happened on Seventh Avenue in Manhattan, and the other witness says it happened on Fifth Avenue. In such a case, the judge should, and almost certainly will, be reversed if she decides that the robbery happened on Sixth Avenue. That is an incoherent and illogical response to the two witnesses’ competing accounts. Instead, the judge has to make a credibility determination to decide whether the robbery happened on Fifth Avenue or Seventh Avenue—or perhaps neither, if both witnesses lack credibility.

Similarly, valuation models constitute evidence of the take-it-or-leave-it variety.¹⁴⁰ Either the judge believes a particular model will offer the most accurate value or she doesn’t. Complex valuation models generally do not consist of easily interchangeable parts but instead rely on a fine degree of

138. See, e.g., ASWATH DAMODARAN, INVESTMENT VALUATION (3d ed. 2012); DAVID ISAAC & JOHN O’LEARY, PROPERTY VALUATION TECHNIQUES (3d ed. 2013).

139. Yee, *supra* note 117, at 23.

140. Sharfman, *supra* note 21, at 370.

coherence in the way that their input variables are calculated.¹⁴¹ A judge may make fact-findings about which variables are appropriate or what values certain variables will have, but this will have implications for the model. An expert might be able to create a different model from pieces of two other models, but that would create an entirely new piece of evidence and offer a new valuation. For a judge to find a value not derived from an expert's model would be for her to step into the role of expert and conduct a new valuation using a formula never before seen in the record. This is both beyond her competence and outside the scope of the judge's prerogative as fact finder—not fact generator.

Furthermore, if a judge credits none of the offered valuation models (and the parties have the ability to make cases against models through their own experts or through cross-examination) then the party with the burden has likely failed to make her case. Judge Posner pointed this out in *Kohler Co. v. United States*, “How to choose between adversaries’ valuations when both are manifestly erroneous? The conventional response would be that the party with the burden of proof (in the sense of the burden of persuasion) would lose.”¹⁴² As the Supreme Court wrote in *Daubert*, “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.”¹⁴³

Part of the confusion that arises in complex valuation cases comes from the complicated role of experts in litigation. Under Federal Rule of Evidence 702, expert testimony is admissible “if and because it will assist the trier of fact to understand evidence that will determine a fact in issue.”¹⁴⁴ The current rule makes clear that a qualified expert may testify “in the form of an opinion,”¹⁴⁵ in order to “suggest[] the inference which should be drawn from applying the [expert’s] specialized knowledge to the facts.”¹⁴⁶ Courts routinely cite to Rule 702 as they mislabel any information introduced by experts as mere “opinion.”¹⁴⁷ That label is one justification courts offer for disregarding the testimony “of any expert witness when that opinion is contrary to [the court’s] judgment.”¹⁴⁸

141. For example, several methods exist for calculating net operating income for the purpose of valuing real estate. One article describing these methods advises appraisers that they “can ensure that appraisal values are meaningful by,” among other things, “be[ing] certain that the [capitalization] rate employed to capitalize a given *NOI* [net operating income] was derived in a method consistent with the development of that *NOI*.” John M. Francis, *The Elusive Definitions of NOI and OAR*, 66 *APPRAISAL J.* 56, 60 (1998).

142. *Kohler*, 468 F.3d at 1035.

143. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 596 (1993).

144. *Parker v. Comm’r*, 86 T.C. 547, 561 (1986) (summarizing precedent on the application of Federal Rule of Evidence 702).

145. *FED. R. EVID.* 702.

146. *FED. R. EVID.* 702 advisory committee’s note.

147. See, e.g., *Parker*, 86 T.C. at 561.

148. *Id.*

Yet, in complex valuation cases, expert witnesses do more than offer their opinions about facts. They also introduce necessary evidence in the form of valuation models and the data that goes into them.¹⁴⁹ An expert's testimony that the model is the right one to use in a particular scenario and the expert's assertion about the ultimate inference that can be drawn from the model must be assessed for credibility and coherence by judges in complex valuation cases. The model itself, however, is not an opinion that the court can adjust. For a judge to justify doing her own haphazard math by declaring that the expert's model is an "opinion" subject to the court's judgment is the same as a judge deciding that the robbery happened on Sixth Avenue when the witnesses say Fifth and Seventh; it is changing a fact to a wholly new fact rather than drawing a supportable inference from a given set of information.

While courts repeatedly note their imperative to issue judgments based only on the facts in the record, the semantics of Rule 702 aid them in erroneously excluding from that category the mathematical models used to transform raw data into valuations purely because those models are created by experts. Once they have labeled the models and other information introduced by experts' "opinion," courts assert that they are free to "be selective in the use of any portion of such an opinion."¹⁵⁰

This leads to a particularly troubling outcome in complex valuation cases. If the methodology used to value an asset is exclusively a matter of opinion, then courts are free to introduce their own opinions about how to value the asset. This means that, as in the bankruptcy case described in Part I, they can average or otherwise combine numbers that appear in the record in any way they see fit.¹⁵¹ By extension, reviewing courts find that the "facts" in the record support judge-made valuations because without the constraint of a particular methodology or model, the "facts" in the record can be combined in manifold ways to support any valuation.¹⁵² Thus, as outlined in Part

149. Typically, the data and facts in a complex valuation case are admissible into evidence. Rule 703 provides, with certain caveats, that an expert may disclose facts or data he or she uses in forming her conclusions even "if the facts or data [an expert relies on] would otherwise be inadmissible." FED. R. EVID. 703. The emphasis on distinguishing between fact testimony and opinion testimony is today something of a historical anachronism. Compare, e.g., Charles T. McCormick, *Some Observations upon the Opinion Rule and Expert Testimony*, 23 TEX. L. REV. 109, 110–11 (1945), with FED. R. EVID. 701. Rule 701 now provides that lay witnesses may also testify "in the form of an opinion" if that opinion is "rationally based on the witness's perception," nontechnical, and helpful to understanding the testimony or to determining a fact in issue. FED. R. EVID. 701.

150. *Buckley v. Comm'r*, 68 T.C.M. (CCH) 754, 759 (1994).

151. See *supra* Part I.

152. *Silverman v. Comm'r*, 538 F.2d 927, 933 (2d Cir. 1976).

I, courts routinely combine their own conclusions about intermediate variables in a valuation calculation—the so-called “facts”—in virtually unidentifiable ways to produce a final valuation.¹⁵³ A reviewing court then upholds that valuation, holding that it is supported by “facts” in the record.¹⁵⁴

B. Implementation

If, as we have argued, the goal in complex valuations is for the judge’s conclusion to correspond to the valuation that the relevant community believes to be accurate, then the basic tenets of American civil procedure and evidence require a shift in the way such valuations are conducted. Judges are not free to assign their own values based on dubious manipulations of Microsoft Excel spreadsheets or simple averaging. Valuations must instead be generated by the techniques used in the relevant community.

In most cases, those techniques will be embodied in a valuation model. The fact-finding role requires judges to actively scrutinize the models offered by experts. Experts are typically the only people in the case with the experience and the often-specialized education required to perform appraisals, interpret financial statements, find and interpret the kind of market data that goes into a valuation, and create a valuation model that will derive meaning from all of the variables. Once the experts have testified, courts must and typically do scrutinize the individual judgments made by experts with a combination of deference to their expertise and skepticism born of the conviction that many “subjective judgments [are] made in arriving at . . . opinions of value.”¹⁵⁵ Conscientious courts must continue to look to “the reasons underlying an expert’s subjective judgments” in order to assess each facet of a valuation.¹⁵⁶

In other words, what judges are required and competent to do, in addition to excluding unqualified experts, is to question the assumptions that the experts make, to insist that experts persuade them that theirs is the best methodology, to be meticulous in questioning the pieces that make up that methodology, and to enforce the burden of proof. The judge should evaluate an expert’s credibility and her methodology (based on direct and cross-examination or even the judge’s own examination) rather than intervene and adopt the role of the expert herself.

The distinction between these two roles can be seen in *In re Chemtura Corp.*¹⁵⁷ There the judge went through a lengthy and thorough credibility inquiry only to conclude that the experts’ lack of credibility counseled him “to be more proactive in making my own valuation judgment, rather than to

153. See *supra* Part I.

154. See *supra* note 39 and accompanying text.

155. *Buckley*, 68 T.C.M. (CCH) at 760 (“[W]e do not find the opinions of value offered by respondent’s expert to be entirely persuasive.”).

156. *Id.*

157. 439 B.R. 561 (Bankr. S.D.N.Y. 2010).

accept either of the proffered ones.”¹⁵⁸ The first half of that analysis (on credibility) is the proper role of the judge; the second half (proactively making an independent valuation) is not.

Thus, a judge may accept or reject the number produced by the chosen methodology.¹⁵⁹ By definition, however, only an expert can apply a given methodology in a complex valuation case with the rigor necessary to produce meaning from a set of inputs and a formula.¹⁶⁰

When a judge presides over a complex valuation, therefore, she generally should be bound to choose a number generated by a model introduced by one of the parties. This may mean that the judge must choose the valuation offered by one side or another. It may also mean that a judge rejects all valuations and applies procedural rules, like the burden of proof, to determine the outcome of the valuation proceeding.¹⁶¹

FIGURE 2
PROPOSED STATIC APPROACH TO JUDICIAL VALUATION

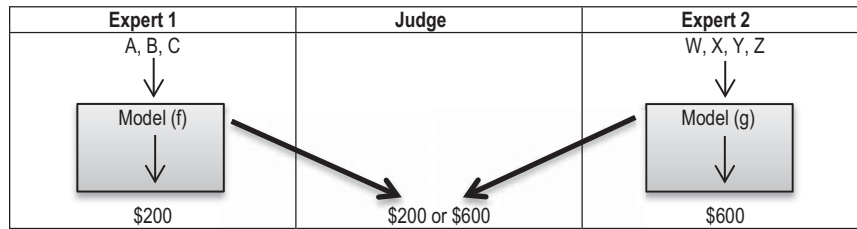


Figure 2 assumes that all input variables (A, B, C and W, X, Y, Z) are endogenous to and inextricably linked to the respective model. For many variables this will be the case. For others it won't. In a dynamic context, depicted in Figure 3, it may be that the judge, after carefully scrutinizing the expert testimony, finds a certain model to be credible, makes factual findings related to variables that go into that model, and orders the expert who produced the chosen model to use the variables and the model to generate a final valuation.¹⁶²

Note that the link between variables and the model is itself a factual question. Some models will by design require certain input variables to be

158. *Chemtura Corp.*, 439 B.R. at 590.

159. Although our motivation is different, our proposal is similar to final-offer arbitration. That literature provides insight into the incentive effects of requiring that a judge or arbitrator take or leave a party's proposed valuation. See *supra* Section II.A. The main practical difference comes from the nuances introduced by the burden of proof. Additionally, the judge should be more focused on the credibility of the proposed methodology rather than simply the reasonableness of the number (which under our analysis can be determined only by looking at the methodology).

160. See Hand, *supra* note 22, at 54 (noting that the expertise is “confessedly foreign” to the fact finder's experience).

161. See *Kohler Co. v. United States*, 468 F.3d 1032, 1035 (7th Cir. 2006).

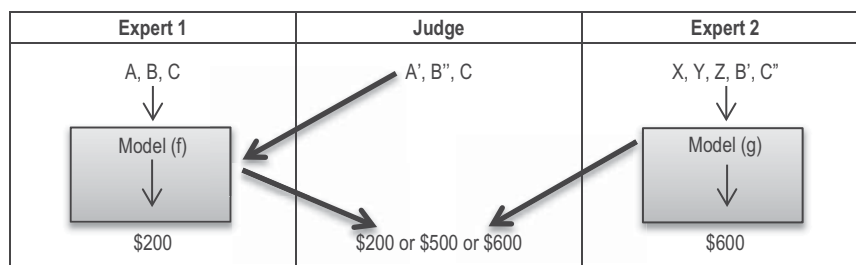
162. See *supra* Section II.B.

correlated with each other or with assumptions in the model. Other variables will have a value that does not depend on the model or its assumptions. For the former, the inputs will live and die with the model. For the latter, the judge may make separate factual findings on which inputs to use (as long as the record supports those findings).¹⁶³

Thus, in Figure 3, the judge determines that Model (f) is the best valuation methodology and then makes factual findings about the value of the variables that go into the model. The variables must be consistent with the model, hence they are related to Expert 1's variables (A, B, C). At the same time, they won't necessarily mirror the inputs suggested by the expert.

This may require expert testimony on various things: (1) the proper model, (2) which variables have a value that does not depend on the model, and (3) where input variables are not dependent on the model, which values to use. Experts may disagree on one or all of these points. The key remains that the judge's ruling must be supported by evidence in the record. If the plaintiff's expert testifies that her model is the correct one and can provide a proper result only with input variable X, the defendant has two options: (1) put on an expert suggesting a different model or (2) put on an expert testifying that the plaintiff's model is more accurate if variable X is replaced with variable A. Of course, the defendant may try to make these arguments in the alternative as well.

FIGURE 3
PROPOSED DYNAMIC APPROACH TO JUDICIAL VALUATION



In this dynamic context, the new system depicted in Figure 3 has the judge making fact-findings both on the input variables (A', B'', and C), and on the appropriate model to determine the final valuation (Model (f)). In addition to ensuring that valuations are based on facts properly in the record, this system would preempt the kind of mathematical incoherence that was so pronounced in the valuation of the Colts Run housing development.¹⁶⁴ Rather than ignoring the requirement that "the income developed by one [valuation] method [be] used with a cap rate derived by that same

163. See 21B CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., *supra* note 135, § 5102.1.

164. For a discussion of the judge's mathematical determination, see *supra* Section I.B.

method,”¹⁶⁵ the judge would be required to consider the methods for assessing income and cap rates and choose one. The judge would also need to choose from the models offered if the experts offered different valuation methods. The judge’s fact-finding would contribute to the ultimate valuation, which would be conducted by the expert—or experts if both valuation models were the same and only the variables differed.

The evaluative process may result in the lay judge being dissatisfied with pieces of each expert’s presentation. The response in such a case, we argue, should be for the judge to highlight the areas in which the experts lack credibility and to require that the parties bring in a new expert or improve the expert’s presentation to address those concerns.¹⁶⁶ Rather than inserting the tax calculation from one model into a model that relies on incompatible assumptions about depreciation, for example, the judge should require that the parties put the evidence in the record and make the necessary adjustments. Judges, as fact finders, are not tasked with adjusting complicated formulae that rely on interdependent assumptions. If a party cannot produce a credible expert or sufficient evidence to persuade the judge, the result should not be for the judge to do the party’s work. If the judge starts creating the factual evidence based on intuition, some form of averaging, or ad hoc adjusting, the judge undermines the fundamental importance of the factual record. Instead, as in any case in which a party with the burden of proof provides insufficient evidence, a party that brings in an exaggerated valuation that lacks credibility should not prevail even if the other party is equally lacking in credibility.¹⁶⁷

Returning complex valuation to the traditional fact-finding process will reduce the costs of uncertainty discussed above. Uncertainty is reduced, first, because the court is expected to adopt the most reasonable model proposed by the parties. This limitation narrows the range of possible numbers that the court can adopt. By grounding the value in a reasonable model, market

165. Transcript of Hearing at 7, *In re Colts Run, LLC*, No. 10-18071 (Bankr. N.D. Ill. Mar. 8, 2011), ECF No. 249.

166. Other structural changes to the presentation of evidence would enhance judges’ ability to focus in on crucial areas of disagreement between experts. One excellent proposal in the tax context calls for a “concurrent evidence” approach in which tax court judges would hear testimony from and question simultaneously sworn experts rather than allowing the experts to be called sequentially and to testify under the direction of the attorneys in the case. Devitt, *supra* note 49. This method has already seen limited use in the tax court and has been adopted in other common-law systems. *See id.* at 218 (discussing *Rovakat, LLC v. Comm’r*, 102 T.C.M. (CCH) 264 (2011), *aff’d*, 529 F. App’x 124 (3d Cir. 2013)).

167. Posner applied this standard in *Kohler Co. v. United States*, 468 F.3d 1032, 1035–37 (2006), holding that where both parties put forward manifestly erroneous valuations, the IRS lost because it had the burden of production. As Posner noted, the exact location of the burdens of production and persuasion can be complicated in tax cases. *See id.* But once those burdens are established, applying them to valuation is straightforward. *Id.* at 1037. As we have suggested throughout, many courts go in the other direction, embracing valuation-as-an-art theories to justify ignoring burdens of proof. *See, e.g.*, *Tractebel Energy Mktg., Inc. v. AEP Power Mktg., Inc.*, 487 F.3d 89, 108–12 (2d Cir. 2007) (vacating the district court’s denial of damages due in part to unpersuasive valuation experts and noting that the district court may assume certain variables in order to arrive at its own reasonable estimate).

participants can predict a more narrow range of outcomes. Courts may err in their determination of reasonable models, but we suggest that those errors will be smaller than the errors inherent in judicial valuation. A return to first principles of fact-finding will also reduce costs in a manner that facilitates accuracy and reasonableness. In the current system, the court is presented with extreme valuation models. In the system promoted here, the judge will face less extreme models from which to choose. The point is simple and has long been recognized in the context of final-offer or baseball arbitration.¹⁶⁸

Knowing that the judge will choose the most reasonable approach, both parties have an incentive to be more reasonable than the other side. Experts, in turn, will have every incentive to present the most effective, current, and defensible valuation scheme available. Especially when the burden of proof clearly rests on a party, that party will go to great lengths to persuade the fact finder that its model is complete and efficacious. The other party can either attack that model or present evidence that other models are more likely to achieve the correct value. The party without the burden of proof might even take the approach of presenting several models in the alternative, giving the court a broader view of the spectrum of what might be credible. If a judge is troubled by a part of the model in the course of litigation, parties will also be incentivized to make the necessary adjustments to their models or risk an adverse judgment. Finally, judges themselves will focus on interrogating the methodology of the experts instead of relying on their own ex post adjustments to determine how the relevant community values a particular asset.¹⁶⁹ These changes will cause the range of models to narrow and will provide more predictability, which will also reduce the fact finder's cost in assessing the models. A changed focus on fact-finding principles also provides an incentive to the expert witnesses to market themselves on their ability to defend their models as reasonable rather than their willingness to take extreme positions.

168. See Farmer & Pecorino, *supra* note 45, at 416; Mark A. Lemley & Carl Shapiro, *A Simple Approach to Setting Reasonable Royalties for Standard-Essential Patents*, 28 BERKELEY TECH. L.J. 1135, 1144 (2013). The idea that complex valuation should look more like final-offer arbitration is not a novel one. See, e.g., Soled, *supra* note 51, at 284 (suggesting that Congress adopt final-offer arbitration requiring the judge to choose either the taxpayer or the IRS's valuation in tax cases).

169. If a judge lacks the time or ability to comb through the valuation itself, the court may appoint a special master to carefully review the expert methodology and inputs before coming to a conclusion. See, e.g., *Abbott v. Burke*, 971 A.2d 989, 992 (N.J. 2009). The New Jersey Supreme Court's approach to recent school-funding litigation provides a good example of how this works in practice. When the state requested that the court approve its new, complex funding scheme as constitutional, the court appointed a lower court judge to sit as a special master. *Id.* at 992, 1010. The judge heard testimony from the state's experts as well as from the other party to the litigation over the course of several months before writing a lengthy opinion describing the state's costing-out study and the resulting funding scheme and recommending that the court find it constitutional. *Id.*

III. IMPLEMENTATION IN VARIOUS AREAS

Valuation disputes are at the heart of many fields of litigation today. Yet the variability and legitimacy problems that plague them have caused scholars and courts to advocate shutting the courtroom doors to valuation disputes. For example, in corporate bankruptcy, the arbitrary way in which courts declare the value of an asset or claim has led to a near consensus that the courts' role in the process should be diminished. Indeed, article after article has proposed procedural and incentive mechanisms to avoid judicial valuation altogether.¹⁷⁰ And lawyers have drawn on these proposals to come up with novel auction mechanisms to force parties to value assets without the intervention of the court.¹⁷¹

Courts have bought into the idea that they should strive to avoid involving dueling experts in their valuations. Judges at all levels have raised valuations produced by some form of "market" (no matter how flawed) to a hallowed status.¹⁷² When markets appear to be available, however remotely, the courts will use them at virtually any cost to avoid asking a judge to value the assets based on expert testimony. In the so-called *Vlasic Pickle* bankruptcy, for example, the Third Circuit announced that "[a]bsent some reason to distrust it, the market price is 'a more reliable measure of the stock's value than the subjective estimates of one or two expert witnesses.'"¹⁷³ There were specific reasons to distrust the market in the *Vlasic* case, and of course markets may not always measure value as reliably as courts would like.¹⁷⁴

We do not suggest that markets are inherently flawed. But market prices have their limitations. Markets are only as good as the information available. In the *Vlasic* case, the creditors alleged that the market had been misled by a failure of disclosure.¹⁷⁵ Thus, in a case where the insiders have the same information as the market, the market is an ideal valuation tool. But courts

170. See, e.g., Barry E. Adler & Ian Ayres, *A Dilution Mechanism for Valuing Corporations in Bankruptcy*, 111 YALE L.J. 83, 90–96, 133–34 (2001); Barry E. Adler, *Game-Theoretic Bankruptcy Valuation*, 41 J. LEGAL STUD. 209, 218–19 (2012); Casey, *supra* note 44, at 801–09; Kerry O'Rourke, Survey, *Valuation Uncertainty in Chapter 11 Reorganizations*, 2005 COLUM. BUS. L. REV. 403, 447–50; Alan Schwartz, *A Normative Theory of Business Bankruptcy*, 91 VA. L. REV. 1199, 1205–07 (2005).

171. See, e.g., *Central European Distribution Corporation's Chapter 11 Plan Incorporates Dutch Auction* (Skadden, Arps, Slate, Meagher & Flom LLP, New York, N.Y.), Aug. 5, 2013, available at http://www.skadden.com/newsletters/Novel_Chapter_11_Plan_Incorporates_Dutch_Auction.pdf.

172. See, e.g., *In re Iridium Operating LLC*, 373 B.R. 283, 291 (Bankr. S.D.N.Y. 2007); *Skripak v. Comm'r*, 84 T.C. 285, 310 (1985); *Cupler v. Comm'r*, 64 T.C. 946, 954–56 (1975).

173. *VFB LLC v. Campbell Soup Co.*, 482 F.3d 624, 633 (3d Cir. 2007) (quoting *In re Prince*, 85 F.3d 314, 320 (7th Cir. 1996)).

174. *Id.* (discounting creditor argument that the public equity market was an improper reflection of value due to failures of disclosure by Campbell Soup); see also, e.g., Douglas G. Baird, *The Bankruptcy Exchange*, 4 BROOK. J. CORP. FIN. & COM. L. 23, 27 (2009) ("If the judge follows the market price at the same time those who trade in the market are following the judge, they will simply be chasing each other's tails.").

175. *VFB LLC*, 482 F.3d at 632–33.

are often called on to provide an after-the-fact valuation of an asset when the market was misinformed. In a securities fraud case, the court might be asked to determine what the value *would* have been, had the market been informed. In other cases, such as those involving the trading of bankruptcy claims, the market may base its value on an expectation of what the court will do.

Expert testimony is most important when the relevant markets are limited in this way. Experts can provide a model to show the value that a fully informed market would place on an asset. In some sense, the well-informed market is the relevant community. But the cases where complex valuations are most important are the ones in which a well-informed community does not exist.

Still, the Supreme Court has placed disproportional weight on the importance of finding a market from which to take a value. The most obvious example is the seminal case *203 North LaSalle*.¹⁷⁶ The Court faced the question whether junior stakeholders had made a new contribution to the firm that was valuable enough to justify the share they were receiving in the reorganized business. The Court suggested that value of the contribution could not be determined by a bankruptcy judge relying on expert testimony. Rather, the contribution could be considered only if it was market tested.¹⁷⁷ The state of corporate governance law in Delaware is similar.¹⁷⁸ Courts are increasingly deferential to markets and market-based decisions, which allows them to avoid any role in valuation.

Thus, fear of judicial valuation has led courts and scholars to advocate keeping judges out of complex valuations entirely. Our analysis suggests that the solution to valuation problems need not be so drastic. Attempts to correct fundamental errors in the mechanism of judicial valuation should precede calls for reform that would shunt litigants into private channels in order to resolve their disputes. If judicial valuation improved considerably, it would become a viable dispute-resolution mechanism and reduce the distrust that pervades bankruptcy and corporate law. In the bankruptcy context, the impact of this change would be enormous. It would reduce the severity of *the* central problem of bankruptcy law today.

In other areas of law, particularly areas where no market exists to provide an escape hatch in valuation, courts have been more flexible. For example, in *Abbott v. Burke*, a long-running suit alleging, among other things, that New Jersey's educational funding system did not meet a constitutionally

176. *Bank of Am. Nat'l Trust & Sav. Ass'n v. 203 N. LaSalle St. P'ship*, 526 U.S. 434 (1999).

177. *Id.* at 457 & n.27.

178. See WILLIAM T. ALLEN ET AL., COMMENTARIES AND CASES ON THE LAW OF BUSINESS ORGANIZATION 323–25 (3d ed. 2009); see also *Cede & Co. v. Technicolor, Inc.*, No. 7129, 2003 WL 23700218, at *2 n.5 (Del. Ch. Dec. 31, 2003, revised July 9, 2004), *modified*, *Cede & Co. v. Technicolor, Inc.*, 884 A.2d 26 (Del. 2005) (“Professors Allen and Kraakman have also noted the institutional disinclination of Chancery judges to engage in the valuation process in certain circumstances precisely because those judges recognize it as a ‘daunting task’ subject to significant uncertainty.”).

mandated floor for providing an education to the state's children, the New Jersey Supreme Court has repeatedly considered competing expert testimony about the amount of money necessary to meet the constitutional minimum.¹⁷⁹ In a recent iteration of that case, the court again did what it had done in the past: it appointed a special master to hear testimony from the experts and make detailed findings and recommendations to the court.¹⁸⁰ The special master, a New Jersey trial judge, spent a full month hearing from both plaintiffs' experts and experts the state had hired to perform a "costing-out study."¹⁸¹ The study sought to quantify the cost of providing an adequate education by interviewing teachers and education experts about the inputs necessary for such an education and creating a formula to determine the amount of money needed to fund those inputs given the number of low-income and special-needs children in a district, among other things.¹⁸² The special master's hearings resulted in a detailed report recommending that the court find the state's funding scheme constitutional.¹⁸³ Upon conducting its own review of the evidence in the case and the special master's report, the New Jersey Supreme Court agreed, issuing a long opinion detailing its findings.¹⁸⁴ This process, although lengthy, represents a triumph of sorts for judicial valuation. A court with a reputation for scrutinizing the evidence in school-finance cases was presented with reputable experts on both sides, conducted a thorough inquiry into the valuation technique and the variables used, and made a finding based entirely on evidence in the record.

Of course, many factors make cases about the value of entitlements different from those seeking to value assets.¹⁸⁵ Yet this Article suggests a fundamental similarity, which is that in both instances, courts must hear testimony from competing experts about the value of something that it would be impossible for a lay person, acting alone, to value. In both instances, it is clear what value is sought; in both cases, a court is tasked with using the full power of the law to arrive at a conclusion based soundly on the evidence in the record.

Courts like the New Jersey Supreme Court have been tempted to intervene to mediate between the sides in entitlement valuation cases in ways reminiscent of asset valuation cases. In earlier rulings in the *Abbott v. Burke*

179. *Abbott v. Burke*, 971 A.2d 989, 991–93 (N.J. 2009).

180. *Id.* at 996.

181. *Id.* at 1000.

182. *See id.*

183. *Id.* at 992.

184. *See id.*

185. Among other things, concerns having to do with separation of powers, the priority and importance of constitutional-rights enforcement and political pressures unique to entitlements debates all distinguish those cases from the average tax or bankruptcy valuation. *See, e.g.,* Julia A. Simon-Kerr & Robynn K. Sturm, *Justiciability and the Role of Courts in Adequacy Litigation: Preserving the Constitutional Right to Education*, 6 STAN. J. C.R. & C.L. 83, 108 (2010) (describing separation of powers concerns making courts reluctant to find for plaintiffs in education-finance cases emphasizing costing-out studies).

litigation, for example, the New Jersey Supreme Court itself, faced with state inaction and what it characterized as untenable demands from plaintiffs, devised its own novel solution to the school-finance problem.¹⁸⁶ Even as it did so, the court called on the state to provide “needed comprehensive relief,” tacitly acknowledging that its own attempt at a remedy would likely fall short.¹⁸⁷ In other education-finance cases, state courts have ignored the findings of their own special masters and bowed to pressure to minimize the impact on state budgets that these education-finance cases can impose.¹⁸⁸ Both responses are politically expedient and potentially justifiable given the unique contours of constitutional entitlement cases. Yet when viewed as valuation cases, it becomes apparent that both are as fundamentally opposed to the requirement that judgments be based on evidence properly in the record as the decision by the bankruptcy judge who pulls a number out of a hat in order to rationalize two wildly inflated expert valuations.

IV. LIMITATIONS ON APPLYING THE SIMPLE THEORY

There are, however, limitations to the panacea of returning to first principles in dealing with the legal system’s problems with experts. An approach that takes the burden of proof seriously and respects mathematical models will improve most interactions with experts, but it cannot solve many of the well-documented problems with scientific expert testimony in areas from toxic torts to medical malpractice to forensics.¹⁸⁹ We have argued that the valuation problem will be ameliorated by a return to the application of traditional theories of evidence, because the prevailing view that valuation is art rather than science and the status quo of judicial intervention have released valuations from all connection to reality. By contrast, the primary problem with scientific evidence as scholars in the field have articulated it is not that judges have thrown up their hands and begun doing their own

186. *Abbott v. Burke*, 693 A.2d 417, 445 (N.J. 1997) (“Presented with no alternative remedy by either the plaintiffs or the State . . . the Court must resort to judicial relief.”).

187. *Id.*

188. *See, e.g., Campaign for Fiscal Equity, Inc. v. State*, 861 N.E.2d 50 (N.Y. 2006); *see also* Simon-Kerr & Sturm, *supra* note 185, at 108 (discussing decision of New York’s highest court to ignore the findings of the lower court and a referee panel and rubber stamp the State’s funding scheme).

189. Several scholars have noted problems with experts in these areas. *See, e.g.,* Gross, *supra* note 21 (describing problems with expert credibility and judicial response in general); Jennifer L. Mnookin, *The Courts, the NAS, and the Future of Forensic Science*, 75 BROOK. L. REV. 1209 (2010) [hereinafter Mnookin, *Future of Forensic Science*] (describing scientific flaws in fingerprinting evidence identified in National Academy of Sciences report and judicial response); Jennifer L. Mnookin, *Expert Evidence, Partisanship, and Epistemic Competence*, 73 BROOK. L. REV. 1009, 1022–23 (2008) [hereinafter Mnookin, *Expert Evidence*] (discussing difficulty in assessing expert evidence in toxic tort cases given a scarcity of established science on question of causation); Erin Murphy, *The New Forensics: Criminal Justice, False Certainty, and the Second Generation of Scientific Evidence*, 95 CALIF. L. REV. 721, 773 (2007) (describing difficulties with expert evidence in so-called “second generation” forensics cases, such as those involving DNA).

science experiments.¹⁹⁰ Instead, to oversimplify, it has to do with the quality of the data being introduced into evidence and the ability of the fact finders, and often also of the attorneys involved, to understand the science well enough to discredit tenuous claims.¹⁹¹ There is no rampant inattention to expert presentations in the birth defect case in which a judge makes a blatantly unscientific finding,¹⁹² or in the fingerprint case in which the jury credits testimony from a fingerprint examiner who represents a tenuous fingerprint match as scientific certainty.¹⁹³ Instead, those problems involve the interplay of bad lawyering, corrupt or inept experts, and fact finders who lack the tools—either through disinterest or lack of specialized knowledge—to probe behind a veneer of credibility.¹⁹⁴

Thus, while problems exist in many other areas involving experts, the phenomenon of widespread judicial disregard for experts in favor of judicial pseudoscience is especially pervasive in valuations. Our proposal seeks to return legitimacy and accuracy to this area by reimposing basic procedural safeguards that have broken down in valuation cases but not in other areas that frequently involve dueling experts. This begs the question whether making valuations more like other areas of the law involving expert testimony is really a good idea. As we have described, there is a considerable body of scholarship dedicated to enumerating problems with expert bias and the susceptibility of fact finders to facially persuasive yet factually deficient experts.¹⁹⁵

These concerns are valid and will not be wholly resolved under our proposal. But valuation cases are less susceptible to false findings of credibility even as they may be more prone to the type of exaggeration that has resulted in a system of judicial averaging. Valuation is also not an area where there is

190. Far from losing sight of their basic procedure, courts in cases involving scientific testimony of a forensic or medical nature have been criticized for hewing too closely to a rules-based understanding of the evidence before them. For example, they have been faulted for “approach[ing] methodological questions as questions of law and case-specific applications of these methods as questions of fact” because this leads them to admit faulty laboratory data in particular cases and allow the fact finder to make the credibility determination rather than screening it out before it gets to the fact finder. Murphy, *supra* note 189, at 757.

191. See, e.g., Gross, *supra* note 21, at 1126–36 (identifying problems with expert witnesses, including litigants’ buying whatever opinion they need, the specialization of experts to plaintiff or defense side, the phenomenon of the professional expert witness, the ability of experts to become expert performers in court, the extensive preparation of experts by attorneys, lawyers who are ill equipped to conduct effective cross-examination, juries who are awed by expert credentials).

192. *Id.* at 1121–24 (describing failures of judges to see through incorrect scientific testimony).

193. Mnookin, *Future of Forensic Science*, *supra* note 189, at 1226 (“[I]n court, until quite recently, experts frequently testified that their technique had a ‘zero error rate.’”).

194. For a discussion of the problems with expert corruption and lawyer inadequacy as well as “the essential paradox in the use of expert evidence”—that experts testify about matters “beyond the ordinary understanding of lay people” yet “we ask lay judges and jurors to judge their testimony”—see Gross, *supra* note 21, at 1182.

195. See, e.g., *id.* at 1135; Mnookin, *Expert Evidence*, *supra* note 189; Murphy, *supra* note 189, at 757.

judicial resistance to science. In this way, it differs from inquiries such as fingerprinting. There, judges have consistently ignored a National Academy of Sciences Report that found both the science behind fingerprint analysis and the way it is generally conducted in this country are deeply flawed.¹⁹⁶ In addition, complex valuation cases typically do not involve the kind of resource imbalances that leave vacuums of expertise on the defense side in criminal cases. One side is unlikely to be without the resources to secure a good expert in a high-stakes valuation case.¹⁹⁷ Thus, these are cases in which our system's reliance on the lay, bankruptcy, or tax judge should be rewarded with probing scrutiny of experts such that the experts become more rational rather than more polished.

For example, an expert in a fingerprinting case might be inclined to inflate her certainty of a match in order to seem more credible,¹⁹⁸ while in a valuation case, an expert will seem more credible if her estimates are less inflated and closer to those offered by the other side. Furthermore, under our proposal, a valuation expert who cannot defend her choices may find that the judge simply chooses the valuation produced by the other side. Even if the judge does not fully adopt the other side's position, she is likely to make fact-findings adverse to the expert's client that will negatively impact the final valuation. In turn, the expert's incentives will shift, reducing the effects of bias on expert opinions. As a final bonus, implementation of our

196. See *United States v. Havvard*, 260 F.3d 597, 601 (7th Cir. 2001) (holding that the district court properly admitted latent fingerprint analysis under *Daubert's* reliability standards); COMM. ON IDENTIFYING THE NEEDS OF THE FORENSIC SCI. CMTY., NAT'L RESEARCH COUNCIL, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009), available at <https://www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf> (finding serious flaws and a lack of standardization in fingerprint analysis and finding a lack of uniformity or standards for the credentialing of fingerprint examiners); Mnookin, *Future of Forensic Science*, *supra* note 189, at 1234–41 (describing the findings of the NAS report and courts' continued insistence on admitting fingerprint evidence).

197. Resource disparities have received much attention in the context of criminal trials. See, e.g., Ronald F. Wright, *Parity of Resources for Defense Counsel and the Reach of Public Choice Theory*, 90 IOWA L. REV. 219, 231 n.48 (2004) (collecting evidence of spending differentials between the government and defendants). In contexts in which large amounts of money are involved, such as the mass tort arena, however, there has been a shift toward cooperation between plaintiffs' lawyers that has leveled the financial playing field. See Peter H. Schuck, *Mass Torts: An Institutional Evolutionist Perspective*, 80 CORNELL L. REV. 941, 956 (1995) (“[P]laintiffs’ lawyers have established clearinghouses that help coordinate the exchange of legal briefs, depositions, information on expert witnesses, and other types of costly litigation resources—cooperation that partly reflects the interdependence of mass tort claims values . . .”).

198. See, e.g., Margaret A. Berger & Lawrence M. Solan, *The Uneasy Relationship Between Science and Law: An Essay and Introduction*, 73 BROOK. L. REV. 847, 850–51 (2008) (“Much of contemporary science involves researchers hypothesizing about natural phenomena and offering tentative explanations that become the subject of further research, which results in both refinements and broad challenges.”); Frank C. Keil, *Getting to the Truth: Grounding Incomplete Knowledge*, 73 BROOK. L. REV. 1035, 1042 (2008) (describing the confidence-inflating effect in a study in which students found it much more difficult to tell the good from the bad explanations when they contained fMRI results, even though the fMRI results were completely noninformative).

proposal will encourage more experts to participate in litigation by improving the actual and perceived legitimacy of the process. This will enhance the quality of expert testimony in general.¹⁹⁹ Thus, experts will be more reliable sources of information.

The strongest objection to refocusing around expert opinions in valuation cases may be that judges in those cases will make the kind of credibility mistakes that seem to occur so often in cases involving scientific testimony.²⁰⁰ It is true that fact finders will get credibility determinations wrong in some cases, blinded by a suave demeanor or a fancy spreadsheet. While credibility mistakes are an unavoidable byproduct of any system that relies on witnesses, however, they will not have the same costs as arbitrary judicial valuations. First, for the reasons described above, they will be less likely to occur in valuation cases than in cases involving more complex scientific testimony. In addition, the current regime creates an incentive for witnesses to present the most extreme valuation that will be tolerated. By contrast, mistakes in credibility, if they are unpredictable and relatively infrequent, do not create incentives for the parties to move to the extremes. At most, the potential for credibility mistakes gives parties with weak claims an incentive to litigate if they think there is a high enough chance of a mistake. But litigants hoping for a mistake still have the incentive to appear as credible as possible. When faced with a judge with some ability to probe behind the numbers (or at least to spot a red flag when the experts present wildly deviating numbers), the incentive to appear credible will lead litigants to hire the most knowledgeable rather than the most polished expert. Furthermore, unless the credibility errors are exaggerated by fraud, incompetence, or institutional flaws, they are unlikely to undermine legitimacy in the same way as arbitrary judgments.

Finally, throughout this Article we have discussed the role of the judge as fact finder. We have done so both for simplicity and because most complex valuation cases do not involve juries. Tort cases are the most frequent exception to that rule. Our argument applies with equal force to juries. There is no difference in theory between how a judge, as opposed to a jury, should conduct fact-finding in a valuation case—although it is obviously harder to know how a jury has reached its conclusion. In practice there may be other factors to consider. The biases of jurors and judges may differ. And the dynamic of jury deliberations where jurors disagree on which expert is credible may require further consideration as well as adjustments such as more extensive jury instructions and additional bifurcation of trials (some of which happens already in complex tort cases). We leave the elaboration of those mechanisms to future work.

199. See Gross, *supra* note 21, at 1135 (“[S]ome of the best experts in many fields have a contempt for legal proceedings that goes beyond the low regard for law and lawyers that is common in our society. . . . As a result, these experts refuse to be witnesses . . .”).

200. See, e.g., *id.* at 1124 n.39 (describing extensive, yet incorrect, credibility findings by district court in process of explaining his belief in plaintiffs’ expert in birth defect suit whose outcome was later criticized as scientifically groundless).

CONCLUSION

Through inattention to basic legal principles and the false conviction that valuation is art not science, the judicial system has embraced a singular approach to complex valuations. Scholars and courts have focused extensively on two questions: (1) whether advocate expert testimony should be part of the system at all; and (2) how to screen experts for qualification to testify if they are part of the system. But little real attention has been paid to the question of what to do with the expert testimony when experts do take the stand. Litigants and courts have intuited a fundamental difference between how to credit evidence offered by experts and lay witnesses—especially in the valuation context. This intuition that valuation evidence must be treated differently in practice is wrong. It has no grounding in doctrine and little theoretic reasoning to commend it.

By focusing on the simple idea that valuations are enterprises in fact-finding and that the values being sought correspond to best practices for valuation by experts in the field, this Article offers a new understanding of the valuation problem. What we are witnessing is, in an important sense, a simple procedural breakdown, not—as others have argued—a failure created by dueling experts that must be cured through blinding the experts, using court-appointed experts, or instructing judges to apply a specific mathematical formula to expert testimony in every case. Because valuation invokes the fact-finding function of the judicial process in order to identify clearly established values, procedural and evidentiary mechanisms that protect the integrity of fact-finding must be enforced. The integral requirement that the facts that ground a judgment appear in the record and the evidentiary rules that structure how those facts appear must not be forgotten. We contend that those rules are being ignored and that adhering to them would produce principled outcomes, legitimacy, and valuable certainty.