
THE CONTROVERSIAL COMMENT C:
FACTUAL CAUSATION IN TOXIC-SUBSTANCE AND
DISEASE CASES

*Joseph Sanders**

INTRODUCTION

Section 28 of the *Restatement (Third) of Torts: Liability for Physical and Emotional Harm* sets forth what appears to be a very noncontroversial position on burden of persuasion with respect to causation.¹

Subsection (a) reestablishes one of the most fundamental principles in tort law: the plaintiff has the burden of persuasion on each element of the tort, in this case the element of cause in fact. And subsection (b) reiterates a position that is less fundamental but hardly controversial: the burden of proof is placed on the defendants in the *Summers v. Tice*² indeterminate defendant situation. One might think, therefore, that the comments explicating this section would be equally noncontroversial. In one instance, this is not the case. Comment *c* on toxic substances and disease is arguably the single most controversial passage in the project.³

The controversy is interesting in its own right. More importantly, however, the controversy is interesting because of what it reveals about how legal approaches to questions of causation

* A.A. White Professor of Law, University of Houston Law Center.

1. Here is the black letter of Section 28:

(a) Subject to Subsection (b), the plaintiff has the burden to prove that the defendant's tortious conduct was a factual cause of the plaintiff's physical harm.

(b) When the plaintiff sues all of multiple actors and proves that each engaged in tortious conduct that exposed the plaintiff to a risk of physical harm and that the tortious conduct of one or more of them caused the plaintiff's harm but the plaintiff cannot reasonably be expected to prove which actor caused the harm, the burden of proof, including both production and persuasion, on factual causation is shifted to the defendants.

RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL & EMOTIONAL HARM § 28 (Tentative Draft No. 5, 2007).

2. 199 P.2d 1 (Cal. 1948).

3. See RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL HARM (BASIC PRINCIPLES) § 28 cmt. c (Tentative Draft No. 2, 2002). Some have compared the controversy about toxic substances and disease to the controversy surrounding the alternative-feasible-design requirement in the *Restatement (Third) of Torts: Products Liability* project in the mid-1990s.

changed in the years between the *Restatement (Second) of Torts* and the *Restatement (Third)*.

Part I discusses the two aspects of comment *c* that are most controversial: how one should conceptualize the causal question in toxic-tort cases and the perceived intermingling of the law of tort and the law of evidence. I note that, with respect to each of these sources of controversy, for better or worse, the comment accurately tracks changes in tort law that occurred between the *Restatement (Second)* and the *Restatement (Third)*.

Part II builds on Part I. Here, I argue that the specific controversies may be viewed through the lens of a set of larger trends in the way tort law has responded to the rise of toxic-tort litigation. I discuss four interrelated changes: (a) the meshing of admissibility and sufficiency, (b) the increased role of the judiciary, (c) the increasing role of scientific understandings in defining how we conceive of causation, and (d) the emergence of truth seeking as the primary goal of adjudication.

I conclude with a brief summary.

I. THE CONTROVERSY

The controversy surrounding comment *c* turned primarily on two issues: the conceptualization of the causal question in toxic-tort cases and the perception that the comment inappropriately addressed issues best left to the law of evidence.

A. *The Causal Question in Toxic Torts*

When the *Restatement (Second)* was promulgated in the 1960s, the era of toxic torts had not emerged nor had the causal difficulties it engenders.⁴ Comment *c* is the *Restatement's* first pronouncement on this topic. Controversy arose because to some it appeared that the comment divided the cause-in-fact question into two separate elements: general causation and specific causation.⁵ The comment discusses causation in terms of these two components, but the

4. Arguably, the rise of toxic-tort litigation began with the landmark case *Borel v. Fibreboard Paper Products Corp.*, 493 F.2d 1076 (5th Cir. 1973).

5. These terms did not appear in legal opinions until after the promulgation of the *Restatement (Second)*. The first use of the terms that I could find in a Westlaw search occurred in a 1983 opinion dealing with Agent Orange:

In that light, the term "general causation" is to be understood in contrast to "specific causation", the latter term being addressed to whether exposure to Agent Orange did in fact cause a particular condition suffered by a particular plaintiff. The former term is addressed to the common question of whether exposure to Agent Orange in the manner that it was used in Vietnam could cause the kinds of injuries that plaintiffs claim to have suffered.

In re "Agent Orange" Prod. Liab. Litig., 570 F. Supp. 693, 695 (E.D.N.Y. 1983).

controversy arose as to whether these were separate elements in the sense that the plaintiff must prove each by a preponderance of the evidence. On this point, comment *c* takes the following position:

The plaintiff must prove by a preponderance of the evidence that, but for the defendant's tortious conduct with respect to the toxic substance, the plaintiff would not have suffered harm. When group-based statistical evidence is proffered in a case, this means that the substance must be capable of causing the disease ("general causation") and that the substance must have caused the plaintiff's disease ("specific causation"). . . .

Thus, courts often address "exposure," "general causation," and "specific causation." Nevertheless, these items are not "elements" of a plaintiff's cause of action and in some cases may not require separate proof. So long as the plaintiff introduces admissible and sufficient evidence of factual causation the burden of production is satisfied. A court in a particular case may conclude that reasonable minds cannot differ about proof of factual causation under the general test *because* reasonable minds cannot differ on whether the plaintiff was exposed to the agent, whether the agent is generally capable of causing the disease, or whether the agent caused the plaintiff's disease in the specific case. These categories function as devices to organize a court's analysis, not as formal elements of the cause of action.⁶

Thus, according to the *Restatement (Third)*, cause in fact is a unitary concept. When courts divide it into component parts, this is simply an organizational device. Sometimes the plaintiff must explicitly make separate proofs concerning general causation and specific causation, but other times this will not be necessary.⁷ This position is clearly correct. It is correct, however, not because the causal question in toxic-tort cases is unique. Every tort case requires proof of both general and specific causation, but in many situations both are proven by the same evidence. Comment *c* explicitly recognizes this fact in the following paragraph:

In most traumatic-injury cases, the plaintiff can prove the causal role of the defendant's tortious conduct by observation, based upon reasonable inferences drawn from everyday experience and a close temporal and spatial connection between that conduct and the harm. Often, no other potential causes of injury exist. When a passenger in an automobile

6. See RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL HARM § 28 cmt. c, at 486 (Proposed Final Draft No. 1, 2005).

7. For this Article, I will set aside the question of "exposure" and whether it does or does not stand on equal footing with general and specific causation. For a useful recent discussion of exposure by a preeminent toxicologist, see Bernard D. Goldstein, *Toxic Torts: The Devil is in the Dose*, 16 J.L. & POL'Y 551 (2008).

collision suffers a broken limb, potential causal explanations other than the collision are easily ruled out [i.e. specific causation]; common experience reveals that the forces generated in a serious automobile collision are capable of causing a fracture [i.e. general causation].⁸

By proving that one's leg was broken in an automobile accident, one has proven both general and specific causation. Quite often in toxic-tort cases this "unitary proof" is not adequate. Because there may be substantial doubt as to whether a substance or a drug harms anyone (or harms anyone at the dosage experienced by the plaintiff), there is a question of general causation. And because even known causes may explain only a fraction of the incidence of a disease, courts ask for separate proof that a given substance or drug caused the plaintiff's illness. Thus, in these cases, it is somewhat formalistic to say that general and specific causation are not each elements of the tort. For all practical purposes, in the case where courts attend to both, both are necessary, and the causal question has become bifurcated in the sense that the plaintiff must offer explicit proof as to both causal questions.⁹ The very fact that comment *c* even obliquely recognizes this reality is one reason that it is controversial.

B. *Daubert and the New Admissibility Rules*

A second objection to comment *c* is that it commingles questions of tort law, which are properly within the scope of the *Restatement (Third)*, and questions of evidence law in the form of *Daubert*¹⁰ rulings, which are not. Comment *c* makes a valiant effort to address this concern by drawing a distinction between admissibility rulings under the law of evidence and substantive-sufficiency rulings under the law of torts. It purports to restrict its discussion to the issue of sufficiency. "The requirement of causation, the elements of agent-disease causation that are sometimes required when group studies are employed as proof, and the sufficiency of the evidence to meet the burden of production on causation are matters of substantive tort law, and they are addressed in the *Restatement*."¹¹

8. RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL HARM § 28 cmt. c, at 482 (Proposed Final Draft No. 1, 2005).

9. The difficulties plaintiffs face with respect to proving causation have caused some to advocate a relaxed causation standard in toxic torts. See, e.g., Margaret A. Berger, *Eliminating General Causation: Notes Towards a New Theory of Justice and Toxic Torts*, 97 COLUM. L. REV. 2117, 2117 (1997) ("The causation model is blind to the realities of scientific uncertainty and corporate behavior, and is inconsistent with notions of moral responsibility underlying tort law."). For a rebuttal, see Jonathan C. Mosher, *A Pound of Cause for a Penny of Proof: The Failed Economy of an Eroded Causation Standard in Toxic Tort Cases*, 11 N.Y.U. ENVTL. L.J. 531, 532-33 (2003).

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

11. See RESTATEMENT (THIRD) OF TORTS: LIAB. FOR PHYSICAL HARM § 28

However, as comment *c* notes, the two issues overlap. Indeed, they overlap in so many ways that disentangling them is impossible. First, the modern evidence rules surrounding the admissibility of expert testimony were, to a large extent, creatures of toxic-tort and drug cases.¹² The earliest pre-*Daubert* cases, such as *Ferebee v. Chevron Chemical Co.*,¹³ adopted a hands-off position with respect to the expert testimony.¹⁴ However, as time went by, courts began to develop various tests by which they might exclude expert testimony under Federal Rule of Evidence 702 or 703. One early influential case was Judge Jack Weinstein's opt-out opinion in the Agent Orange litigation, in which he excluded expert testimony and dismissed the cases of opt-out plaintiffs.¹⁵ Over the next several years, with some notable exceptions,¹⁶ courts hearing toxic-tort cases often excluded expert testimony. Needless to say, two of the three cases in the *Daubert* trilogy, *Daubert* and *Joiner*, also involved drugs or toxic injuries, as do many post-*Daubert* opinions.¹⁷

Second, the central concepts in comment *c* are the product of admissibility decisions. A clear majority of all reported tort cases that discuss general causation and specific causation involve questions of admissibility.¹⁸

cmt. *c*, at 486 (Proposed Final Draft No. 1, 2005).

12. The developing case law that led up to *Daubert* included *Ambrosini v. Labarraque*, 966 F.2d 1464 (D.C. Cir. 1992) (exposure to the drug Depo-Provera); *Christophersen v. Allied-Signal Corp.*, 939 F.2d 1106 (5th Cir. 1991) (exposure to fumes containing particles of nickel and cadmium); *Viterbo v. Dow Chemical Co.*, 826 F.2d 420, 422 (5th Cir. 1987) (exposure to chemical herbicide); *Ferebee v. Chevron Chemical Co.*, 736 F.2d 1529 (D.C. Cir. 1984) (same); *In re "Agent Orange" Products Liability Litigation*, 611 F. Supp. 1223 (E.D.N.Y. 1985) (exposure to Agent Orange), and the numerous cases involving the drug Bendectin, including *Daubert*, 509 U.S. 579. Of course, not every important admissibility decision involved a toxic tort. See, e.g., *United States v. Downing*, 753 F.2d 1224 (3d Cir. 1985) (involving eyewitness identification).

13. *Ferebee*, 736 F.2d at 1531–32 (addressing a plaintiff who alleged that he contracted pulmonary fibrosis as a result of long-term skin exposure to diluted solutions of paraquat, a herbicide).

14. "The case was thus a classic battle of the experts, a battle in which the jury must decide the victor." *Id.* at 1535.

15. *In re "Agent Orange"*, 611 F. Supp. at 1260–64.

16. See, e.g., *Ambrosini*, 966 F.2d at 1464.

17. See *Gen. Elec. Co. v. Joiner*, 522 U.S. 136 (1997) (exposure to polychlorinated biphenyls ("PCBs")); see, e.g., *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717 (3d Cir. 1994) (same).

18. Within the Westlaw "allfeds" database, I searched for cases with the terms "tort" and "general causation." I then included or excluded the terms "Daubert" and "702." My search produced 184 cases when the latter two terms were included and 109 cases when they were excluded. A substantial number of the 109 cases involved litigation under the National Vaccine Injury Act, 42 U.S.C. §§ 300aa-1 to -34 (2000 & Supp. II 2003). When I also excluded the term "vaccine," only 86 cases remained.

I repeated the analysis using the term "specific causation" instead of "general causation." The results were similar. 65 cases use the term when

Third, these opinions do not restrict themselves to narrow issues of admissibility. Many of the substantive legal discussions of the causal proof needed to prevail in a toxic-tort case are to be found in opinions whose primary purpose is to resolve admissibility controversies.¹⁹ In the process, they create the law that makes comment *c* possible.

Finally, many of these cases are like *Daubert* and *Joiner* in the sense that the result of the admissibility decision is outcome dispositive. The pattern is quite familiar. The trial court assesses plaintiff's causal proof in terms of both general and specific causation, it excludes the testimony on one or both of these causal grounds, and finally it enters a summary judgment for the defense because the plaintiff no longer has any admissible evidence on the causal question.²⁰ Whenever this occurs, the line between the evidentiary question of admissibility and the tort question of sufficiency is at best blurred. And as I discuss below, the line has become even more blurred in the wake of *Kumho Tire* and the

"Daubert" and "702" are excluded, while 189 cases use the term when they are included.

Repeating the search using the "allstates" database (and adding the term "Frye") produced less dramatic results, but it remains true that for both sets of analyses, cases including terms indicating that the case deals with admissibility questions outnumber cases excluding the term.

The results are even more one-sided if one searches only those cases that include the terms "toxic" and "tort."

19. For example, the court in *In re Breast Implant Litigation* offered the following assertion concerning plaintiff's burden on causation:

Causation in toxic tort cases is discussed in terms of general and specific causation. See, e.g., *Raynor v. Merrell [Pharm.], Inc.*, 104 F.3d 1371, 1376 (D.C. Cir. 1997). General causation is whether a substance is capable of causing a particular injury or condition in the general population, while specific causation is whether a substance caused a particular individual's injury.

In order to establish their claims, Plaintiffs "must show both general and specific causation—that is, that breast implants are capable of causing" the conditions complained of, and that "breast implants were the cause-in-fact" of the specific conditions.

In re Breast Implant Litig., 11 F. Supp. 2d 1217, 1224 (D. Colo. 1998) (quoting *Kelley v. Am. Heyer-Schulte Corp.*, 957 F. Supp. 873, 875 (W.D. Tex. 1997)).

20. See, for example, *Christophersen v. Allied-Signal Corp.*, 939 F.2d 1106, 1108 (5th Cir. 1991) (exposure to fumes containing particles of nickel and cadmium); *Viterbo v. Dow Chem. Co.*, 826 F.2d 420, 422 (5th Cir. 1987) (exposure to chemical herbicide); and the many cases involving the drug Bendectin, including *Turpin v. Merrell Dow Pharmaceuticals, Inc.*, 959 F.2d 1349 (6th Cir. 1992); *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (9th Cir. 1991), *vacated*, 509 U.S. 579 (1993); *DeLuca v. Merrell Dow Pharmaceuticals, Inc.*, 911 F.2d 941 (3d Cir. 1990); *Ealy v. Richardson-Merrell, Inc.*, 897 F.2d 1159 (D.C. Cir. 1990); *Brock v. Merrell Dow Pharmaceuticals, Inc.*, 874 F.2d 307 (5th Cir. 1989); *Richardson v. Richardson-Merrell, Inc.*, 857 F.2d 823 (D.C. Cir. 1988); *Lynch v. Merrell-National Laboratories*, 830 F.2d 1190 (1st Cir. 1987).

revisions to Federal Rule of Evidence 702.²¹

Comment *c* does commingle tort and evidence issues. How could it be otherwise? The law it discusses is a creature of admissibility rulings, and the comment's attempt to finesse the problem by distinguishing between admissibility and sufficiency is at best a formal response.

In sum, those who criticize comment *c* on these two grounds have a point. Despite its protestations to the contrary, the comment does lend some credence to the idea that the causal question may be bifurcated and that, in the area of toxic torts, it is very difficult to distinguish the separate emulsified domains of evidence law and tort law. However, the fault, if there is fault to be assigned, is not in the comment but in changes in the law itself. Indeed the changes run much deeper than the preceding discussion suggests.

I believe that the controversy surrounding comment *c* is only partly due to these specific critiques. It is also a response to what the comment stands for in a more general sense. The comment stands as a marker for the fundamental ways in which legal approaches to questions of causation have changed in the years between the *Restatement (Second)* and the *Restatement (Third)*.

II. CHANGES IN OUR APPROACH TO CAUSATION

The rise of toxic torts and the judicial response in terms of heightened admissibility rules and bifurcation of the causal question are part of more basic changes in the way we handle causal questions. In this Part, I touch on four components of this change: (a) merging admissibility and sufficiency, (b) shifting the balance of power away from juries and toward judges, (c) the increasingly important role of science in resolving causal questions, and (d) the increasing dominance of truth as the central adjudicative goal. I discuss each of these in turn. Before I do so, however, I should emphasize that all of this has occurred gradually and is at most a matter of degree. There is much about tort law's approach to the causal question that remains the same. In this Article, I emphasize change.

A. *Admissibility and Sufficiency*

Comment *c* attempts to compartmentalize the causal question in tort from the causal question in evidence by drawing a distinction between sufficiency and admissibility. But, as I noted above, the comment recognizes that this is a difficult line to draw and in fact the line has become increasingly blurred over time. To see why this is so requires a brief review of *Daubert* and the two Supreme Court cases that followed, *Joiner* and *Kumho Tire*.

In hindsight, one can see that *Daubert v. Merrell Dow*

21. See *infra* notes 28–34 and accompanying text.

*Pharmaceuticals*²² presented two separate ways of addressing the question of the admissibility of scientific evidence. On the one hand, it offered a list of four nonexclusive factors that one may use in considering whether an expert's testimony is sufficiently reliable to be admissible. The now well-known factors are falsifiability, error rate, peer review and publication, and general acceptance.²³ However, the opinion also discussed a second consideration, beginning with a quote from Judge Becker in *United States v. Downing*:

"An additional consideration under Rule 702—and another aspect of relevancy—is whether expert testimony proffered in the case is sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute" The consideration has been aptly described by Judge Becker as one of "fit." "Fit" is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes.²⁴

The court then proceeded to provide an example:

The study of the phases of the moon, for example, may provide valid scientific "knowledge" about whether a certain night was dark, and if darkness is a fact in issue, the knowledge will assist the trier of fact. However (absent creditable grounds supporting such a link), evidence that the moon was full on a certain night will not assist the trier of fact in determining whether an individual was unusually likely to have behaved irrationally on that night.²⁵

The example is unfortunate. Not only is it trivial, it presents a situation where there is no evidence of general causation—moonlight causing insanity—and thus focuses the reader's attention on the general situation, not the details of a given case. A much more relevant example would have focused on the case at hand. For these reasons and perhaps others, attention was deflected away from a "fit" analysis and the first wave of opinions following *Daubert* based their analysis almost entirely on the four factors.

The situation began to change four years later with the Supreme Court's decision in *General Electric v. Joiner*.²⁶ In a passage perhaps made more memorable with the use of a piece of law Latin, the Court reinvigorated the fit analysis and by example clarified that it applied to questions of specific causation as well as those of general causation:

22. 509 U.S. 579 (1993).

23. *Id.* at 593–94.

24. *Id.* at 591 (quoting *United States v. Downing*, 753 F.2d 1224, 1242 (3d Cir. 1985)) (citation omitted).

25. *Id.*

26. 522 U.S. 136 (1997).

[N]othing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered. That is what the District Court did here, and we hold that it did not abuse its discretion in so doing.²⁷

Two years later, in *Kumho Tire v. Carmichael*,²⁸ without ever using the word, the Court placed the fit analysis front and center. *Kumho Tire* involved a tire failure that the plaintiff attributed to a manufacturing defect.²⁹ In a key passage concerning whether the plaintiff's expert's testimony supported this conclusion, the Court said:

[C]ontrary to respondents' suggestion, the specific issue before the court was not the reasonableness *in general* of a tire expert's use of a visual and tactile inspection to determine whether overdeflection had caused the tire's tread to separate from its steel-belted carcass. Rather, it was the reasonableness of using such an approach, along with Carlson's particular method of analyzing the data thereby obtained, to draw a conclusion regarding *the particular matter to which the expert testimony was directly relevant*. That matter concerned the likelihood that a defect in the tire at issue caused its tread to separate from its carcass. The tire in question, the expert conceded, had traveled far enough so that some of the tread had been worn bald; it should have been taken out of service; it had been repaired (inadequately) for punctures; and it bore some of the very marks that the expert said indicated, not a defect, but abuse through overdeflection. The relevant issue was whether the expert could reliably determine the cause of *this* tire's separation.³⁰

In the aftermath of *Joiner* and *Kumho Tire*, federal-court admissibility decisions focus less on the *Daubert* factors³¹ and more

27. *Id.* at 146 (citation omitted).

28. 526 U.S. 137 (1999).

29. *Id.* at 142.

30. *Id.* at 153–54 (citation omitted).

31. This intuition that non-*Daubert* factors have played an increasingly important role is supported by a Rand study on the effect of *Daubert*. As Dixon and Gill have noted:

[A]fter *Daubert*, challengers and judges initially focused on the *Daubert* factors when challenging and evaluating reliability As time passed, however, and judges gained experience in evaluating reliability and appellate court opinions reinforced their authority, challengers and judges would have felt less compelled to address each *Daubert* factor and instead paid increasing attention to more general factors important to assessing reliability.

Lloyd Dixon & Brian Gill, *Changes in the Standards for Admitting Expert Evidence in Federal Civil Cases Since the Daubert Decision*, 8 PSYCHOL. PUB.

on a fit analysis.³² The central question in these opinions was whether there is too large an analytical gap between the evidence available to the expert and the conclusion the expert wishes to draw. Federal Rule of Evidence 702, as revised in 2000, reflects this shift as well. Among other things, the proponent must show that the expert's "testimony is based on sufficient facts or data" and that the expert "has applied the principles and methods reliably to the facts of the case."³³ An admissibility decision along these lines moves even closer to a sufficiency analysis. For better or worse, with respect to toxic torts, the law of tort and the law of evidence overlap more than ever.³⁴

*B. Shifting the Balance of Power Away from Juries and Toward Judges*³⁵

Civil jury trials are in long-term decline.³⁶ The decline began long before the *Daubert* revolution and has many causes.³⁷

POL'Y & L. 251, 284–85 (2002).

32. This is my assessment after reading most of the admissibility decisions dealing with issues of toxicology, epidemiology, and differential diagnosis for a treatise on scientific evidence.

33. The full text of Rule 702 reads:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

FED. R. EVID. 702.

34. See Bobak Razavi, *Admissible Expert Testimony and Summary Judgment: Reconciling Celotex and Daubert after Kochert*, 29 J. LEGAL MED. 307, 309–18 (2008).

35. I do not mean to suggest that as a whole the *Restatement (Third)* moves the law in this direction. To the contrary, in a number of ways it will tend to send more cases to the jury. For example, the abolition of the distinctions between invitees, licensees, and trespassers will tend to limit the frequency with which judges will decide owner-and-occupier cases by declaring that the defendant owed no duty to the plaintiff as a matter of law.

36. The definitive work on this decline is that of Marc Galanter. See Marc Galanter, *The Hundred-Year Decline of Trials and the Thirty Years War*, 57 STAN. L. REV. 1255 (2005) [hereinafter Galanter, *The Hundred-Year Decline of Trials*]; Marc Galanter, *The Vanishing Trial: An Examination of Trials and Related Matters in Federal and State Courts*, 1 J. EMPIRICAL LEGAL STUD. 459 (2004). Some believe that the trend is almost certain to continue. See Lawrence M. Friedman, *The Day Before Trials Vanished*, 1 J. EMPIRICAL LEGAL STUD. 689 (2004).

37. Professor Galanter discusses these causes in the articles cited *supra* note 36. The decline continues apace. Deborah R. Hensler, *Jurors in the Material World: Putting Tort Verdicts in Their Social Context*, 13 ROGER WILLIAMS U. L. REV. 8, 11–12 n.9 (2008) ("From 1995 to 2002, the total number of civil jury trials in state courts of twenty-two states decreased 25% (from

Simultaneously, judicial power has been on the rise. The emergence of managerial judging³⁸ and the increasing importance of devices such as summary judgment³⁹ have reshaped the judicial task. The decline in trials and the changes in the judicial role sweep across nearly all areas of law, but the impact is perhaps most strongly felt in torts because that is where most civil jury trials occur.⁴⁰

Toxic torts comprise a very small percentage of all tort cases and no more than a few percent of all tort jury trials.⁴¹ And, perhaps surprisingly, when compared to automobile and premises-liability cases, a larger percentage of toxic-tort cases go to trial.⁴² Nevertheless, the interaction between judges and juries is particularly stark in these cases because the reduction in jury trials is a direct result of judicial admissibility rulings rather than settlements.

Of course, the exclusion of one or more experts, or the restriction of what they may say on the stand, is not always fatal to the plaintiff's lawsuit. However, in the area of toxic torts this is frequently the case.⁴³ Prior to the *Daubert* revolution, nearly all of these cases would have gone to the jury.

Many commentators have noted this shift, and a substantial number have reacted negatively.⁴⁴ They argue that admissibility

23,453 to 17,617).”).

38. See Judith Resnik, *Managerial Judges*, 96 HARV. L. REV. 374, 382 (1982); Judith Resnik, *Trial as Error, Jurisdiction as Injury: Transforming the Meaning of Article III*, 113 HARV. L. REV. 924, 939–43 (2000).

39. Arthur R. Miller, *The Pretrial Rush to Judgment: Are the “Litigation Explosion,” “Liability Crisis,” and Efficiency Clichés Eroding Our Day in Court and Jury Trial Commitments?*, 78 N.Y.U. L. REV. 982, 1062–72 (2003).

40. Research from the early 1990s indicates that nearly eighty percent of the jury trials in state courts were tort cases. The federal situation is not quite as skewed, but here as well tort cases predominate, at least within cases based on diversity jurisdiction. See Neil Vidmar, *The Performance of the American Civil Jury: An Empirical Perspective*, 40 ARIZ. L. REV. 849, 851–52 (1998).

41. Two-thirds of the tort cases that went to a jury in state courts involved automobile accidents or premises liability. *Id.* at 851.

42. In the study cited by Vidmar, automobile-negligence and slander/libel cases resulted in jury trials only 1.9% of the time, whereas medical-malpractice suits went to the jury 8.2% of the time. The trial rate for toxic-substance torts was 6.5% and for product-liability cases it was 2.9%. *Id.* Of course, the low percentage of auto cases going to trial reflects settlement practices more than it does judicial intervention in the trial process.

43. See Margaret A. Berger, *Upsetting the Balance Between Adverse Interests: The Impact of the Supreme Court’s Trilogy on Expert Testimony in Toxic Tort Litigation*, 64 LAW & CONTEMP. PROBS. 289, 324 (2001).

44. Among the critical articles are Michel F. Baumeister & Dorothea M. Capone, *Admissibility Standards as Politics—The Imperial Gate Closers Arrive!!!*, 33 SETON HALL L. REV. 1025 (2003); Berger, *supra* note 43, at 324; Carl F. Cranor & David A. Eastmond, *Scientific Ignorance and Reliable Patterns of Evidence in Toxic Tort Causation: Is There a Need for Liability Reform?*, 64 LAW & CONTEMP. PROBS. 5, 15 (2001); Lucinda M. Finley, *Guarding the Gate to the Courthouse: How Trial Judges Are Using Their Evidentiary*

decisions are incoherent: judges use arbitrary criteria or apply their criteria arbitrarily and as a result do not do a good job of sorting reliable evidence from unreliable evidence. These arguments are often coupled with the complaint that judges have set the admissibility bar too high for plaintiffs in toxic-tort cases.⁴⁵

There is no gainsaying that the bar is higher than it once was. It could not be otherwise, for before *Daubert* very few cases were concluded as the result of expert-witness admissibility determinations.⁴⁶ Whether the bar is too high is, of course, a matter about which there is disagreement.⁴⁷ For good or ill, judges use admissibility rulings to resolve many cases, and they do so using the analysis set forth in comment *c*. They use the concept of general causation to resolve whole categories of toxic torts with very few trials. This has occurred, for example, with respect to silicone-implant litigation,⁴⁸ most of the Parlodel litigation,⁴⁹ and claims based on multiple chemical sensitivity.⁵⁰ And they use the concept of specific causation to resolve a multitude of claims where the plaintiff could not present reliable evidence tying the drug or substance to the specific injury.⁵¹ In the process, they created the

Screening Role to Remake Tort Causation Rules, 49 DEPAUL L. REV. 335, 337 (1999); Allan Kanner & M. Ryan Casey, *Daubert and the Disappearing Jury Trial*, 69 U. PITT. L. REV. 281 (2007); Razavi, *supra* note 34, at 317–18.

Not all objections focus on causation. Some critics do not like a greater judicial role simply because they believe that jury decision making furthers other goals such as legitimating the judicial process or leavening harsh legal rules with the yeast of everyday social norms. See Paul Butler, *The Case for Trials: Considering the Intangibles*, 1 J. EMPIRICAL LEGAL STUDIES 627 (2004).

45. See Baumeister & Capone, *supra* note 44, at 1033–34; Kanner & Casey, *supra* note 44, at 283.

46. The Bendectin litigation, of which *Daubert* is a part, is a good example. Almost all of the twenty-five or so Bendectin cases that were heard on the merits were tried to either a judge or a jury. Although the plaintiffs never prevailed in any of these cases, this was the result of defense verdicts or judicial reversal of plaintiff verdicts. See generally JOSEPH SANDERS, *BENDECTIN ON TRIAL: A STUDY OF MASS TORT LITIGATION* (1998).

47. There is some evidence that admissibility hearings resulted in fewer exclusionary decisions in the latter part of the 1990s, but we have no systematic data about what has happened in the last five years or so. Dixon & Gill, *supra* note 31, at 274–76.

A broader question is what we mean by “too high”? When commentators object that a case should have gone to the jury, they may mean that they think the case was wrongly decided. Or they may mean that the correct decision in the case is within a gray area and, therefore, if the case did get to a jury, no matter what the jury decided, the verdict would withstand appeal on the merits. Or they may mean that even if the case was correctly decided in the admissibility proceedings, nevertheless there should have been a trial.

48. See 3 DAVID L. FAIGMAN ET AL., *MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY* § 28:1 (2005–2006).

49. See *id.* § 21:6.

50. See *id.* § 22:12.

51. See, e.g., *Knight v. Kirby Inland Marine Inc.*, 482 F.3d 347, 355 (5th Cir. 2007); *Guinn v. Astrazeneca Pharms. LP*, 598 F. Supp. 2d 1239, 1243 (M.D.

law that makes comment *c* possible.

C. The Increasingly Important Role of Science in Resolving Causal Questions

The rise of toxic-tort litigation and the concomitant emergence of more stringent admissibility rules have altered our approach to causation in a third way, a way that in some respects is the most profound. Causation is increasingly understood through the lens of scientific understanding.⁵²

Plaintiffs cannot prevail without the assistance of experts, and perforce defendants must defend with experts of their own.⁵³ Often experts from more than one discipline are required, including toxicologists, epidemiologists, and medical doctors from many specialties.

But it is not the mere presence of experts that matters most. Rather, it is the way their disciplines, for example, epidemiology and toxicology, understand and define the causal problem. The scientific turn in understanding causation has several dimensions. One centerpiece of this approach is the use of probabilistic reasoning and statistics to confirm or disconfirm causal assertions. A marker for this shift is indicated by the use of the term “statistical significance” in judicial opinions. A Westlaw search for the term reveals that it appears in over 1100 opinions. However, the term appears in but a handful of cases prior to the 1970s. Nearly all of the approximately 100 cases from that decade concerned employment discrimination. Apparently, the first use of the term in a toxic-tort context occurred in *Palmer v. A.H. Robins Co.*,⁵⁴ a Dalkon Shield case. This was followed a few months later by the use of the term in an Agent

Fla. 2009).

52. See FED. COURTS STUDY COMM., REPORT OF THE FEDERAL COURTS STUDY COMMITTEE 97 (1990) (noting that “[e]conomic, statistical, technological, and natural and social scientific data are becoming increasingly important in both routine and complex litigation”); Gerald W. Boston, *A Mass-Exposure Model of Toxic Causation: The Content of Scientific Proof and the Regulatory Experience*, 18 COLUM. J. ENVTL. L. 181, 382 (1993) (emphasizing that courts are increasingly relying upon scientific evidence in toxic-tort cases); Alani Golanski, *General Causation at a Crossroads in Toxic Tort Cases*, 108 PENN ST. L. REV. 479, 515 (2003) (“Litigants increasingly rely on scientific evidence, and its use in legal cases has grown exponentially . . .”).

53. Precise recent data on the frequency of experts is hard to come by. What evidence we do have indicates that few tort cases go forward without experts. See Samuel R. Gross, *Expert Evidence*, 1991 WIS. L. REV. 1113, 1120 (1991); Carol Krafska et al., *Judge and Attorney Experiences, Practices, and Concerns Regarding Expert Testimony in Federal Civil Trials*, 8 PSYCHOL. PUB. POLY & L. 309, 318 (2002); Daniel W. Shuman, Elizabeth Whitaker & Anthony Champagne, *An Empirical Examination of the Use of Expert Witnesses in the Courts—Part II: A Three City Study*, 34 JURIMETRICS J. 193, 197, 204 (1994). For cases that do have experts, Krafska et al. report that the mean number of experts in 1998 was 4.31 per trial. Krafska et al., *supra*, at 319.

54. 684 P.2d 187, 200 (Colo. 1984).

Orange opinion.⁵⁵ Today, discussions of statistical reasoning are commonplace in both civil and criminal cases.

The rise of probabilistic reasoning is accompanied by a greater concern with questions of validity as this term is commonly understood by scientific communities. In *Daubert* itself, the court noted in footnote 9, “In a case involving scientific evidence, *evidentiary reliability* will be based upon *scientific validity*.”⁵⁶ Validity, of course, is a complex concept, involving questions of both internal validity⁵⁷ and external validity.⁵⁸ Explicitly or implicitly, courts frequently turn to these concepts in assessing evidence claims about toxic torts.⁵⁹ The concept of external validity has been particularly important in a number of opinions.⁶⁰ Again, one need look no further than the *Daubert* trilogy for an example. In *Joiner*, Chief Justice Rehnquist eviscerated the plaintiff’s causal claim by critiquing each of the animal and epidemiological studies in turn

55. *In re* “Agent Orange” Prod. Liab. Litig., 597 F. Supp. 740, 838 (E.D.N.Y. 1984).

56. *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 590 n.9 (1993).

57. Internal validity addresses our ability to infer that a relationship between two variables is causal or that the absence of a relationship implies the absence of causal relationship.

Threats to internal validity usually can be thought of as specification errors. Specification errors occur when the researcher fails to consider a factor that mediates the observed effect between two variables, either because it explains changes in both the “cause” and the “effect” or intervenes between the “cause” and the “effect” and acts independently on the “effect.”

Joseph Sanders, *Scientific Validity, Admissibility, and Mass Torts After Daubert*, 78 MINN. L. REV. 1387, 1401 (1994). Threats due to selection (“a threat that groups being compared are composed of different types of individuals and, therefore, that observed differences are due to factors other than the treatment under investigation”) are particularly important in this context. *Id.*

58. “External validity involves the ability to generalize conclusions to *particular* persons, settings and times and to *types* of persons, settings and times. . . . If a study uncovers a cause and effect relationship, the researcher must determine to which categories of individuals the relationship can be generalized.” *Id.* at 1404. For example, if a laboratory study finds a causal relationship between a substance and a disease in laboratory animals, the researcher must determine whether the results can be generalized to humans. *Id.*

59. The terms “external validity” and “internal validity” are only occasionally used in opinions. For example, the term “external validity” appears only in a little over 100 cases according to a Westlaw search for the term. However, the concept is used much, much more frequently.

60. The idea of internal validity is used far less frequently, and there is some evidence that judges have a more difficult time detecting this type of problem than they do detecting external-validity threats. See Margaret Bull Kovera & Bradley D. McAuliff, *The Effects of Peer Review and Evidence Quality on Judge Evaluations of Psychological Science: Are Judges Effective Gatekeepers?*, 85 J. APPLIED PSYCHOL. 574 (2000); Joseph Sanders, *The Merits of the Paternalistic Justification for Restrictions on the Admissibility of Expert Evidence*, 33 SETON HALL L. REV. 881, 926–28 (2003).

and then asserting that none of the studies met his implicit external-validity criteria. That is, each study was performed in circumstances sufficiently different from those of the plaintiff, so its findings failed to provide support for the plaintiff's claim.⁶¹

Justice Rehnquist's method of discussing each study in turn and demonstrating its flaws was criticized by Justice Stevens, who argued that the procedure used by the Court of Appeals for the Eleventh Circuit, which assessed the "weight of the evidence" by looking at all the research simultaneously, is preferable to the one-study-at-a-time method of the district court and the majority opinion.⁶² Regardless of what one concludes on this issue, the larger point is that the question of causal proof is reduced to a question of "best scientific practice."

The concern with validity is accompanied by an increased concern with method. If there is a single watchword in admissibility decisions, it is methodology. The vast majority of admissibility decisions in *Daubert* jurisdictions discuss expert methods. The language of causation is the language of the methodology used to support causal assertions. Again, the use of the term "methodology" is a recent addition to the judicial lexicon, at least when used to refer to expert testimony on causation.⁶³

When the courts do discuss methodology, they are usually referring to scientific methodology.⁶⁴ This fact highlights another aspect of the scientific turn in understanding causation. As courts rely more and more on a scientific view of causation, they tend to be less respectful of nonscientific evidence, especially clinical evidence that does not have an identifiable empirical base. One must not overstate the situation. Clinical judgments remain a central component of many, if not most, toxic-tort cases. Most importantly,

61. Gen. Elec. Co. v. Joiner, 522 U.S. 136, 144–46 (1997).

62. *Id.* at 153 (Stevens, J., concurring in part and dissenting in part). For a sophisticated discussion of this issue that sides with Justice Stevens, see Susan Haack, *Proving Causation: The Holism of Warrant and the Atomism of Daubert*, 4 J. HEALTH & BIOMED. L. 253 (2008).

63. Using the search terms "tort" and "expert /2 witness /p methodology" in a Westlaw search produces 509 opinions. All but two were decided in the 1980s or later. A simpler search using the terms "methodology & causation & tort" generates 2043 cases, all but twenty-six of which were decided in the 1980s or later. Over 1850 of these opinions were decided in 1990 or later.

The frequency of the term's usage can be measured in a different way. One may ask, "When courts talk about causation and expert witnesses in tort cases how frequently do they employ the term 'methodology?'" A Westlaw search using the terms "causation & tort & 'expert witness' & methodology" generates approximately 1000 opinions decided in 1990 or after. A search that uses the first three terms but does not use "methodology" generates approximately 4500 post-1989 cases. Thus approximately eighteen percent of all relevant cases in this period of time used the term.

64. Of the approximately 1000 post-1989 opinions that used the terms "causation & tort & 'expert witness' & methodology," over 580 used the term "scientific" in the same paragraph that they used the term "methodology."

proof of specific causation is usually achieved through the use of experts who bring relatively little empirical data to bear when asserting that a plaintiff's injury was caused by the particular substance at issue in the litigation.⁶⁵

Courts generally label this process "differential diagnosis" and sometimes assert that physicians are well trained in this endeavor.⁶⁶ However, this assertion is often based on confusion in the terminology. When physicians use this term in their medical practice, they are referring to the process of determining which disease produced a set of symptoms,⁶⁷ not what caused the underlying disease. The latter exercise is better described by the term "differential etiology."⁶⁸ Increasingly, courts recognize the difference and in the process become more skeptical of medical assertions of cause without evidence that the expert is trained in this task and without empirical evidence supporting the conclusion.⁶⁹

65. Joseph Sanders & Julie Machal-Fulks, *The Admissibility of Differential Diagnosis Testimony to Prove Causation in Toxic Tort Cases: The Interplay of Adjective and Substantive Law*, 64 LAW & CONTEMP. PROBS. 107, 130–37 (2001).

66. See, e.g., *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 262 (4th Cir. 1999); *In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 759 (3d Cir. 1994).

67. See STEDMAN'S MEDICAL DICTIONARY 491–92 (27th ed. 2000) (defining "differential diagnosis" as "the determination of which of two or more diseases with similar symptoms is the one from which the patient is suffering").

68. See *id.* at 624 (defining "etiology" as "[t]he science and study of the causes of disease and their mode of operation").

69. For example, the judge in *Wynacht v. Beckman Instruments, Inc.*, 113 F. Supp. 2d 1205 (E.D. Tenn. 2000), made the following observation:

[T]here is a fundamental distinction between Dr. Ziem's ability to render a medical diagnosis based on clinical experience and her ability to render an opinion on causation of Wynacht's injuries. Beckman apparently does not dispute, and the Court does not question, that Dr. Ziem is an experienced physician, qualified to diagnose medical conditions and treat patients. The ability to diagnose medical conditions is not remotely the same, however, as the ability to deduce, delineate, and describe, in a scientifically reliable manner, the causes of these medical conditions.

Id. at 1209; see also *Turner v. Iowa Fire Equip. Co.*, 229 F.3d 1202, 1208 (8th Cir. 2000); *Bowers v. Norfolk S. Corp.*, 537 F. Supp. 2d 1343, 1360–61 (M.D. Ga. 2007); *Medalen v. Tiger Drylac U.S.A., Inc.*, 269 F. Supp. 2d 1118, 1137 (D. Minn. 2003).

Several commentators also question the reliability of these assertions when rendered by individuals with little experience based solely on their clinical judgment. See Edward J. Imwinkelried, *The Admissibility and Legal Sufficiency of Testimony About Differential Diagnosis (Etiology): Of Under- and Over-Estimations*, 56 BAYLOR L. REV. 391, 405 (2004) ("In short, an expert physician's opinion about the nature of an illness, based on a differential diagnosis, might well be more reliable than the same physician's opinion about causation, arrived at by differential etiology."); Gary E. Marchant, *Genetic Data in Toxic Tort Litigation*, 14 J.L. & POL'Y 7, 25 (2006) ("[T]he tort system currently relies on crude, inexact methods to evaluate specific causation."); Ian S. Spechler, *Physicians at the Gates of Daubert: A Look at the Admissibility of*

In sum, comment *c* signals the increasing importance of expert testimony, but even more significantly, it signals the dominance of scientific understandings of causation in toxic-tort cases. Critics of the scientific turn argue that judges rely too heavily on certain types of scientific evidence⁷⁰ or that they fail to appreciate the socially constructed, contextual nature of science and scientific knowledge.⁷¹ Some of these critiques have merit, but collectively they simply reinforce the point that this dominance defines both which understandings of causal proof are acceptable and which understandings are less acceptable.

D. The Increasing Dominance of Truth

The scientific turn has helped to produce one more change that reaches beyond the question of causation: it has privileged truth seeking as a goal of adjudication. Traditionally, truth seeking has been viewed as one of several stated objectives of adjudication.⁷² However, it is not the only objective, and it may sometimes compete with other goals. The most frequently articulated alternative objective is the peaceful resolution of disputes.⁷³ Peaceful resolution, in turn, depends at least in part on the willingness of the loser to accept the outcome, and thus a subsidiary goal of peaceful

Differential Diagnosis Testimony to Show External Causation in Toxic Tort Litigation, 26 REV. LITIG. 739, 772 (2007) (“Physicians should be required to show that they often determine external causation in evaluating patients, that this determination of external causation was a natural part of the differential diagnosis, or that some special circumstance qualifies them to give an opinion in the particular instance.”).

The trend toward relying less on clinical judgments may find an ally in the growing influence of evidence-based medicine within the medical community. See generally Arnold J. Rosoff, *Evidence-Based Medicine and the Law: The Courts Confront Clinical Practice Guidelines*, 26 J. HEALTH POL. POL’Y & L. 327 (2001) (providing an overview of the use of evidence-based medicine).

70. In this regard, the primacy of epidemiological evidence has been a frequent source of criticism. See Finley, *supra* note 44, at 337, 357.

71. Kanner & Casey, *supra* note 44, at 297 (“There is a battle underway for the soul of science. On the one hand are objective researchers. Environmental and social groups do not have the financial resources to fund their own research to meet their ideological needs. And opposed to objective research are the industry scientists, whose allegiance lies with their corporate backers, rather than the truth.”). For a well-balanced and thoughtful view of the ways in which judges do and do not idealize science, see David S. Caudill & Lewis H. LaRue, *Why Judges Applying the Daubert Trilogy Need to Know About the Social, Institutional, and Rhetorical—and Not Just the Methodological—Aspects of Science*, 45 B.C. L. REV. 1 (2003); Lewis H. LaRue & David S. Caudill, *A Non-Romantic View of Expert Testimony*, 35 SETON HALL L. REV. 1 (2004).

72. See FED. R. EVID. 102 (prescribing that the evidentiary rules shall be construed, inter alia, toward the end of ascertaining the truth).

73. See *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 597 (1993) (“[T]he balance that is struck by [the] Rules of Evidence [is] designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes.”).

resolution is achieving procedural justice. One well-accepted procedural-justice theory advanced by Tyler and Lind points to three factors that are important to the belief that procedures are fair: (1) neutrality (the authority engages in evenhanded treatment), (2) trust (the authority tries to be fair), and (3) status recognition (the authority treats one politely, with dignity, and with respect for one's rights and opinions).⁷⁴

The traditional model of adversarial adjudication is sometimes justified because of the priority it gives to peaceful settlement and procedural-justice goals⁷⁵ and its willingness to limit the search for truth in pursuit of these other goals.⁷⁶ Here is Laurence Tribe on this point in his famous article, *Trial by Mathematics*:

It would be a terrible mistake to forget that a typical lawsuit, whether civil or criminal, is only in part an objective search for historical truth. It is also, and no less importantly, a ritual—a complex pattern of gestures comprising what Henry Hart and John McNaughton once called “society’s last line of defense in the indispensable effort to secure the peaceful settlement of social conflicts.”⁷⁷

It is worth noting, however, that in a footnote accompanying this quotation, Professor Tribe added the following:

I do not exclude the possibility that, in extraordinary cases, and especially in cases involving highly technical controversies, the “historical” function may be so dominant and the need for public comprehension so peripheral that a different analysis would be in order, laying greater stress on trial accuracy and less on the elements of drama and ritual.⁷⁸

This passage is prescient. Confronted with complex toxic-tort causation questions, courts have placed increased emphasis on getting it right. As Carl Cranor notes in his book on toxic torts, “[T]he *Daubert* Court’s decision and its implications appear to symbolize that it is more important to the law to get the science

74. See Tom R. Tyler & E. Allan Lind, *Procedural Justice*, in HANDBOOK OF JUSTICE RESEARCH IN LAW 65, 65 (Joseph Sanders & V. Lee Hamilton eds., 2001).

75. Darryl K. Brown, *The Decline of Defense Counsel and the Rise of Accuracy in Criminal Adjudication*, 93 CAL. L. REV. 1585, 1588 (2005) (“One recognized feature of adversarial adjudication is that it gives higher priority to dispute resolution and party participation than inquisitorial systems, which are less willing to trade off accuracy for party control of adjudication practice.”).

76. Abram Chayes described the “traditional model” of adversarial adjudication as “relatively relaxed about the accuracy of its factfinding.” Abram Chayes, *The Role of the Judge in Public Law Litigation*, 89 HARV. L. REV. 1281, 1287 (1976).

77. Laurence H. Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329, 1376 (1971).

78. *Id.* at 1376 n.151.

right by means of *Daubert* reviews than to adjudicate more fully the justice of past events and lawful norms of behavior in a public forum.”⁷⁹

This has led to an increase in summary judgments⁸⁰ and other judicial devices that place producing the perceived correct outcome over other goals.⁸¹ The rise of a scientific understanding of causation is accompanied by the ascendancy of a search for the key scientific goal: truth.

CONCLUSION

Section 28, comment *c* has emerged as the single most controversial provision in the *Restatement (Third) of Torts: Liability for Physical and Emotional Harm*. In this Article, I review what I perceive to be the primary sources of the controversy: bifurcation of the causal question and intermingling of the law of evidence and the law of torts. Although the comment addresses each of these concerns, there is considerable merit to the criticisms. The problem, however, is not with the comment, but with changes in the law itself. Courts often do bifurcate the causal question in precisely the sense that they make both specific causation and general causation elements of the plaintiff's case. Moreover, the courts have hopelessly commingled the law of evidence and the law of torts in toxic-tort cases. These factors alone are sufficient to make the comment controversial.

However, the import of this comment runs deeper. Comment *c*

79. CARL F. CRANOR, TOXIC TORTS: SCIENCE, LAW, AND THE POSSIBILITY OF JUSTICE 349 (2006) (emphasis omitted).

80. JOE S. CECIL ET AL., FED. JUDICIAL CTR., TRENDS IN SUMMARY JUDGMENT PRACTICE: 1975–2000, at 3 (2007); Stephen B. Burbank, *Vanishing Trials and Summary Judgment in Federal Civil Cases: Drifting Toward Bethlehem or Gomorrah?*, 1 J. EMPIRICAL LEGAL STUD. 591, 617–18 (2004); Galanter, *The Hundred-Year Decline of Trials*, *supra* note 34, at 1266.

81. The Supreme Court's opinion in *Weisgram v. Marley Co.*, 528 U.S. 440 (2000), is indicative. Plaintiffs' expert testimony was admitted at trial and resulted in a favorable verdict. *Id.* at 445. The district court entered a judgment on the verdict, but the Court of Appeals for the Eighth Circuit reversed. *Id.* It held that Marley's motion for a judgment as a matter of law should have been granted because the testimony of plaintiffs' experts was incompetent to prove Weisgram's case. *Id.* The court of appeals then considered the remaining evidence in the light most favorable to Weisgram, found it insufficient to support the jury verdict, and directed judgment as a matter of law for Marley. *Id.* Although it recognized its discretion to remand for a new trial under Rule 50(d), the court of appeals rejected any contention that it was required to do so, stating that this was not a close case, plaintiffs had a fair opportunity to prove their strict-liability claim, they failed to do so, and there was no reason to give them a second chance. *Id.* at 445–46. The Supreme Court affirmed. *Id.* at 446. For a critical discussion of the case, see Robert A. Ragazzo, *The Power of a Federal Appellate Court to Direct Entry of Judgment as a Matter of Law: Reflections on Weisgram v. Marley Co.*, 3 J. APP. PRAC. & PROCESS 107, 109 (2001).

is noteworthy because it is a window into shifts in the judicial process that occurred in the years between the *Restatement (Second)* and the *Restatement (Third)*. Most fundamentally, it reflects the rise of science and scientific understandings of causation in the toxic-tort arena and elsewhere. For good or ill, this scientific turn has transformed tort law in both substantive and procedural ways.

Once afoot, the trends discussed in Part II are not easily cabined in the narrow arena of toxic torts. They may spill over into other areas of tort law as well. For this reason, if for no other, the prominent status accorded comment *c* in the *Restatement (Third)* is well deserved.