DEPOSITIONS IN A NUTSHELL

Friday, December 8, 2017

DEPOSING THE ACCIDENT RECONSTRUCTION EXPERT

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TABLE OF CONTENTS

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Introduction

Often, in contested claims of liability, each side retains an accident reconstruction expert to bolster the party's position that it did not cause the accident. This seminar is designed to provide a base strategy for deposing the opposition party's accident reconstruction expert. The materials and discussion center on conducting due diligence by way of deposition to determine whether the opposing expert has the proper credentials, relies on credible facts and utilizes reliable methodology in forming his opinions so as to be allowed to testify in trial.

I. What is accident reconstruction?

Accident reconstruction - a branch of causation forensics-is a scientific approach to solving the questions of how and why an accident occurred. This approach is usually performed by experts trained in the field of accident reconstruction engineering and physics. Often the expert is a former law enforcement officer. Reconstructing an accident requires a methodology that begins with known data such as vehicle rest positions, accident scene evidence and vehicle damage. Information such as pre and post impact direction of travel length of pre-impact skid marks, post impact distances moved, co-efficient of friction values for the various surfaces the vehicles traveled over, point of impact, impact angles and weights of the vehicles are all used as inputs into the equations used to reconstruct an accident. By working with this data in reverse, the accident reconstruction expert can form opinions such as speed, collision severity, visibility, driver behavior and other causal factors.

All types of accidents are investigated through reconstruction methodology, plane crashes, train accidents, crane failures, bridge collapses, auto accidents, etc.

II. Admissibility of Expert Testimony

The purpose of deposing the opposing party's accident reconstruction expert is to determine, first and foremost:

1. Whether the witness has sufficient credentials to qualify as an expert;
2. Whether the facts which form the basis of the expert's opinions are true, credible and verifiable;
3. Whether the methodology used by the expert to form the basis of his opinion is reliable; and
4. Whether the testimony will assist the trier of fact, through the appreciation of scientific or technical expertise, to understand the evidence of determine a fact in issue.

Going into any deposition, but particularly an expert witness deposition, you must have a goal in mind and a plan to achieve that goal. In deposing the accident reconstruction expert, the goal is to determine whether the expert meets the criteria to be allowed to testify in court.

Before deposing the accident reconstruction expert, review and refresh your knowledge of:

1 Louisiana Code of Evidence, Article 702;
2. The U.S. Supreme Court's opinion in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) (Attachment A); and
3. The Louisiana Supreme Court's opinion in *Cheairs v. State of Louisiana, DOTD, et. al.*, 03-680 (La. 12/3/03), 861 So.2d 536 (Attachment B).

Louisiana Code of Evidence Article 702 provides as follows:

Art. 702. Testimony by experts

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

(1) The expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
(2) The testimony is based on sufficient facts or data;
(3) The testimony is the product of reliable principles and methods; and

(4) The expert has reliably applied the principles and methods to the facts of the case.

In *Daubert*, the United States Supreme Court established a new standard to assist district courts in evaluating the admissibility of expert testimony. The new standard required district courts to perform a "gate keeping" function to "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." Important in that opinion is that the court defined the term "scientific methodology" and establishes a set of illustrative factors in determining whether the scientific methodology is reliable.

In *Cheairs*, the Louisiana Supreme Court established a three-prong inquiry for determining the admissibility of expert testimony:

> [T]he admission of expert testimony is proper only if all three of the following things are true:
>
> (1) The expert is qualified to testify competently regarding the matters he intends to address; (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*; and (3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue.

To reiterate, the purpose of deposing the accident reconstruction expert is to do due diligence on:

1. The expert's credentials and qualifications;
2. The factual basis for the expert's opinions; and
3. The methodology employed by the expert to reach his opinions.

III. Preparation

> Before anything else, preparation is the key to success.
> Alexander Graham Bell

1. Know your case, know the facts of your case, know everything in your file;
2. Read, know and understand the report of the accident reconstruction expert you are deposing. Your purpose is to find out everything you can about the accident reconstructionist's opinion and to do that you must dissect and understand his report.
3. Know the accident reconstruction expert. Read and understand the

curriculum vitae of the expert Check the credentials of the schools attended. Check the expert's licensure. Understand what the requirements are for membership in or certification by organizations of which he claims to be a a member. Secure reports, deposition transcripts and trial transcripts from other cases, read them and look for contradictions and inconsistencies with his opinions in your case.

4. Do an Internet search. Find what the accident reconstruction expert has published that relates to your case and read it. Check Westlaw and Lexis for court opinions discussing the expert's testimony or *Daubert* challenges involving the expert.
5. Know the science upon which the accident reconstructionist bases his opinions. Understand the concepts of co-efficient of friction, perception-reaction time, conservation of linear momentum, etc. You must be able to engage on the science to drill down into the basis of the opinions.
6. Create a detailed outline. The outline should include every point you intend to cover in the deposition. Outlines force you to analyze and organize your questions. Outlines keep you on track. Outlines prevent you from forgetting to question the expert on key issues.

IV. The Base Outline

A. Qualifications

1. Educational background and training
2. Special schools, seminars or courses attended since formal education
3. Employment history/job titles/job duties/how experience in the job provides expert with experience and expertise to render an opinion in the case
4. Employment experience in the field of accident reconstruction
5. Degrees, licenses, certificates/licensed engineer/how was license acquired/what criteria for license or certificate
6. Teaching and lecturing experience in accident reconstruction, engineering, physics, law enforcement
7. Publications and writings in the field that are germane to the issue
   a. Books
   b. Magazines
   c. Peer reviewed journals, by whom reviewed
   d. Any application of his writings to facts and opinions in case
   e. Familiar with any publications expressing views or opinions contrary to views expressed in his writings
8. Professional associations, societies, organizations in which witness holds membership
   a. How long

b. What is criteria for membership
c. Holds office in organization
d. Active on a committee
e. Has organization published standards, guidelines or recommended practices relating to subject matter of the case

9. Professional achievements, honors, awards
10. Explain what accident reconstruction is to the jury
11. What is witness' usual procedure in investigating and evaluating a case and rendering an opinion.

B. Bias

1. To whom are your services available
2. Fee schedule and fee arrangement
3. Prior work for opposing counsel
4. Percentage of work for plaintiff v. defendant
5. Percentage of work that is non-litigation related
6. Number of times testified in depositions and for whom
7. Number of times testified in trial and for whom
8. Ever not been qualified as an expert by a court
9. Has his testimony ever been barred by a court
10. For each case testified in:
    a. Subject matter of case
    b. Subject of his testimony
    c. For whom testified
    d. What opinions he offered
11. Number of times he has testified in same or similar context

C. Connection to Case

1. When retained/who retained
2. What were you asked to do/by whom
3. Anything told not to do/not to consider. By whom
4. What information was supplied:
    a. Reports
    b. Depositions
    c. Statements
    d. Photographs, videos, drawings
5. When was material supplied
6. Interviewed witnesses
7. How did expert decide what he would review
8. What materials did expert rely upon to formulate his opinions

9. What research did witness conduct
10. What literature did expert review
11. Has expert requested additional investigation or testing to be done

D. Understanding the Facts of the Case

1. Ask expert for a detailed explanation of what he understands to have happened in the accident.
2. What are the sources of the facts and information.
3. Did all or any of the facts assist in forming the basis of his opinion
4. Did expert disregard any facts, and if so, what facts
5. Anything told not to do/not to consider. By whom

E. Work Performed

1. What investigation did expert conduct
2. Did witness visit the scene
    a. When
    b. With whom
    c. Observations
    d. What work performed at the scene
3. What vehicles/instrumentalities/equipment inspected
    a. When
    b. With whom
    c. Observations
4. What photographed
5. What videotaped
6. What photos/video from others viewed
7. Measurements taken
8. Create a photo/video/measurement log
9. Create any drawings, sketches or renderings
10. What assumptions were made in the analysis
11. What assumptions were made in rendering the opinions
12. What is the basis for assumptions
13. Did expert conduct any testing
    a. What tested
    b. Why tested
    c. Test protocols
    d. Testing videotaped/witnessed
    e. Test results
14. Did witness perform any recreations or simulations
    a. Live, computer or animation

b. When/where
c. If live, who present
d. What done
e. What trying to determine
f. What computer program used

V. Determination of Point of Impact

a. Able to determine point of impact
b. What inform tion utilized to arrive at determination
c. Perform a debris field analysis
d. Gouge marks/scuff marks
e. Is that information relied upon the type of data or information normally relied upon by persons in your field to establish point of impact
f. What is your opinion as to location of point of impact
g. Any additional findings to corroborate your opinion

VI. Determination of Speed of Vehicles

1. What engineering principles and concepts did expert utilize to arrive at speed of vehicle

A. Energy Analysis

The pre-impact motion of a vehicle is characterized by what is called "kinetic energy" or motion energy, which is a mathematical description involving the vehicle's speed and weight. As a collision commences, the vehicle's kinetic energy and speed are reduced by

- energy lost to the road surface;
- energy lost during erratic motion and/or side-slipping;
- energy resulting in vehicle damage (and other vehicles or objects);
- energy transferred to property such as utility poles, fences, walls.

When the vehicle reaches its FRP, it has zero kinetic energy. The energy method of reconstructing the pre-impact speed of a vehicle includes isolating each event and identifying its energy loss, quantifying the energy loss by the equivalent speed needed to produce each loss, and then adding the equivalent speeds of all the events together using what is called "the combined speeds equation" to find the pre-impact vehicle speed. This is usually a minimum speed since some of the energy cannot be quantified. - American Prosecutors Research Institute, Crash Reconstruction Basics for Prosecutors

1. Skid mark length
   a. Drag factor analysis of roadway/drag sled or accelerometer/table
2. Crush analysis damage data from staged accidents with known speeds used to compare to accident vehicle damage
3. Speed from utility pole impact - known breaking point of various sizes of utility poles

B. Momentum Analysis

1. Conservation of momentum

C. Airborne Vehicle: Speed in a Vaulting Motion

D. Speed from Yaw Marks

E. What Methodology/What Formula Used

F. Time Distance Analysis

a. During any vehicle motion - speed, position and time are mathematically interrelated
b. Time distance analysis may be used to determine:
   i. Distance from impact when perception started
   ii. Time available for evasive action
   iii. Time needed for successful avoidance of collision
   iv. Assessment of inattentiveness or delay in reaction
   v. Determine experts perception time and reaction time used in formulating time distance calculations

G. Speeds From Event Data Recorder - Vehicle Black Box, Locomotive Event Recorder

H. Visability/Conspicuity/Illumination

- Did the expert conduct any analysis of visibility /conspicuity/illumination
- What type vehicle used
- Weather/ lighting conditions
- When did the object/pedestrian that was struck enter into the area illuminated by the vehicle lights
- Did background lights play a role in creating clutter and contributed to not detecting oncoming vehicle
- Were the signs/signals/warnings conspicuous

I. Opinions

1. Ask expert to give a detailed list of the opinions and conclusions she has reached
2. What is the basis for each opinion
3. On what facts is each opinion based
4. Did expert consult with any other expert or technical person to form opinions
5. Did expert consult with opposing counsel in formulating opinion
6. Did expert conduct any testing or calculations to formulate his opinions
7. Does anyone else share the experts opinion on any specific issue you contest
8. Did expert perform any type of mathematical analysis, prepare calculations or make measurements
9. What materials expert has created
10. Did expert prepare a report - confirm report you have is the right one.
11. Any supplemental reports generated or contemplated
12. Did expert prepare any trial exhibits, models, computer animations, etc.

J. Remaining Work to be Done

1. Is there any work that remains to be done
2. What is the nature of the work to be done
3. Has counsel requested that you do any additional work
4. What is purpose of additional work
5. Have you suggested to counsel that you would like t do additional work
6. What prohibited work from being done before deposition

On Rehearing In Part January 16, 2004

Original Image of 861 So.2d 536 (PDF)

Cheairs v. State ex rel. Department of Transp. and Development
Supreme Court of Louisiana. December 3, 2003 861 So.2d 536 2003-0680 (La. 12/3/03) *(Approx. 16 pages)*

Mark CHEAIRS

v.

STATE of Louisiana, through the DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, Baton Rouge Police Department, The State of Louisiana, through the Department of Public Safety and Corrections and State Farm Mutual Automobile Insurance Company.

No. 2003-C-0680.
Dec. 3, 2003.
Order Granting Rehearing Jan. 16, 2004.

Synopsis

Background: Driver injured when he struck a stationary Department of Transportation and Development (DOTD) maintenance vehicle brought negligence action against Department. After jury found department 55 percent at fault, the trial court entered judgment for plaintiff. Department appealed. The Court of Appeal affirmed.

Holdings: On grant of writ of certiorari, the Supreme Court, Calogero, C.J., held that:
1 traffic accident reconstructionist was qualified to testify concerning standards set forth in the Manual of Uniform Traffic Control Devices;
2 jury's finding that DOTD was negligent was not clearly erroneous; and
3 allocation of fault was not manifestly erroneous.

Affirmed.

Victory, J., dissented and assigned reasons and would grant rehearing and docket.

Traylor, J., dissented for reasons assigned by Victory, J., and would grant rehearing and docket.

West Headnotes (10)

Change View

1 **Evidence** Physical Facts
Traffic accident reconstructionist was qualified to testify in negligence action brought by motorist, who struck Department of Transportation and Development (DOTD) maintenance vehicle parked on road, concerning standards set forth in the Manual of Uniform Traffic Control Devices (MUTCD), even though he was not a traffic engineer, in light of reconstructionist's testimony that he had worked in development of traffic control plans, including lane closure issues and rerouting of traffic for incident management, that he had been involved in implementation of plans designed by others in compliance with standards set forth in MUTCD, reconstructionist's curriculum vitae also listed training he had received regarding application of the standards set forth in the MUTCD, as well as his work experience related to that document, and type of incident that led to motorist's injuries--a maintenance vehicle stopped to pick up debris in highway--was not one that involved exercise of engineering judgment. LSA-C.E. art. 702.

1 Case that cites this headnote

SELECTED TOPICS

Automobiles

Injuries from Defects or Obstructions In Highways and Other Public Places
Department of Transportation and Development

Opinion Evidence

Qualification of Expert Witness and Scope of Expert Testimony

Appeal and Error

Questions of Fact, Verdicts, and Findings
Manifestly Erroneous Findings of Trial Court

Secondary Sources

APPENDIX 1 KEY REGULATIONS AND STATUTES

Above Ground Storage Tank Guide Appendix 1

...P.L. 101-380, 101 Stat. 484 (1990) Sec. 1001 Definitions. 1002 Elements of liability. 1003 Defenses to liability. 1004 Limits on liability. 1005 Interest. 1006 Natural resources. 1007 Recovery by forei...

APPENDIX 1 STATUTES AND REGULATIONS

Stormwater Permit Man. Appendix 1

...Sec. 101. (a) The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that...

Liability, in motor vehicle-related cases, of governmental entity for injury or death resulting from ice or snow on surface of highway or street

97 A.L.R.3d 11 (Originally published in 1980)

...This annotation collects and discusses the state and federal cases which have involved an injury or death occurring in a motor vehicle accident allegedly resulting from ice or snow on the surface of a ...

See More Secondary Sources

Briefs

JOINT APPENDIX, VOL. I

2007 WL 4466887
Exxon Shipping Company, et al., Petitioners, v. Grant Baker, et al., Respondents.
Supreme Court of the United States
Dec. 17, 2007

...CHARLES A. De MONACO Assistant Chief Environmental Crimes Section Environment and Natural Resources Division U.S. Department of Justice P.O. Box 23985 Washington, D.C. 20026-3985 202-272-9879 Attorney ...

JOINT APPENDIX, VOL. II

2008 WL 4291229
Coeur Alaska, Inc., Petitioner, v. Southeast Alaska Conservation Council, et al., Respondents. State of Alaska, Petitioner, v. Southeast Alaska Conservation Council, et al., Respondents.
Supreme Court of the United States
Sep. 17, 2008

...This Record of Decision (ROD) documents the decision by the U.S. Environmental Protection Agency (EPA) Region 10 to issue

2 **Evidence** Physical Facts
Daubert test did not apply in determining whether traffic accident reconstructionist was qualified to testify regarding standards set forth in the Manual of Uniform Traffic Control Devices (MUTCD), even though reconstructionist was not traffic engineer, where *Daubert* concerned admissibility of new techniques as basis for expert scientific testimony, not determination whether expert met qualifications to testify concerning particular matter, and defendant Department of Transportation and Development (DOTD) did not question methodology used by expert. LSA-C.E. art. 702.

42 Cases that cite this headnote

3 **Appeal and Error** Competency of Witness
A district court's decision to qualify an expert witness will not be overturned absent an abuse of discretion.

36 Cases that cite this headnote

4 **Evidence** Knowledge, Experience, and Skill in General
The fact that a witness does not have a college degree generally does not disqualify him from testifying as an expert if the witness has sufficient experience; experience alone is normally sufficient to qualify a witness as an expert witness.

12 Cases that cite this headnote

5 **Evidence** Matters Involving Scientific or Other Special Knowledge in General
Evidence Necessity of Qualification
Evidence Necessity and Sufficiency
The admission of expert testimony is proper only if all three of the following things are true: (1) the expert is qualified to testify competently regarding the matters he intends to address, (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*, and (3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue.

39 Cases that cite this headnote

6 **Automobiles** Vehicles at Rest or Unattended
Automobiles Negligence in General
Evidence Conflict with Other Evidence
Jury's finding, in negligence action brought by motorist who struck Department of Transportation and Development (DOTD) maintenance vehicle parked on road, that DOTD negligently conducted emergency debris pick-up in traffic lanes of bridge was not manifestly erroneous, given that jury was presented with two theories of liability presented by two experts, namely, that motorist was negligent in following preceding car too closely for traffic conditions, or that DOTD worker was negligent in stopping vehicle in traffic lane and failing to adequately warn oncoming traffic; fact that jury chose to allocate 55 percent of fault to DOTD showed that neither party's view of evidence was completely accepted by jury.

4 Cases that cite this headnote

7 **Appeal and Error** Manifest or Obvious Error
In civil cases, the appropriate standard for appellate review of factual determinations is the manifest error-clearly wrong standard, which precludes the setting aside of a trial court's finding of fact unless that finding is clearly wrong in light of the record reviewed in its entirety.

7 Cases that cite this headnote

8 **Appeal and Error** Clearly Erroneous Findings
Appeal and Error Manifest or Obvious Error

a National Pollutant Discharge Elimination System (NPDES) permit for discharges...

JOINT APPENDIX, VOL. II

2008 WL 5422892
Hugh M. Caperton, Harman Development Corporation, Harman Mining Corporation, and Sovereign Coal Sales, Inc., Petitioners, v. A.T. Massey Coal Company, Inc., et al., Respondents.
Supreme Court of the United States
Dec. 29, 2008

...D.C. Offut, Jr. Stephen Burchett Perry W. Oxley David E. Rich Offut, Fisher & Nord Huntington, West Virginia Bruce E. Stanley Tarek F. Abdalla Reed Smith LLP Pittsburgh, Pennsylvania Attorneys for Appe...

See More Briefs

Trial Court Documents

In re River Canyon Real Estate Investments, LLC

2013 WL 4792272
In Re: RIVER CANYON REAL ESTATE INVESTMENTS, LLC, Debtor.
United States Bankruptcy Court, D. Colorado.
July 31, 2013

...THIS MATTER comes before the Court on the (i) Revised Fourth Amended Plan of Reorganization Proposed by River Canyon Real Estate Investments, LLC (the "Plan"), filed by Debtor River Canyon Real Estate ...

In re M.D. Moody & Sons, Inc.

2010 WL 6982486
In re: M.D. MOODY & SONS, INC., et al., Debtor.
United States Bankruptcy Court, M.D. Florida.
Mar. 05, 2010

...FN1. These Chapter 11 cases consist of the following four entities (the last four digits of their respective taxpayer identification numbers follow in parentheses): M.D. Moody & Sons, Inc. (2036), Mood...

In re Global Aviation Holdings Inc.

2012 WL 1141596
In re: GLOBAL AVIATION HOLDINGS INC., et al., Debtors.
United States Bankruptcy Court, E.D. New York.
Mar. 01, 2012

...Chapter 11 Global Aviation Holdings Inc. (the "Borrower") and certain of its affiliates, each as a debtor and debtor-in-possession (collectively, with the Borrower, the "Debtors") in the above captione...

See More Trial Court Documents

In civil cases, a reviewing court may not merely decide if it would have found the facts of the case differently; the reviewing court should affirm the trial court where the trial court judgment is not clearly wrong or manifestly erroneous.

1 Case that cites this headnote

9 **Appeal and Error** Clear, Plain, or Manifest Error
When the district court has allowed both parties to present their experts before making its factual determinations, the factfinder's choice of alternative permissible views cannot be considered to be manifestly erroneous or clearly wrong.

1 Case that cites this headnote

10 **Automobiles** Comparative Negligence and Apportionment of Fault
Automobiles Comparative Negligence and Apportionment of Fault
Evidence Nature, Condition, and Relation of Objects
Jury's allocation of 41 percent fault to motorist, 4 percent to phantom vehicle, and 55 percent to Department of Transportation and Development (DOTD) was not manifestly erroneous, in motorist's suit against DOTD to recover for injuries sustained when he struck DOTD maintenance vehicle parked in roadway so that driver could conduct emergency debris pick-up in traffic lanes of bridge; expert testified that debris pickup was a "planned" incident because DOTD knew that it would frequently be required to pick up debris from interstate, DOTD was aware of risk it created, DOTD's decision to allow driver to stop vehicle in travel lane, without requiring warning device in addition to single arrow board, involved great risk of harm, metal rods on roadway were not an emergency situation because they were not located in travel lanes, and motorist was driving in prudent and safe manner when he suddenly and unexpectedly confronted an emergency situation created by DOTD.

Attorneys and Law Firms

**538* Douglas M. Chapoton, Richard P. Ieyoub, Attorney General, Stacey A. Moak, Baton Rouge, for Applicant.

Daniel J. McGlynn, Karl J. Koch, Baton Rouge, for Respondent.

Opinion

***1* CALOGERO, Chief Justice.

Defendant, State of Louisiana, through the Department of Transportation and Development ("DOTD"), appeals a judgment of the First Circuit Court of Appeal, which affirmed a jury verdict allotting 55 percent fault to the DOTD for an accident that occurred when a vehicle being driven by plaintiff, Mark Cheairs, struck a stationary DOTD "Roadrunner" from the rear, causing him serious injuries. DOTD asserts that the jury's verdict was improperly based in part on opinion testimony from plaintiff's expert witness, Michael Gillen, that DOTD violated provisions of the Manual of Uniform Traffic Control Devices ("MUTCD"), an opinion that Gillen was purportedly not qualified to give because he is not a traffic engineer. Alternatively, DOTD asserts that both the jury's finding that DOTD's negligence caused the accident and the jury's decision to allot 55 percent of the fault to DOTD were manifestly erroneous.

On the expert witness issue, we find that the factors established by the United States Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993) do not directly address the issue presented here-i.e., whether an expert has ***2* the proper qualifications to testify, because the only issue directly addressed by *Daubert* is the reliability of an expert's methodology. We further find that the district court did not abuse its discretion when it found that Gillen was qualified to testify as an expert and admitted Gillen's expert testimony in part based on his application of the standards set forth in the MUTCD. Finally, on the basis of the record evidence, we find no manifest error in the jury's decision to impose a portion of the liability for the accident on the DOTD or in its allocation of 55 percent of the fault to DOTD.

FACTS AND PROCEDURAL HISTORY

Sometime during the early morning hours of April 2, 1997, an unidentified vehicle dropped metal rods [1] on the roadway of the Mississippi River Bridge in Baton Rouge, Louisiana. A passing motorist reported the presence of the rods to the Baton Rouge Police Department. Officers Frank Caruso and Tim Browning were dispatched to the bridge to investigate the report. When they saw the rods on the roadway, [2] they called the DOTD to send someone to pick up the rods.

DOTD employee Adam Broussard, who was operating the department's "Roadrunner" vehicle on the day in question, proceeded to the bridge to pick up the rods. Testimony at trial established that the Roadrunner was a special maintenance vehicle used by DOTD employees to quickly pick up debris on the interstate. The Roadrunner was an orange pick-up truck with a lighted electronic arrow board measuring 60 inches by 30 inches mounted on top of the cab. The Roadrunner was ***3** also ***539** equipped with two revolving yellow lights mounted on top of the cab. The Roadrunner may also have had orange flags mounted at the back, but trial testimony on that issue was inconsistent.

Broussard arrived at the location of the rods in the eastbound lane of the bridge at approximately 8:15 or 8:30 a.m. When he saw 30 or so metal rods on the roadway, he stopped the Roadrunner in a travel lane, turned on the arrow board, got out of the truck and picked up the rods, without incident. While picking up the rods in the eastbound lane, Broussard noticed that some eight or nine additional rods were lying on the westbound side of the bridge. Accordingly, he drove the Roadrunner to an exit, then proceeded to return across the bridge in the westbound lane. Again, Broussard stopped the Roadrunner-this time in the far left travel lane-and got out of the vehicle. Because he had stopped the Roadrunner midway between the place where the dropped rods began and the place where they ended, Broussard testified that he walked past the back of the Roadrunner, while he was signaling the traffic to move over with his hand.

At about the same time, plaintiff was driving his vehicle up the ramp to the Mississippi River Bridge. Plaintiff testified that he was following a white sedan that obscured his vision, making it impossible for him to see the Roadrunner until the white sedan abruptly changed lanes in order to avoid the stationary Roadrunner. By the time he saw the Roadrunner, plaintiff stated, he did not have time to make a safe lane change, which would have involved checking his mirrors to see if another vehicle was coming in the lane to his right. He simply tried to go around the Roadrunner as safely as possible under the alarming circumstances confronting him. However, because he did not have sufficient time to move over, the left front driver's side of his vehicle ***4** struck the right back passenger side of the Roadrunner. Plaintiff was badly injured as a result of the accident.

Plaintiff filed suit against a number of defendants, including the DOTD and another Louisiana State agency, the Department of Public Safety and Corrections. Also named as defendants were the Baton Rouge Police Department and State Farm Mutual Automobile Insurance Co. Liability and damages were bifurcated for trial, and liability alone was tried to a jury. The jury returned a verdict allotting 55 percent fault for the accident to DOTD, 41 percent fault to plaintiff, and 4 percent fault to the phantom vehicle that had apparently spilled the steel rods on the roadway of the bridge. The district court issued a judgment conforming to the jury verdict. The district court denied DOTD's motion for new trial. DOTD appealed to the First Circuit Court of Appeal, which, in an unpublished opinion, affirmed the trial court judgment, then denied DOTD's application for rehearing. *Cheairs v. State of Louisiana,* 2002-0083 (La.App. 1 Cir. 12/20/02), 837 So.2d 761. This court granted DOTD's application for supervisory writs to review the judgment below. *Cheairs v. State of Louisiana,* 2003-0680 (La.05/09/03), 843 So.2d 383.

EXPERT WITNESS QUALIFICATIONS

1 By its first two assignments of error, DOTD asserts that the district court erred as a matter of law by misapplying the standard governing admissibility of expert testimony established by the United States Supreme Court in *Daubert* and adopted by this court in *State v. Foret,* 628 So.2d 1116 (La.1993), and that the appellate court improperly failed to find that the district court abused its discretion when it allowed plaintiff's expert to testify.

***540 **5** In this case, plaintiff offered the expert testimony of Michael S. Gillen, a retired 20-year veteran of the Baton Rouge City Police Department, who had been employed since 1993 by a private corporation, National Collision Technologies, as a traffic reconstructionist. DOTD filed a motion *in limine* requesting that the district court hold a pre-trial *Daubert* hearing on the issue of whether Gillen was qualified to testify concerning application of the standards set forth in the MUTCD, which is a publication of the U.S. Department of Transportation, Federal Highway Administration, that "provides standards for design and

application of traffic control devices." MUTCD § 1A-4 (1998 ed.). DOTD challenged Gillen's qualifications to apply the standards set forth in the MUTCD on the basis of the following highlighted language from § 1A-4 of MUTCD:

> The decision to use a particular device at a particular location should be made on the basis of an engineering study of the location. Thus, while this Manual provides standards for design and application of traffic control devices, **the manual is not a substitute for engineering judgment.** It is the intent that the provisions of this Manual be standards for traffic control devices installation, but not a legal requirement for installation. **Qualified engineers are needed to exercise the engineering judgment inherent in the selection of traffic control devices, just as they are needed to locate and design the roads and streets with the devices complement.** Jurisdictions with responsibility for traffic control, that do not have qualified engineers on their staffs, should seek assistance from the State highway department, their county, a nearby large city, or a traffic consultant.

(Emphasis supplied by DOTD.) On the basis of the above language, DOTD argues that only traffic engineers are qualified to testify concerning the application of the standards set forth in the MUTCD.

Plaintiff points, however, to other provisions of the MUTCD, which seem to indicate that persons other than traffic engineers are qualified to apply the provisions of the manual. For example, plaintiff cites language from the official website of the United States Department of Transportation, Federal Highway Administration, found ***6** under the heading, "Who Uses the MUTCD? And How?" The answer given is, in pertinent part, as follows:

> Probably many more folks in more diverse professions than you might imagine. And they use the information for very different reasons! Here's how.
>
> * * *
>
> Organizations with completely different charters and constituents depend on the MUTCD. For example, law enforcement personnel rely on the MUTCD as they monitor driver behavior and investigate traffic incidents. The insurance and legal communities frequently refer to the MUTCD when investigating claims or proceedings with legal activities that arise from traffic-related incidents.
> http://mutcd.fhwa.dot.gov/kno-users.htm.

2 3 Admissibility of expert testimony in Louisiana is governed by La.Code of Evid. art. 702, which provides as follows:

> 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.

The above article follows Fed. Rule of Evid. 702, according to Official Comment ***541** (b) (1988) to La.Code of Evid. art. 702. A district court is accorded broad discretion in determining whether expert testimony should be held admissible and who should or should not be permitted to testify as an expert. Official Comment (d), citing 3 J. Weinstein & M. Berger, Weinstein's Evidence ¶ 702[02] (1981). *See also Merlin v. Fuselier Const., Inc.* 2000-1862, p. 12 (La.App. 5 Cir. 5/30/01), 789 So.2d 710, 718 ["Whether an expert meets the qualifications of an expert witness and the competency of the expert witness to testify in specialized areas is within the discretion of the trial court."] A district court's decision to qualify an expert will not be overturned absent an abuse of discretion. *Id.; State v. Castleberry,* 1998-1388 (La.4/13/99),758 So.2d 749, 776.

**7 In *Daubert,* the United States Supreme Court set a new standard to assist district courts in evaluating the admissibility of expert testimony. The new standard required the district courts to perform a "gatekeeping" function to "ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." 509 U.S. at 589, 113 S.Ct. 2786. *See also State v. Chauvin* 2002-1188 (La.5/20/03), 846 So.2d 697, 700-01. In *Kumho Tire Company, Ltd. v. Carmichael,* 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238 (1999), the United States Supreme Court held that the analysis established by *Daubert* is to be applied to determine the admissibility of all expert testimony, not just scientific testimony. *Merlin,* 2000-1862 at p. 12, 789 So.2d at 718. The *Kumho Tire* case dealt specifically with the issue of whether *Daubert* applies to engineering expert testimony. 526 U.S. 137, 119 S.Ct. 1167, 143 L.Ed.2d 238.

Daubert established the following non-exclusive factors to be considered by district courts to determine the admissibility of expert testimony:

(1) The "testability" of the scientific theory or technique;

(2) Whether the theory or technique has been subjected to peer review and publication;

(3) The known or potential rate of error; and

(4) Whether the methodology is generally accepted in the scientific community. *Daubert,* 509 U.S. at 592-94, 113 S.Ct. 2786. This court in *Foret* characterized the *Daubert* factors as "observations" which provide a "helpful guide for our lower courts in considering this difficult issue." 628 So.2d at 1123.

As is evident from the nature of the factors listed above, the United States Supreme Court was concerned in *Daubert* with determining the admissibility of new techniques as a basis for expert scientific testimony. *Foret,* 628 So.2d at 1121. The *Daubert* factors are designed to "assist the trial courts in their preliminary assessment **8 of whether the reasoning or methodology underlying the testimony is scientifically valid and can properly be applied to the facts at issue." *Chauvin,* 2002-1188 at 5, 846 So.2d at 701. *Daubert* requires that the reliability of expert testimony is to be ensured by a requirement that there be "a valid scientific connection to the pertinent inquiry as a precondition to admissibility." *Foret,* 628 So.2d at 1122, quoting *Daubert,* 509 U.S. at 580, 113 S.Ct. 2786. Significantly, the *Daubert* court was clearly not concerned with the issue raised by DOTD herein-whether the expert is qualified solely by education to give opinion testimony concerning a particular matter. Therefore, an important consideration in this case is the fact that DOTD does not question *methodology* regarding Gillen's testimony, methodology being the primary concern of the *Daubert* case.

4 Moreover, determination of the admissibility of expert testimony under *542 La.Code of Civ. Proc. art. 702 "turns upon whether it would assist the trier of fact to understand the evidence or to determine a fact in issue." Official Comment (c), citing 3 Weinstein & Berger, ¶ 702[02]. Generally, the fact that a witness does not have a college degree does not disqualify him from testifying as an expert if the witness has sufficient experience. *Manchack v. Willamette Industries, Inc.,* 24,599 (La.App. 2 Cir. 8/12/93), 621 So.2d 649, 653. Experience alone is normally sufficient to qualify a witness as an expert. *Id.*

5 The above principles should not, however, be interpreted to mean that a court should not consider an expert's qualifications when deciding whether to admit a particular expert's testimony, only that the *Daubert* case does not directly address that issue. In fact, *Daubert* itself notes that Fed. Rule of Evid. 702, the counterpart of La.Code of Evid. art. 702, "is premised on an assumption that the expert's opinion will have a reliable basis in the knowledge and experience of his discipline." **9 501 U.S. at 592, 111 S.Ct. 2456. Apparently in recognition of the fact that *Daubert* does not directly address that issue, the United States Eleventh Circuit Court of Appeal has developed a three-part inquiry to more fully assist district courts in determining all the relevant issues related to the admissibility of expert testimony, with the *Daubert* analysis serving as one of the three prongs. The three-prong inquiry was first set forth in *City of Tuscaloosa v. Harcros Chemicals, Inc.,* 158 F.3d 548 (11th Cir.1998), in which the court stated that the admission of expert testimony is proper only if all three of the following things are true:

> (1) the expert is qualified to testify competently regarding the matters he intends to address; (2) the methodology by which the expert reaches his conclusions is sufficiently reliable as determined by the sort of inquiry mandated in *Daubert;* and (3) the testimony assists the trier of fact, through the application of scientific, technical, or specialized expertise, to understand the evidence or to determine a fact in issue.

Id. at 562, 158 F.3d 548. When the Eleventh Circuit adopted this three-part inquiry in *Harcros Chemicals,* it cited, *inter alia,* the United States Third Circuit Court of Appeals' decision in *Petruzzi's IGA Supermarkets, Inc. v. Darling-Delaware Co.,* 998 F.2d 1224 (3d Cir.), *cert. denied sub nom, Moyer Packing Co. v. Petruzzi's IGA Supermarkets, Inc.,* 510 U.S. 994, 114 S.Ct. 554, 126 L.Ed.2d 455 (1993), in which the court set forth the same basic three-prong inquiry in a different way, as follows:

> There are three intertwined bases for excluding testimony under [Federal] Rule 702:(1) if the testimony will not assist the trier of fact; (2) if scientific evidence is not sufficiently reliable; and (3) if the particular expert does not

have sufficient specialized knowledge to assist the jurors. *See* Jack B. Weinstein & Margaret A. Berge, *Weinstein's Evidence* ¶ 702 [01] (1992).

Id. at 1238. As is evident from the above statement, the three factors set forth in the Eleventh Circuit's three-prong inquiry are derived directly from Fed. Rule of Evid. 702, which is identical to La.Code of Evid. art. 702. Further, both the third circuit in ***10** *Petruzzi's IGA Supermarkets* and the eleventh circuit in *Harcros Chemicals* cite language from *Daubert* in support of the inquiries they have established.

Because we find that this three-part inquiry provides more comprehensive guidance to district courts determining the admissibility of expert testimony, we adopt the eleventh circuit's inquiry here. The adoption of this three-prong inquiry should not be interpreted as a repudiation of the ***543** excellent principles for evaluating the methodology employed by expert witnesses set forth in *Daubert* and its progeny, including *Foret*. Those principles will continue to govern the second of the three prongs in the inquiry we adopt herein. We adopt the three-part inquiry only because we recognize that *Daubert* does not address all of the issues pertinent to the decision to admit expert testimony.

DOTD challenges Gillen's testimony in this case solely on the basis of the first prong of the inquiry listed above-i.e., whether he "is qualified to testify competently regarding the matters he intends to address." At the pre-trial *Daubert* hearing in this case, Gillen testified that he had worked in the development of traffic control plans, including lane closure issues and rerouting of traffic for incident management. Further, Gillen stated that he had been involved in the implementation of plans designed by others in compliance with the standards set forth in the MUTCD, which he referred to as a "reference manual." Gillen's *curriculum vitae* also listed the training he had received regarding application of the standards set forth in the MUTCD, as well as his work experience related to that document. Following the *Daubert* hearing, the district court qualified Gillen as an expert in the field of traffic reconstruction, and rejected DOTD's argument that Gillen was not qualified to apply the standards set forth in the MUTCD.

***11** At trial, Gillen's testimony included his opinion concerning the actions the DOTD should have taken in order to comply with both the standards of Part VI of MUTCD, relative, among other things, to "*Incident Management Operations*," as well as the standards contained in the "Maintenance Traffic Control Handbook," published by DOTD. Gillen testified that both documents recommend the use of two vehicles for lane closures even for the short period of time it would take to pick up the metal rods in this case. Gillen opined that the applicable standards of both MUTCD and the DOTD handbook were designed to encourage redundancy and conspicuity in the use of warning devices. DOTD improperly failed to use redundant, conspicuous warning devices to manage the incident in question, Gillen said.

We have closely reviewed the district court's decision to qualify Gillen as an expert in traffic reconstruction and to allow him to testify concerning application of the standards set forth in the MUTCD in light of the evidence presented at the pre-trial "*Daubert*" hearing, and find no abuse of the district court's exercise of its broad discretion in its determination to allow expert testimony in this case and to allow Gillen to testify as an expert. In response to DOTD's reliance on § 1A-4 of the 1988 edition of the MUTCD, we believe that the circumstances to which Gillen applied the standards set forth in the MUTCD in this case did not involve the type of "decision to use a particular device at a particular location," which that section requires be based on "an engineering study of the location." Similarly, despite the fact that MUTCD § 1A-4 specifically says that the standards provided therein are "not a substitute for engineering judgment," engineering judgment is not regularly employed in the type of situation that resulted in plaintiff's injuries herein. Obviously, engineers are not regularly involved in making the type of decision Broussard made concerning lane closure in response to a specific unpredictable incident. Those decisions are regularly made by police ***12** officers, like Gillen, and people like Broussard, who was assigned by DOTD to perform debris pickup duties on the date in question. In fact, DOTD allowed whatever employee was assigned to the Roadrunner to make decisions ***544** about lane closures and other traffic control devices necessary to incident control on a regular basis. Certainly, DOTD did not consider it necessary to undertake an engineering study of the location before allowing Broussard to close the lane in order to pick up the metal rods.

Further, regarding the other sentence from MUTCD § 1A-4 highlighted by DOTD, we believe it is axiomatic that "[q]ualified engineers are needed to exercise the engineering judgment inherent in the selection of traffic control devices, just as they are needed to locate and design the roads and streets which the devices complement." However, that fact

does not mean that Gillen, who is not an engineer by education, is not qualified to express his opinion concerning the application of the standards set forth in the MUTCD to lane closures necessary for incident management. The MUTCD is a massive work with provisions covering numerous areas of traffic control; engineers are obviously required to implement its provisions regarding such matters as traffic control devices at particular locations for long-term construction projects, as well as the design of streets and roads and the selection of attendant traffic control devices. However, as demonstrated by DOTD's own procedures, neither the MUTCD nor the DOTD handbook can logically be interpreted to mean that traffic engineers must be employed to make decisions about management of every incident that affects traffic control.

Ultimately, DOTD's argument is counterintuitive. It would be illogical and impractical for this court to conclude that highway department employees must consult an engineer before making any decisions related to traffic control, even when such decisions are necessitated by an unpredictable incident of very short duration, such as ***13** the incident at issue herein. In fact, DOTD allowed Broussard to make the decisions challenged in this case and Broussard clearly is not an engineer. Policemen and highway department employees must be allowed to make some decisions on the scene. As indicated by the information from the Federal Highway Department website quoted by plaintiff, the MUTCD is expressly intended to provide guidance to people other than engineers. Further, MUTCD § 1A-4, relied upon by DOTD, specifically permits "jurisdictions with responsibility for traffic control, that do not have qualified engineers on their staffs" to "seek assistance from the State highway department, their county, a nearby large city, or a traffic consultant," which seems to allow persons other than traffic engineers to apply the standards set forth in the MUTCD. The same conclusion could be reached concerning the DOTD handbook, which contains flow charts to guide persons making decisions about incident management that would surely be insultingly simple to a traffic engineer. If engineers alone are to be allowed to make such decisions, the need for the MUTCD and the DOTD handbook would be greatly diminished. If people other than traffic engineers can use the documents, people other than traffic engineers are obviously qualified to testify concerning their use. If Roadrunner operator Broussard is qualified to make decisions about lane closures, expert accident reconstructionist Gillen is certainly qualified to testify concerning the propriety of those decisions.

It should also be noted that the jury heard evidence regarding Gillen's qualifications and was free to afford his testimony whatever weight it deemed appropriate. Prior to the receipt of the testimony, the district court properly found that Gillen was qualified to testify concerning the standards set forth by the MUTCD and properly admitted the expert testimony of ***545** Gillen, who is qualified by experience, skill, ***14** and training, to state his opinion concerning the propriety of DOTD's actions, based on the standards set forth in the MUTCD and the DOTD's own handbook.

LIABILITY OF DOTD

6 Alternatively, DOTD challenges the jury's decision to impose liability on DOTD. By its third assignment of error, DOTD asserts that the jury's finding that DOTD negligently conducted the emergency debris pick-up in the westbound lanes of the bridge was manifestly erroneous. By its fourth assignment of error, DOTD asserts that the jury's finding that DOTD's conduct was a cause in fact of the accident was manifestly erroneous.

7 8 In civil cases, the appropriate standard for appellate review of factual determinations is, as DOTD acknowledges, the manifest error-clearly wrong standard, which precludes the setting aside of a trial court's finding of fact unless that finding is clearly wrong in light of the record reviewed in its entirety. *Cenac v. Public Access Water Rights Ass'n,* 2002-2660, p. 9, (La.6/27/03),851 So.2d 1006, 1023. Thus, a reviewing court may not merely decide if it would have found the facts of the case differently. *Id.* The reviewing court should affirm the trial court where the trial court judgment is not clearly wrong or manifestly erroneous. *Id.* at 9-10, 851 So.2d at 1023.

In support of its arguments, DOTD invokes the presumption that a following motorist in a rear-end collision has breached the duty not to follow too closely established by La.Rev.Stat.32:81 and therefore is negligent. This court recognized that presumption in *Mart v. Hill,* 505 So.2d 1120, 1123 (La.1987), in which we noted the fact that the risk of a rear-end collision is clearly within the scope of the statutory prohibition against following too closely. *Id.* According to DOTD, the cause of the accident was not the conduct of the DOTD, but plaintiff's failure to observe the road ***15** ahead and the plaintiff's decision to follow the white sedan too closely for the traffic conditions. DOTD also claims that it should not be held liable for the plaintiff's accident because plaintiff failed to prove that it violated

its duty to conform to the standard of conduct of a reasonable person in like circumstances. *Joseph v. Dickerson,* 99-1046, p. 7 (La.1/19/00), 754 So.2d 912, 916.

As DOTD notes, a presumption of negligence does apply to a following motorist in a rear-end collision. Ordinarily, the effect of the presumption is that the burden of proof shifts to the driver of the following vehicle, who is typically the defendant in the case. *See Boudreaux v. Wimberley.* 2002-1064, p. 6 (La.App. 3 Cir. 4/2/03),843 So.2d 519, 523. However, in the instant case, the following driver is not the defendant, but the plaintiff, who already bears the burden of proof. Therefore, the burden-shifting effect of the presumption is rendered moot in this case, and the plaintiff continues to bear the burden. Moreover, as recognized by this court in *Boudreaux,* "[f]ollowing vehicles have escaped liability for rear-end collisions by establishing that the forward vehicle, encountered in the dark, was stalled and unlighted, or that the unpredictable driving of the preceding motorist created a sudden emergency that the following motorist could not reasonably have anticipated." *Id.* at 6-7, 843 So.2d at 523, quoting *Sonnier v. Reed,* 532 So.2d 344, 345 (La.App. 3 Cir.1988). In the instant case, plaintiff argued that the DOTD's decision to stop the Roadrunner in the travel lane of the bridge with only the arrow board to warn motorists of its presence created a sudden emergency that he could not reasonably have anticipated.

9 ***546** As revealed by the record in this case, the parties presented two opposing views concerning the cause of the accident at issue herein. In fact, the parties essentially agreed on the salient facts surrounding the accident, and the jury's decision turned on its choice between two theories of liability presented by the two experts. When the ****16** district court has allowed both parties to present their experts before making its factual determinations, the factfinder's choice of alternative permissible views cannot be considered to be manifestly erroneous or clearly wrong. *See Fussell v. Roadrunner Towing and Recovery, Inc.,* 99-0194 (La.App. 1 Cir. 3/31/00),765 So.2d 373, 376, citing *Stobart v. State, Department of Transportation and Development,* 617 So.2d 880, 883 (La.1993).

Ultimately, the DOTD sought to convince the jury that plaintiff was solely liable for the accident in this case both because its conduct was completely reasonable under the circumstances and because plaintiff's conduct was unreasonable. For example, on the issue of the reasonableness of DOTD's action, DOTD asserted at trial that Broussard's decision to stop the Roadrunner in the travel portion of the far right lane was proper under all of the standards set forth in the MUTCD and the DOTD handbook, especially since he would only be stopped in that location for the very short period of time it would take to pick up the rods. DOTD sought to support its theory of the case primarily through the testimony of its expert traffic engineer, John Mounce, that Broussard followed proper departmental policy and met all of the requirements for stopping in the travel lane when he activated the lighted electronic arrow board, which Mounce repeatedly characterized as the best possible device for warning the motoring public concerning lane closures. On the issue of the unreasonableness of plaintiff's conduct, DOTD points to testimony that plaintiff's vision was greatly impaired because it had been tested at 20/200. DOTD also asserts that, had plaintiff not had such a serious vision impairment and had he been properly paying attention, he would have seen the Roadrunner, or at least the Roadrunner's arrow board, in plenty of time to make a safe, successful lane change.

****17** On the other hand, Plaintiff sought to convince the jury exactly the opposite-i.e., that DOTD's conduct was unreasonable under the circumstances and his conduct was reasonable. On the issue of the unreasonableness of DOTD's conduct, plaintiff asserted, primarily through the testimony of Gillen, that the procedures followed by Broussard were inadequate to properly warn motorists of the vehicle stopped in the travel portion of the bridge. In support of this theory, Gillen testified that both the standards set forth in the MUTCD and the DOTD handbook require the use of at least two vehicles for a debris pick-up operation, a work vehicle and a protection vehicle, and that DOTD's decision to allow Broussard to stop a single vehicle in the travel lane, without providing other warning signals, was both improper under the applicable standards and unreasonable under the circumstances. According to Gillen, the more warning devices used, the better the redundancy and conspicuity. Further, Gillen testified that Broussard's decision to stop the Roadrunner in the middle of the area where the rods were located was a violation of DOTD handbook,[3] as was his decision to try to wave traffic over with his finger or hand, instead of using a regulation 24 by 24-inch flag. Plaintiff also presented Broussard's testimony that he had only seen the DOTD ***547** handbook on one occasion, during a training class, and that he had never again looked at the handbook, although he had been told that he needed to familiarize himself with the handbook before going out on the Roadrunner. On the issue of the reasonableness of his own conduct, plaintiff sought to convince the jury that he was driving at a safe speed and at a safe distance behind the white sedan, and that his vision

impairment did not cause the accident because only his visual acuity-i.e., his ability to distinguish between fine characters-was compromised, and that seeing the arrow board did not require visual acuity.

***18** DOTD also sought to convince the jury that any failure to follow the standards set forth in the MUTCD and the DOTD handbook on its part did not cause the accident. In support of this argument, Mounce testified that having two vehicles on the scene would not have prevented the accident because plaintiff would have simply struck the first of the two vehicles he had come upon. Gillen testified however that having two vehicles would have greatly increased the probability that plaintiff would have seen the vehicles in time to make a safe, successful lane change because of the redundancy and conspicuity values of two vehicles, as opposed to one. Moreover, Gillen noted that the presence of two vehicles would necessarily have required the presence of two workers, one of whom could have been stationed farther down the bridge approach with a regulation warning flag to let motorists know about the need to change lanes.

As noted, the jury was presented with two opposing views of the cause of the accident that injured plaintiff. The jury's allocation of fault reveals that it actually chose a third view-i.e., that both the actions of DOTD and the actions of the plaintiff were unreasonable under the circumstances. The jury found that both parties were liable for the accident. The allocation of fault in this case reveals that neither the plaintiff's view of the evidence nor DOTD's view of the evidence was completely accepted by the jury. Following our review of the record evidence, we find no manifest error in the jury's finding that plaintiff's accident was caused in part by DOTD's breach of a duty it owed to plaintiff. Accordingly, the jury's decision to impose liability on the DOTD is not manifestly erroneous and that decision is hereby affirmed.

ALLOCATION OF FAULT

10 ***19** In its fifth and final assignment of error, DOTD asserts that the jury was manifestly erroneous in its allocation of fault between the parties. DOTD urges this court to reallocate fault to impose 100 percent of the fault on plaintiff. Alternatively, in the event this court finds, as it has, that the jury's decision to impose some of the liability for the accident on DOTD was not manifestly erroneous, DOTD asserts that no more than 10 percent fault should be allotted to DOTD.

In applying the manifest error standard to the factfinder's allocation of fault in *Petre v. State ex rel. Dept. of Transp. and Development,* 2001-0876 (La.4/3/02), 817 So.2d 1107, this court stated as follows:

> Whether or not we agree with the equal allocation of fault between Ms. Petre and DOTD, we find it difficult, if not impossible, to conclude that the district court's reasoning was manifestly erroneous. In analyzing the allocation of fault of the parties, the court of appeal correctly applied the manifest error standard. Furthermore, the court of appeal was correct in applying the *Watson* [*v. State Farm Fire & Casualty Insurance Co.,* 469 So.2d 967, 974 (La.1985)] factors, which include the following: ***548** 1) whether the conduct results from inadvertence or involved an awareness of the danger; 2) how great a risk was created by the conduct; 3) the significance of what was sought by the conduct; 4) the capacities of the actor, whether superior or inferior; and 5) any extenuating circumstances that might require the actor to proceed in haste, without proper thought.

Id. at 13, 817 So.2d at 1114-15.

In this case, the court of appeal failed to expressly consider each of the factors set forth in *Watson,* 469 So.2d at 974. Nevertheless, our application of those standards convinces us that the court of appeal correctly affirmed the jury's allocation of 55 percent of the fault to DOTD. Concerning the first *Watson* factor-i.e., whether the conduct results from inadvertence or involved an awareness of the danger, Gillen repeatedly testified that debris pickup was a "planned" incident because the DOTD knew that it would frequently be required to pick up debris from the interstate as revealed by the fact that DOTD assigned an employee to the Roadrunner each day for the sole purpose of having him drive around the interstate and pick up debris. Further, ***20** Mr. Gillen indicated, DOTD was aware of the risk it created by stopping a vehicle in a travel lane, while plaintiff's conduct was completely inadvertent. Concerning the second *Watson* factor-i.e., how great a risk was created by the conduct, Gillen testified that DOTD's decision to allow the Roadrunner operator to stop a vehicle in the travel lane of the interstate without requiring the use of a second vehicle, or even some other type of warning device, in addition to the single arrow board, involved a

great risk of harm, while plaintiff was simply driving in a prudent and safe manner when he suddenly and unexpectedly confronted an emergency situation created by the DOTD's imprudent actions.

Concerning the third *Watson* factor-i.e., the significance of what was being sought by the conduct, plaintiff presented the testimony of Officers Caruso and Browning that they did not consider the presence of the metal rods to present an emergency situation because they were not located in travel lanes of the bridge, but instead were located to the side of the roadway, close to the concrete barrier. Although the plaintiff did not dispute the significance of debris pickup in general, he did suggest that DOTD improperly treated the incident involved in this case as an emergency, as a result of which the debris pickup was conducted without proper safety considerations and at an inopportune time-i.e., rush hour. Gillen testified that debris pick-up is a pre-planned response and suggested that it should be done during off-peak hours, unless an emergency demands immediate action. Concerning the fourth *Watson* factor-i.e., the capacities of the actor, whether superior or inferior, the record evidence established that the DOTD, a state agency with the power and authority to close traffic lanes, had the superior capacity to prevent the accident by taking the necessary precautions mandated by the applicable standards set forth in the MUTCD and the DOTD handbook. Finally, concerning the fifth *Watson* factor-i.e., any extenuating ***21** circumstances that might require the actor to proceed in haste, as explained above, plaintiff disputed DOTD's assertion that the presence of the metal rods created an emergency that required it to act in haste. And, regarding the plaintiff, he testified that he was not in a hurry.

Our review of the record evidence reveals no manifest error in the jury's decision to allot 55 percent of the fault for the accident to the DOTD. Accordingly, that decision is hereby affirmed.

***549 DECREE**

We affirm the judgment of the court of appeal on the liability portion of the bifurcated trial finding DOTD 55 percent at fault for the plaintiff's accident. The case is remanded to the district court for trial of the second of the bifurcated phases, i.e., the damages suffered by plaintiff.

AFFIRMED.

VICTORY, J., dissents and assigns reasons.

TRAYLOR, J., dissents for the reasons assigned by VICTORY, J.

***1** VICTORY, J., dissenting.

I dissent from the majority opinion because, in my view, the jury's decision imposing liability on the DOTD was manifestly erroneous. Even if the DOTD had used two vehicles for this emergency pick-up operation, as the plaintiff's expert contended was required under the MUTCD standards, the accident would not have been prevented because plaintiff would have simply struck the first of the two vehicles.

Therefore, I respectfully dissent.

PER CURIAM.

We grant rehearing in this case for the sole purpose of withdrawing our order remanding the case to the district court for determination of damages. Damages were previously determined, immediately following the trial on liability, through binding arbitration on agreement of the parties. Otherwise, the application for rehearing filed by the State is denied.

All Citations

861 So.2d 536, 2003-0680 (La. 12/3/03)

Footnotes

1 Although the testimony at trial indicated that the rods were concrete rebar rods measuring between six and seven inches in length, the rod included among the exhibits in this case was approximately one-quarter to one-half inch in circumference and 24 inches long. It was initially reported that a "crate of nails" had been dropped on the bridge.

2 Some testimony at trial indicated that the rods were actually not located in the travel lanes of the bridge, but were located to the sides, near the concrete barriers.

3 DOTD's expert, Mounce, admitted that the DOTD handbook required that the Roadrunner be stopped before the rods, for the safety of the workman picking up the rods.

End of Document

Superseded by Rule as Stated In Kansas City Southern Railway Company v. Sny Island Levee Drainage District, 7th Cir.(Ill.), August 3, 2016

Daubert v. Merrell Dow Pharmaceuticals, Inc.
Supreme Court of the United States June 28, 1993 509 U.S. 579 113 S.Ct. 2786 125 L.Ed.2d 469 See All Citations *(Approx. 24 pages)*

Supreme Court of the United States

William DAUBERT, et ux., etc., et al., Petitioners,

v.

MERRELL DOW PHARMACEUTICALS, INC.

No. 92–102.
Argued March 30, 1993
Decided June 28, 1993.

Infants and their guardians ad litem sued pharmaceutical company to recover for limb reduction birth defects allegedly sustained as result of mothers' ingestion of antinausea drug Bendectin. The United States District Court for the Southern District of California, 727 F.Supp. 570, granted company's motion for summary judgment, and plaintiffs appealed. The Court of Appeals, 951 F.2d 1128, affirmed. Plaintiffs filed petition for writ of certiorari, which was granted. The Supreme Court, Justice Blackmun, held that: (1) "general acceptance" is not necessary precondition to admissibility of scientific evidence under Federal Rules of Evidence, and (2) Rules assign to trial judge the task of ensuring that expert's testimony both rests on reliable foundation and is relevant to task at hand.

Vacated and remanded.

Chief Justice Rehnquist filed opinion concurring in part and dissenting in part in which Justice Stevens joined.

West Headnotes (36)

Change View

1 **Evidence** Results of experiments
Federal Rules of Evidence superseded *Frye* "general acceptance" test for admissibility of scientific evidence. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

131 Cases that cite this headnote

2 **Federal Civil Procedure** Rules of Court in General
Supreme Court interprets legislatively enacted Federal Rules of Evidence as it would any statute.

27 Cases that cite this headnote

3 **Evidence** Relevancy in general
Basic standard of relevance under Federal Rules of Evidence is liberal one. Fed.Rules Evid.Rules 401, 402, 28 U.S.C.A.

104 Cases that cite this headnote

4 **Evidence** Results of experiments
Rigid "general acceptance" requirement for admission of scientific evidence would be at odds with "liberal thrust" of Federal Rules of Evidence and their general approach of relaxing traditional barriers to "opinion" testimony. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

SELECTED TOPICS

Opinion Evidence

Qualification or Competency of Expert Witness
Clear Abuse of Discretion Standard of Review
Qualifications and Admissibility of Opinion Testimony of Experts
Personal Injury Attorney Expert Testimony

Test of Admissibility of Expert Scientific Evidence

Secondary Sources

s 702:5. Reliability "gatekeeping" under Daubert/Kumho/rule 702: historical development and assessment

5 Handbook of Fed. Evid. § 702:5 (8th ed.)

...The United States Supreme Court has declared that the trial court has a gatekeeping obligation to determine whether the explanative theory underlying every expert witness' testimony, regardless of whet...

s 6266. Introduction

29 Fed. Prac. & Proc. Evid. § 6266 (2d ed.)

...Even if a witness is qualified to testify as an expert and her testimony would help the trier of fact, three subdivisions of Rule 702 impose on the trial judge additional responsibility to determine wh...

The Daubert Challenge to the Admissibility of Scientific Evidence

60 Am. Jur. Trials 1 (Originally published in 1996)

...Historically, federal trial courts' analyses and determinations with regard to the admissibility of scientific evidence were straight-forward and simple. From its formulation in 1923 until 1993, the so...

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Briefs

BRIEF OF AMICUS CURIAE TRIAL LAWYERS FOR PUBLIC JUSTICE IN SUPPORT OF RESPONDENTS

1997 WL 433329
General Electric Company v. Robert K. Joiner, Karen P. Joiner; Trial Lawyers for Public Justice
Supreme Court of the United States
July 30, 1997

...FN1.Pursuant to Rule 37.6 of the Rules of the Court, counsel for a party did not author this brief in whole or in part and no person or entity, other than the amicus curiae, its members, or counsel, ha...

BRIEF FOR PETITIONERS

1997 WL 304727
General Electric Company v. Robert K. Joiner
Supreme Court of the United States
May 30, 1997

...FN* Counsel of Record The opinion of the District Court is reported at 864 F. Supp. 1310 and appears at P.C.A. 34a. The opinion of the Court of Appeals is reported at 78 F.3d 524 and appears at P.C.A....

BRIEF FOR PETITIONERS

123 Cases that cite this headnote

5 **Evidence** Results of experiments
Trial judge is not disabled under Federal Rules of Evidence from screening purportedly scientific evidence. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

12 Cases that cite this headnote

6 **Evidence** Results of experiments
Under Federal Rules of Evidence, trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

1171 Cases that cite this headnote

7 **Evidence** Results of experiments
"Scientific," within meaning of Federal Rule of Evidence stating that if "scientific," technical, or other specialized knowledge will assist trier of fact to understand evidence or to determine fact in issue an expert may testify thereto, implies grounding in methods and procedures of science. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

1171 Cases that cite this headnote

8 **Evidence** Matters involving scientific or other special knowledge in general
"Knowledge," within meaning of Federal Rule of Evidence stating that if scientific, technical, or other specialized "knowledge" will assist trier of fact to understand evidence or to determine fact in issue an expert may testify thereto, connotes more than subjective belief or unsupported speculation. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

1470 Cases that cite this headnote

9 **Evidence** Matters involving scientific or other special knowledge in general
Subject of scientific knowledge need not be "known" to certainty to permit expert testimony, since, arguably, there are not certainties in science. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

133 Cases that cite this headnote

10 **Evidence** Matters involving scientific or other special knowledge in general
Inference or assertion must be derived by scientific method to qualify as "scientific knowledge," within meaning of Federal Rule of Evidence stating that if scientific, technical, or other specialized knowledge will assist trier of fact to understand evidence or to determine fact in issue an expert may testify thereto. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

894 Cases that cite this headnote

11 **Evidence** Basis of Opinion
For scientific testimony to be admitted, proposed testimony must be supported by appropriate validation, in other words, "good grounds" based on what is known. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

510 Cases that cite this headnote

12 **Evidence** Matters involving scientific or other special knowledge in general
Requirement under Federal Rule of Evidence that expert's testimony pertain to "scientific knowledge" establishes standard of evidentiary reliability. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

670 Cases that cite this headnote

1992 WL 541269
Daubert (William, Joyce), Guardians for Daubert (Jason), DeYoung (Anita), Guardian for Schuller (Eric) v. Merrell Dow Pharmaceuticals, Inc.
Supreme Court of the United States
Dec. 02, 1992

...The opinion of the United States Court of Appeals for the Ninth Circuit is reported at 951 F.2d 1128, and is reprinted at J.A. 237. The memorandum decision and order of the United States District Cour...

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Trial Court Documents

United States of America v. Hernandez

2015 WL 10912345
UNITED STATES OF AMERICA, v. Santas HERNANDEZ, Defendant.
United States District Court, N.D. Georgia, Atlanta Division.
Jan. 23, 2015

...Presently before the Court is the Government's Motion to Exclude Defense Expert Testimony of Yolanda Pividal [Doc 153]. The Court holds that, while Ms. Pividal may testify as a lay fact witness and lay...

United States of America v. Benton

2016 WL 2839319
UNITED STATES OF AMERICA, Plaintiff, v. Jesse R. BENTON, John F. Tate and Dimitrios N. Kesari, Defendants.
United States District Court, S.D. Iowa, Central Division.
Apr. 20, 2016

...The original indictment in this matter charged that from in or about October, 2011, to in or about August, 2014, Defendants violated reporting requirements established by the Federal Election Campaign ...

Theofanis v. Boston Scientific Corporation

2005 WL 3832049
Katherine THEOFANIS, Personal Representative of the Estate of Chris C. Theofanis, deceased, Plaintiff, v. BOSTON SCIENTIFIC CORPORATION and Boston Scientific Scimed, Inc., Defendants.
United States District Court, S.D. Indiana, Indianapolis Division.
Mar. 16, 2005

...FN1. The issue of causation is complicated by the fact that following Mr. Theofanis' death, the hospital kept only his heart and the broken piece of guide wire. The rest of the guide wire and the Rotab...

See More Trial Court Documents

13 **Evidence** Results of experiments
In case involving scientific evidence, evidentiary reliability will be based upon scientific reliability. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

129 Cases that cite this headnote

14 **Evidence** Results of experiments
Condition for admission of scientific evidence or testimony under Federal Rule of Evidence, that evidence or testimony assist trier of fact to understand evidence or to determine fact in issue, goes primarily to relevance. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

557 Cases that cite this headnote

15 **Evidence** Results of experiments
In determining admissibility of scientific evidence or testimony, scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

90 Cases that cite this headnote

16 **Evidence** Results of experiments
"Helpfulness" standard under Federal Rule of Evidence for admissibility of scientific evidence or testimony requires valid scientific connection to pertinent inquiry as precondition to admissibility. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

219 Cases that cite this headnote

17 **Evidence** Matters of opinion or facts
Unlike ordinary witness, expert is permitted wide latitude to offer opinions, including those that are not based on first-hand knowledge or observation. Fed.Rules Evid.Rules 701–703, 28 U.S.C.A.

282 Cases that cite this headnote

18 **Evidence** Matters involving scientific or other special knowledge in general
Presumably, relaxation under Federal Rules of Evidence of usual requirement of first-hand knowledge when there is testimony by expert is premised on assumption that expert's opinion will have reliable basis in knowledge and experience of his discipline. Fed.Rules Evid.Rules 701–703, 28 U.S.C.A.

1305 Cases that cite this headnote

19 **Evidence** Matters involving scientific or other special knowledge in general
Faced with proffer of expert scientific testimony, trial judge must determine at outset whether expert is proposing to testify to (1) scientific knowledge that (2) will assist trier of fact to understand or determine fact in issue; preliminary assessment must be made of whether reasoning or methodology underlying testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to facts in issue. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

6078 Cases that cite this headnote

20 **Evidence** Determination of question of competency
Preliminary questions concerning qualification of person to be witness, existence of privilege, or admissibility of evidence should be established by preponderance of proof. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

38 Cases that cite this headnote

21 **Evidence** Results of experiments
Requirements for admissibility of scientific testimony or opinion under Federal Rule of Evidence do not apply specially or exclusively to unconventional evidence. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

19 Cases that cite this headnote

22 **Evidence** Scientific facts and principles

Scientific theories that are so firmly established as to have obtained status of scientific law, such as laws of thermodynamics, properly are subject to judicial notice. Fed.Rules Evid.Rule 201, 28 U.S.C.A.

21 Cases that cite this headnote

23 **Evidence** Basis of Opinion

Definitive checklist or test does not exist in making preliminary assessment of whether reasoning or methodology underlying expert testimony is scientifically valid and whether that reasoning or methodology properly can be applied to facts in issue. Fed.Rules Evid.Rule 104(a), 28 U.S.C.A.

4093 Cases that cite this headnote

24 **Evidence** Matters involving scientific or other special knowledge in general

Ordinarily, key question to be answered in determining whether theory or technique is scientific knowledge that will assist trier of fact, and, thus, whether expert testimony is admissible, will be whether theory or technique can be, and has been, tested. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

2008 Cases that cite this headnote

25 **Evidence** Matters involving scientific or other special knowledge in general

In determining whether theory or technique is scientific knowledge that will assist trier of fact, and, thus, whether expert testimony is admissible, is whether theory or technique has been subjected to peer review and publication. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

3097 Cases that cite this headnote

26 **Evidence** Matters involving scientific or other special knowledge in general

Publication of theory or technique, which is but one element of peer review, is not sine qua non of admissibility of expert testimony; publication does not necessarily correlate with reliability, and, in some instances, well-grounded but innovative theories will not have been published. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

1196 Cases that cite this headnote

27 **Evidence** Matters involving scientific or other special knowledge in general

Fact of publication of theory or technique, or lack thereof, in peer-review journal will be relevant, though not dispositive, consideration in assessing scientific validity of particular technique or methodology on which expert opinion is premised; submission to scrutiny of scientific community is component of "good science," in part because it increases likelihood that substantive flaws in methodology will be detected. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

2776 Cases that cite this headnote

28 **Evidence** Matters involving scientific or other special knowledge in general

In determining admissibility of expert opinion regarding particular scientific technique, court ordinarily should consider known or potential rate of error, and existence and maintenance of standards controlling technique's operation. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

3199 Cases that cite this headnote

29 **Evidence** Matters involving scientific or other special knowledge in general

"General acceptance" of scientific theory or technique can have bearing in determining admissibility of expert testimony. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

412 Cases that cite this headnote

30 **Evidence** Results of experiments
Widespread acceptance of scientific theory or technique can be important factor in ruling particular evidence admissible, and known technique that has been able to draw only minimal support within community may properly be viewed with skepticism. Fed.Rules Evid.Rules 104(a), 702, 28 U.S.C.A.

140 Cases that cite this headnote

31 **Evidence** Results of experiments
Inquiry envisioned by Federal Rule of Evidence pertaining to admission of scientific testimony and evidence is flexible one. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

24 Cases that cite this headnote

32 **Evidence** Results of experiments
Overarching subject of Federal Rule of Evidence on admission of scientific testimony and evidence is scientific validity, and, thus, evidentiary relevance and reliability, of principles that underlie proposed submission. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

308 Cases that cite this headnote

33 **Evidence** Results of experiments
Focus of Federal Rule of Evidence on admission of scientific testimony and evidence must be solely on principles and methodology, not on conclusions that they generate. Fed.Rules Evid.Rule 702, 28 U.S.C.A.

425 Cases that cite this headnote

34 **Evidence** Determination of question of competency
Judge assessing proffer of expert's scientific testimony under Federal Rule of Evidence on testimony by experts should also be mindful of other applicable rules, including rule on expert opinions based on otherwise inadmissible hearsay, rule allowing court to procure assistance of expert of its own choosing, and rule permitting exclusion of relevant evidence if its probative value is substantially outweighed by danger of unfair prejudice, confusion of issues, or misleading jury. Fed.Rules Evid.Rules 403, 702, 703, 706, 28 U.S.C.A.

617 Cases that cite this headnote

35 **Federal Civil Procedure** Scintilla of evidence
Federal Civil Procedure Weight and sufficiency
In event that trial court concludes that scintilla of scientific evidence presented supporting a position is insufficient to allow reasonable juror to conclude that position more likely than not is true, court remains free to direct verdict, and likewise to grant summary judgment. Fed.Rules Civ.Proc.Rules 50(a), 56, 28 U.S.C.A.; Fed.Rules Evid.Rule 702, 28 U.S.C.A.

216 Cases that cite this headnote

36 **Federal Civil Procedure** Rules of Court in General
Federal Rules of Evidence are designed not for exhaustive search for cosmic understanding but for particularized resolution of legal disputes.

25 Cases that cite this headnote

***2789** *Syllabus*[*]

***579** Petitioners, two minor children and their parents, alleged in their suit against respondent that the children's serious birth defects had been caused by the mothers'

prenatal ingestion of Bendectin, a prescription drug marketed by respondent. The District Court granted respondent summary judgment based on a well-credentialed expert's affidavit concluding, upon reviewing the extensive published scientific literature on the subject, that maternal use of Bendectin has not been shown to be a risk factor for human birth defects. Although petitioners had responded with the testimony of eight other well-credentialed experts, who based their conclusion ***2790** that Bendectin can cause birth defects on animal studies, chemical structure analyses, and the unpublished "reanalysis" of previously published human statistical studies, the court determined that this evidence did not meet the applicable "general acceptance" standard for the admission of expert testimony. The Court of Appeals agreed and affirmed, citing *Frye v. United States,* 54 App.D.C. 46, 47, 293 F. 1013, 1014, for the rule that expert opinion based on a scientific technique is inadmissible unless the technique is "generally accepted" as reliable in the relevant scientific community.

Held: The Federal Rules of Evidence, not *Frye,* provide the standard for admitting expert scientific testimony in a federal trial. Pp. 2792–99.

(a) *Frye*'s "general acceptance" test was superseded by the Rules' adoption. The Rules occupy the field, *United States v. Abel,* 469 U.S. 45, 49, 105 S.Ct. 465, 467, 83 L.Ed.2d 450, and, although the common law of evidence may serve as an aid to their application, *id.,* at 51–52, 105 S.Ct., at 468–469, respondent's assertion that they somehow assimilated *Frye* is unconvincing. Nothing in the Rules as a whole or in the text and drafting history of Rule 702, which specifically governs expert testimony, gives any indication that "general acceptance" is a necessary precondition to the admissibility of scientific evidence. Moreover, such a rigid standard would be at odds with the Rules' liberal thrust and their general approach of relaxing the traditional barriers to "opinion" testimony. Pp. 2792–94.

(b) The Rules—especially Rule 702—place appropriate limits on the admissibility of purportedly scientific evidence by assigning to the trial 580 ***580** judge the task of ensuring that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand. The reliability standard is established by Rule 702's requirement that an expert's testimony pertain to "scientific ... knowledge," since the adjective "scientific" implies a grounding in science's methods and procedures, while the word " knowledge" connotes a body of known facts or of ideas inferred from such facts or accepted as true on good grounds. The Rule's requirement that the testimony "assist the trier of fact to understand the evidence or to determine a fact in issue" goes primarily to relevance by demanding a valid scientific connection to the pertinent inquiry as a precondition to admissibility. Pp. 2794–96.

(c) Faced with a proffer of expert scientific testimony under Rule 702, the trial judge, pursuant to Rule 104(a), must make a preliminary assessment of whether the testimony's underlying reasoning or methodology is scientifically valid and properly can be applied to the facts at issue. Many considerations will bear on the inquiry, including whether the theory or technique in question can be (and has been) tested, whether it has been subjected to peer review and publication, its known or potential error rate and the existence and maintenance of standards controlling its operation, and whether it has attracted widespread acceptance within a relevant scientific community. The inquiry is a flexible one, and its focus must be solely on principles and methodology, not on the conclusions that they generate. Throughout, the judge should also be mindful of other applicable Rules. Pp. 2796–98.

(d) Cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof, rather than wholesale exclusion under an uncompromising "general acceptance" standard, is the appropriate means by which evidence based on valid principles may be challenged. That even limited screening by the trial judge, on occasion, will prevent the jury from hearing of authentic scientific breakthroughs is simply a consequence of the fact that the Rules are not designed to seek cosmic understanding but, rather, to resolve legal disputes. Pp. 2798–99.

951 F.2d 1128 (CA9 1991), vacated and remanded.

***2791** BLACKMUN, J., delivered the opinion for a unanimous Court with respect to Parts I and II–A, and the opinion of the Court with respect to Parts II–B, II–C, III, and IV, in which WHITE, O'CONNOR, SCALIA, KENNEDY, SOUTER, and THOMAS, JJ., joined. REHNQUIST, C.J., filed an opinion concurring in part and dissenting in part, in which STEVENS, J., joined, *post,* p. ——.

Attorneys and Law Firms

***581** Michael H. Gottesman, Washington, DC, for petitioners.

Charles Fried, Cambridge, MA, for respondent.

Opinion

582 ***582** Justice BLACKMUN delivered the opinion of the Court.

In this case we are called upon to determine the standard for admitting expert scientific testimony in a federal trial.

I

Petitioners Jason Daubert and Eric Schuller are minor children born with serious birth defects. They and their parents sued respondent in California state court, alleging that the birth defects had been caused by the mothers' ingestion of Bendectin, a prescription antinausea drug marketed by respondent. Respondent removed the suits to federal court on diversity grounds.

After extensive discovery, respondent moved for summary judgment, contending that Bendectin does not cause birth defects in humans and that petitioners would be unable to come forward with any admissible evidence that it does. In support of its motion, respondent submitted an affidavit of Steven H. Lamm, physician and epidemiologist, who is a well-credentialed expert on the risks from exposure to various chemical substances. [1] Doctor Lamm stated that he had reviewed all the literature on Bendectin and human birth defects—more than 30 published studies involving over 130,000 patients. No study had found Bendectin to be a human teratogen (*i.e.*, a substance capable of causing malformations in fetuses). On the basis of this review, Doctor Lamm concluded that maternal use of Bendectin during the first trimester of pregnancy has not been shown to be a risk factor for human birth defects.

583 ***583** Petitioners did not (and do not) contest this characterization of the published record regarding Bendectin. Instead, they responded to respondent's motion with the testimony of eight experts of their own, each of whom also possessed impressive credentials. [2] These experts had concluded that Bendectin can cause birth defects. Their conclusions were based upon "in vitro" (test tube) and "in vivo" (live) animal studies that found a link between Bendectin and malformations; pharmacological studies of the chemical structure of Bendectin that purported to show similarities between the structure of the drug and that of other substances known to cause birth defects; and the "reanalysis" of previously ****2792** published epidemiological (human statistical) studies.

The District Court granted respondent's motion for summary judgment. The court stated that scientific evidence is admissible only if the principle upon which it is based is " 'sufficiently established to have general acceptance in the field to which it belongs.' " 727 F.Supp. 570, 572 (S.D.Cal.1989), quoting *United States v. Kilgus,* 571 F.2d 508, 510 (CA9 1978). The court concluded that petitioners' evidence did not meet this standard. Given the vast body of epidemiological data concerning Bendectin, the court held, expert opinion which is not based on epidemiological evidence 584 ***584** is not admissible to establish causation. 727 F.Supp., at 575. Thus, the animal-cell studies, live-animal studies, and chemical-structure analyses on which petitioners had relied could not raise by themselves a reasonably disputable jury issue regarding causation. *Ibid.* Petitioners' epidemiological analyses, based as they were on recalculations of data in previously published studies that had found no causal link between the drug and birth defects, were ruled to be inadmissible because they had not been published or subjected to peer review. *Ibid.*

The United States Court of Appeals for the Ninth Circuit affirmed. 951 F.2d 1128 (1991). Citing *Frye v. United States,* 54 App.D.C. 46, 47, 293 F. 1013, 1014 (1923), the court stated that expert opinion based on a scientific technique is inadmissible unless the technique is "generally accepted" as reliable in the relevant scientific community. 951 F.2d, at 1129–1130. The court declared that expert opinion based on a methodology that diverges "significantly from the procedures accepted by recognized authorities in the field ... cannot be shown to be 'generally accepted as a reliable technique.' " *Id.*, at 1130, quoting *United States v. Solomon,* 753 F.2d 1522, 1526 (CA9 1985).

The court emphasized that other Courts of Appeals considering the risks of Bendectin had refused to admit reanalyses of epidemiological studies that had been neither published nor subjected to peer review. 951 F.2d, at 1130–1131. Those courts had found unpublished reanalyses "particularly problematic in light of the massive weight of the original published studies supporting [respondent's] position, all of which had undergone full scrutiny from the scientific community." *Id.*, at 1130. Contending that reanalysis is generally accepted by the

scientific community only when it is subjected to verification and scrutiny by others in the field, the Court of Appeals rejected petitioners' reanalyses as "unpublished, not subjected to the normal peer review process and generated solely for use in litigation." *Id.*, at 1131. The 585 ***585** court concluded that petitioners' evidence provided an insufficient foundation to allow admission of expert testimony that Bendectin caused their injuries and, accordingly, that petitioners could not satisfy their burden of proving causation at trial.

We granted certiorari, 506 U.S. 914, 113 S.Ct. 320, 121 L.Ed.2d 240 (1992), in light of sharp divisions among the courts regarding the proper standard for the admission of expert testimony. Compare, *e.g., United States v. Shorter,* 257 U.S.App.D.C. 358, 363–364, 809 F.2d 54, 59–60 (applying the "general acceptance" standard), cert. denied, 484 U.S. 817, 108 S.Ct. 71, 98 L.Ed.2d 35 (1987), with *DeLuca v. Merrell Dow Pharmaceuticals, Inc.,* 911 F.2d 941, 955 (CA3 1990) (rejecting the "general acceptance" standard).

II

A

In the 70 years since its formulation in the *Frye* case, the "general acceptance" test has been the dominant standard for determining the admissibility of novel scientific evidence at trial. See E. Green & C. Nesson, Problems, Cases, and Materials on Evidence 649 (1983). Although under increasing attack of late, the rule continues to be followed by a ****2793** majority of courts, including the Ninth Circuit. [3]

The *Frye* test has its origin in a short and citation-free 1923 decision concerning the admissibility of evidence derived from a systolic blood pressure deception test, a crude precursor to the polygraph machine. In what has become a famous (perhaps infamous) passage, the then Court of Appeals for the District of Columbia described the device and its operation and declared:

> "Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages 586 ***586** is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, *the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.*" 54 App.D.C., at 47, 293 F., at 1014 (emphasis added).

Because the deception test had "not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development, and experiments thus far made," evidence of its results was ruled inadmissible. *Ibid.*

1 The merits of the *Frye* test have been much debated, and scholarship on its proper scope and application is legion. [4] 587 ***587** Petitioners' primary attack, however, is not on the content but on the continuing authority of the rule. They contend that the *Frye* test was superseded by the adoption of the Federal Rules of Evidence. [5] We agree.

2 3 We interpret the legislatively enacted Federal Rules of Evidence as we would any statute. *Beech Aircraft Corp. v. Rainey,* 488 U.S. 153, 163, 109 S.Ct. 439, 446, 102 L.Ed.2d 445 (1988). Rule 402 provides the baseline:

> "All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, ****2794** by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible."

"Relevant evidence" is defined as that which has "any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence." Rule 401. The Rule's basic standard of relevance thus is a liberal one.

Frye, of course, predated the Rules by half a century. In *United States v. Abel,* 469 U.S. 45, 105 S.Ct. 465, 83 L.Ed.2d 450 (1984), we considered the pertinence of background common law in interpreting the Rules of Evidence. We noted that the Rules occupy the field, *id.,* at 49, 105 S.Ct., at 467, but, quoting Professor Cleary, the Reporter, 588 ***588** explained that the common law nevertheless could serve as an aid to their application:

" 'In principle, under the Federal Rules no common law of evidence remains. "All relevant evidence is admissible, except as otherwise provided...." In reality, of course, the body of common law knowledge continues to exist, though in the somewhat altered form of a source of guidance in the exercise of delegated powers.' " *Id.*, at 51–52, 105 S.Ct., at 469.

We found the common-law precept at issue in the *Abel* case entirely consistent with Rule 402's general requirement of admissibility, and considered it unlikely that the drafters had intended to change the rule. *Id.*, at 50–51, 105 S.Ct., at 468–469. In *Bourjaily v. United States*, 483 U.S. 171, 107 S.Ct. 2775, 97 L.Ed.2d 144 (1987), on the other hand, the Court was unable to find a particular common-law doctrine in the Rules, and so held it superseded.

4 Here there is a specific Rule that speaks to the contested issue. Rule 702, governing expert testimony, provides:

> "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."

Nothing in the text of this Rule establishes "general acceptance" as an absolute prerequisite to admissibility. Nor does respondent present any clear indication that Rule 702 or the Rules as a whole were intended to incorporate a "general acceptance" standard. The drafting history makes no mention of *Frye*, and a rigid "general acceptance" requirement would be at odds with the "liberal thrust" of the Federal Rules and their "general approach of relaxing the traditional barriers to 'opinion' testimony." *Beech Aircraft Corp. v. Rainey*, 488 U.S., at 169, 109 S.Ct., at 450 (citing Rules 701 to 705). See also Weinstein, ***589** Rule 702 of the Federal Rules of Evidence is 589Sound; It Should Not Be Amended, 138 F.R.D. 631 (1991) ("The Rules were designed to depend primarily upon lawyer-adversaries and sensible triers of fact to evaluate conflicts"). Given the Rules' permissive backdrop and their inclusion of a specific rule on expert testimony that does not mention " 'general acceptance,' " the assertion that the Rules somehow assimilated *Frye* is unconvincing. *Frye* made "general acceptance" the exclusive test for admitting expert scientific testimony. That austere standard, absent from, and incompatible with, the Federal Rules of Evidence, should not be applied in federal trials. [6]

B

5 6 That the *Frye* test was displaced by the Rules of Evidence does not mean, ****2795** however, that the Rules themselves place no limits on the admissibility of purportedly scientific evidence. [7] Nor is the trial judge disabled from screening such evidence. To the contrary, under the Rules the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.

7 8 9 10 11 12 13 The primary locus of this obligation is Rule 702, which clearly contemplates some degree of regulation of the subjects and theories about which an expert may testify. "*If scientific,* technical, or other specialized *knowledge will assist the trier of fact* to understand the evidence or to determine a fact in issue" an expert "may testify *thereto.*" (Emphasis added.) The subject of an expert's testimony must 590 ***590** be "scientific ... knowledge." [8] The adjective " scientific" implies a grounding in the methods and procedures of science. Similarly, the word "knowledge" connotes more than subjective belief or unsupported speculation. The term "applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds." Webster's Third New International Dictionary 1252 (1986). Of course, it would be unreasonable to conclude that the subject of scientific testimony must be "known" to a certainty; arguably, there are no certainties in science. See, *e.g.*, Brief for Nicolaas Bloembergen et al. as *Amici Curiae* 9 ("Indeed, scientists do not assert that they know what is immutably 'true'—they are committed to searching for new, temporary, theories to explain, as best they can, phenomena"); Brief for American Association for the Advancement of Science et al. as *Amici Curiae* 7–8 ("Science is not an encyclopedic body of knowledge about the universe. Instead, it represents a *process* for proposing and refining theoretical explanations about the world that are subject to further testing and refinement" (emphasis in original)). But, in order to qualify as "scientific knowledge," an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by appropriate validation—*i.e.*, "good grounds," based on what is known. In short, the requirement that an expert's testimony pertain to " scientific knowledge" establishes a standard of evidentiary reliability. [9]

14 15 16 591 ***591*** Rule 702 further requires that the evidence or testimony "assist the trier of fact to understand the evidence or to determine a fact in issue." This condition goes primarily to relevance. " Expert testimony which does not relate to any issue in the case is not relevant and, ergo, non-helpful." 3 Weinstein & Berger ¶ 702[02], p. 702–18. See also *United States v. Downing,* 753 F.2d 1224, 1242 (CA3 1985) ("An additional consideration ***2796*** 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." *Ibid.* "Fit" is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes. See Starrs, *Frye v. United States* Restructured and Revitalized: A Proposal to Amend Federal Evidence Rule 702, 26 Jurimetrics J. 249, 258 (1986). 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. Rule 702's "helpfulness" 592 ***592*** standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility.

17 18 That these requirements are embodied in Rule 702 is not surprising. Unlike an ordinary witness, see Rule 701, an expert is permitted wide latitude to offer opinions, including those that are not based on firsthand knowledge or observation. See Rules 702 and 703. Presumably, this relaxation of the usual requirement of firsthand knowledge—a rule which represents "a 'most pervasive manifestation' of the common law insistence upon 'the most reliable sources of information,' " Advisory Committee's Notes on Fed.Rule Evid. 602, 28 U.S.C.App., p. 755 (citation omitted)—is premised on an assumption that the expert's opinion will have a reliable basis in the knowledge and experience of his discipline.

19 20 21 22 23 Faced with a proffer of expert scientific testimony, then, the trial judge must determine at the outset, pursuant to Rule 104(a),[10] whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue.[11] This entails a preliminary assessment of whether the reasoning or methodology ***593*** underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue. We are confident that federal judges possess the capacity to undertake this review. Many factors will bear on the inquiry, and we do not presume to set out a definitive checklist or test. But some general observations are appropriate.

24 Ordinarily, a key question to be answered in determining whether a theory or technique is scientific knowledge that will assist the trier of fact will be whether it can be (and has been) tested. "Scientific methodology today is based on generating hypotheses and testing them to see if they can be falsified; indeed, this methodology is what distinguishes science from other fields of human inquiry." Green 645. See also C. Hempel, Philosophy of Natural Science 49 (1966) ***2797*** ("[T]he statements constituting a scientific explanation must be capable of empirical test"); K. Popper, Conjectures and Refutations: The Growth of Scientific Knowledge 37 (5th ed. 1989) ("[T]he criterion of the scientific status of a theory is its falsifiability, or refutability, or testability") (emphasis deleted).

25 26 27 Another pertinent consideration is whether the theory or technique has been subjected to peer review and publication. Publication (which is but one element of peer review) is not a *sine qua non* of admissibility; it does not necessarily correlate with reliability, see S. Jasanoff, The Fifth Branch: Science Advisors as Policymakers 61–76 (1990), and in some instances well-grounded but innovative theories will not have been published, see Horrobin, The Philosophical Basis of Peer Review and the Suppression of Innovation, 263 JAMA 1438 (1990). Some propositions, moreover, are too particular, too new, or of too limited interest to be published. But submission to the scrutiny of the scientific community is a component of "good science," in part because it increases the likelihood that substantive flaws in methodology will be detected. See J. Ziman, Reliable Knowledge: An Exploration 594 ***594*** of the Grounds for Belief in Science 130–133 (1978); Relman & Angell, How Good Is Peer Review?, 321 New Eng.J.Med. 827 (1989). The fact of publication (or lack thereof) in a peer reviewed journal thus will be a relevant, though not dispositive, consideration in assessing the scientific validity of a particular technique or methodology on which an opinion is premised.

28 Additionally, in the case of a particular scientific technique, the court ordinarily should consider the known or potential rate of error, see, *e.g., United States v. Smith,* 869 F.2d 348, 353–354 (CA7 1989) (surveying studies of the error rate of spectrographic voice

identification technique), and the existence and maintenance of standards controlling the technique's operation, see *United States v. Williams,* 583 F.2d 1194, 1198 (CA2 1978) (noting professional organization's standard governing spectrographic analysis), cert. denied, 439 U.S. 1117, 99 S.Ct. 1025, 59 L.Ed.2d 77 (1979).

29 30 Finally, "general acceptance" can yet have a bearing on the inquiry. A "reliability assessment does not require, although it does permit, explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance within that community." *United States v. Downing,* 753 F.2d, at 1238. See also 3 Weinstein & Berger ¶ 702[03], pp. 702–41 to 702–42. Widespread acceptance can be an important factor in ruling particular evidence admissible, and "a known technique which has been able to attract only minimal support within the community," *Downing,* 753 F.2d, at 1238, may properly be viewed with skepticism.

31 32 33 The inquiry envisioned by Rule 702 is, we emphasize, a flexible one.[12] Its overarching subject is the scientific validity ***595*** and thus the evidentiary relevance and reliability—of the principles that underlie a proposed submission. The focus, of course, must be solely on principles and methodology, not on the conclusions that they generate.

34 Throughout, a judge assessing a proffer of expert scientific testimony under Rule 702 should also be mindful of other applicable rules. Rule 703 provides that expert opinions based on otherwise inadmissible ***2798*** hearsay are to be admitted only if the facts or data are "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." Rule 706 allows the court at its discretion to procure the assistance of an expert of its own choosing. Finally, Rule 403 permits the exclusion of relevant evidence "if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury...." Judge Weinstein has explained: "Expert evidence can be both powerful and quite misleading because of the difficulty in evaluating it. Because of this risk, the judge in weighing possible prejudice against probative force under Rule 403 of the present rules exercises more control over experts than over lay witnesses." Weinstein, 138 F.R.D., at 632.

III

35 We conclude by briefly addressing what appear to be two underlying concerns of the parties and *amici* in this case. Respondent expresses apprehension that abandonment of "general acceptance" as the exclusive requirement for admission will result in a "free-for-all" in which befuddled juries are confounded by absurd and irrational pseudoscientific assertions. ***596*** In this regard respondent seems to us to be overly pessimistic about the capabilities of the jury and of the adversary system generally. Vigorous 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. See *Rock v. Arkansas,* 483 U.S. 44, 61, 107 S.Ct. 2704, 2714, 97 L.Ed.2d 37 (1987). Additionally, in the event the trial court concludes that the scintilla of evidence presented supporting a position is insufficient to allow a reasonable juror to conclude that the position more likely than not is true, the court remains free to direct a judgment, Fed.Rule Civ.Proc. 50(a), and likewise to grant summary judgment, Fed.Rule Civ.Proc. 56. Cf., *e.g., Turpin v. Merrell Dow Pharmaceuticals, Inc.,* 959 F.2d 1349 (CA6) (holding that scientific evidence that provided foundation for expert testimony, viewed in the light most favorable to plaintiffs, was not sufficient to allow a jury to find it more probable than not that defendant caused plaintiff's injury), cert. denied, 506 U.S. 826, 113 S.Ct. 84, 121 L.Ed.2d 47 (1992); *Brock v. Merrell Dow Pharmaceuticals, Inc.,* 874 F.2d 307 (CA5 1989) (reversing judgment entered on jury verdict for plaintiffs because evidence regarding causation was insufficient), modified, 884 F.2d 166 (CA5 1989), cert. denied, 494 U.S. 1046, 110 S.Ct. 1511, 108 L.Ed.2d 646 (1990); Green 680–681. These conventional devices, rather than wholesale exclusion under an uncompromising "general acceptance" test, are the appropriate safeguards where the basis of scientific testimony meets the standards of Rule 702.

36 Petitioners and, to a greater extent, their *amici* exhibit a different concern. They suggest that recognition of a screening role for the judge that allows for the exclusion of "invalid" evidence will sanction a stifling and repressive scientific orthodoxy and will be inimical to the search for truth. See, *e.g.,* Brief for Ronald Bayer et al. as *Amici Curiae.* It is true that open debate is an essential part of both legal and scientific analyses. Yet there are important differences between the quest for truth in the courtroom and the quest 597 ***597*** for truth in the laboratory. Scientific conclusions are subject to perpetual revision. Law, on the other hand, must resolve disputes finally and quickly. The scientific project is advanced by broad and wide-ranging consideration of a multitude of hypotheses, for those that are incorrect will eventually be shown to be so, and that in itself is an advance. Conjectures that

are probably wrong are of little use, however, in the project of reaching a quick, final, and binding legal judgment—often of great consequence—about a particular set of events in the past. We recognize that, in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic ***2799** insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes. [13]

IV

To summarize: "General acceptance" is not a necessary precondition to the admissibility of scientific evidence under the Federal Rules of Evidence, but the Rules of Evidence—especially Rule 702—do assign to the trial judge the task of ensuring that an expert's testimony both rests on a reliable foundation and is relevant to the task at hand. Pertinent evidence based on scientifically valid principles will satisfy those demands.

The inquiries of the District Court and the Court of Appeals focused almost exclusively on "general acceptance," as gauged by publication and the decisions of other courts. Accordingly, ***598** the judgment of the Court of Appeals is vacated, and the case is remanded for further proceedings consistent with this opinion.

It is so ordered.

Chief Justice REHNQUIST, with whom Justice STEVENS joins, concurring in part and dissenting in part.

The petition for certiorari in this case presents two questions: first, whether the rule of *Frye v. United States,* 54 App.D.C. 46, 293 F. 1013 (1923), remains good law after the enactment of the Federal Rules of Evidence; and second, if *Frye* remains valid, whether it requires expert scientific testimony to have been subjected to a peer review process in order to be admissible. The Court concludes, correctly in my view, that the *Frye* rule did not survive the enactment of the Federal Rules of Evidence, and I therefore join Parts I and II–A of its opinion. The second question presented in the petition for certiorari necessarily is mooted by this holding, but the Court nonetheless proceeds to construe Rules 702 and 703 very much in the abstract, and then offers some "general observations." *Ante,* at 2796.

"General observations" by this Court customarily carry great weight with lower federal courts, but the ones offered here suffer from the flaw common to most such observations—they are not applied to deciding whether particular testimony was or was not admissible, and therefore they tend to be not only general, but vague and abstract. This is particularly unfortunate in a case such as this, where the ultimate legal question depends on an appreciation of one or more bodies of knowledge not judicially noticeable, and subject to different interpretations in the briefs of the parties and their *amici.* Twenty-two *amicus* briefs have been filed in the case, and indeed the Court's opinion contains no fewer than 37 citations to *amicus* briefs and other secondary sources.

599 ***599** The various briefs filed in this case are markedly different from typical briefs, in that large parts of them do not deal with decided cases or statutory language—the sort of material we customarily interpret. Instead, they deal with definitions of scientific knowledge, scientific method, scientific validity, and peer review—in short, matters far afield from the expertise of judges. This is not to say that such materials are not useful or even necessary in deciding how Rule 703 should be applied; but it is to say that the unusual subject matter should cause us to proceed with great caution in deciding more than we have to, because our reach can so easily exceed our grasp.

But even if it were desirable to make "general observations" not necessary to decide ***2800** the questions presented, I cannot subscribe to some of the observations made by the Court. In Part II–B, the Court concludes that reliability and relevancy are the touchstones of the admissibility of expert testimony. *Ante,* at 2794–95. Federal Rule of Evidence 402 provides, as the Court points out, that "[e]vidence which is not relevant is not admissible." But there is no similar reference in the Rule to "reliability." The Court constructs its argument by parsing the language "[i]f scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, ... an expert ... may testify thereto...." Fed.Rule Evid. 702. It stresses that the subject of the expert's testimony must be "scientific ... knowledge," and points out that "scientific" "implies a grounding in the methods and procedures of science" and that the word "knowledge" "connotes more than subjective belief or unsupported speculation." *Ante,* at 2794–95. From this it concludes that "scientific knowledge" must be "derived by the scientific method." *Ante,* at 2795. Proposed testimony, we are told, must be supported by "appropriate validation." *Ante,* at 2795. Indeed, in footnote 9, the Court decides that "[i]n a case involving

scientific evidence, evidentiaryreliability ***600** will be based upon *scientific validity.*" *Ante,* at 2795, n. 9 (emphasis inoriginal).

Questions arise simply from reading this part of the Court's opinion, and countless more questions will surely arise when hundreds of district judges try to apply its teaching to particular offers of expert testimony. Does all of this *dicta* apply to an expert seeking to testify on the basis of "technical or other specialized knowledge"—the other types of expert knowledge to which Rule 702 applies—or are the "general observations" limited only to "scientific knowledge"? What is the difference between scientific knowledge and technical knowledge; does Rule 702 actually contemplate that the phrase "scientific, technical, or other specialized knowledge" be broken down into numerous subspecies of expertise, or did its authors simply pick general descriptive language covering the sort of expert testimony which courts have customarily received? The Court speaks of its confidence that federal judges can make a "preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue." *Ante,* at 2796. The Court then states that a "key question" to be answered in deciding whether something is "scientific knowledge" "will be whether it can be (and has been) tested." *Ante,* at 2796. Following this sentence are three quotations from treatises, which not only speak of empirical testing, but one of which states that the " 'criterion of the scientific status of a theory is its falsifiability, or refutability, or testability,' " *Ante,* at 2796–97.

I defer to no one in my confidence in federal judges; but I am at a loss to know what is meant when it is said that the scientific status of a theory depends on its "falsifiability," and I suspect some of them will be, too.

I do not doubt that Rule 702 confides to the judge some gatekeeping responsibility in deciding questions of the admissibility of proffered expert testimony. But I do not think 601 ***601** it imposes on them either the obligation or the authority to become amateur scientists in order to perform that role. I think the Court would be far better advised in this case to decide only the questions presented, and to leave the further development of this important area of the law to future cases.

All Citations

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Footnotes

* The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States v. Detroit Lumber Co.,* 200 U.S. 321, 337, 26 S.Ct. 282, 287, 50 L.Ed. 499.

1 Doctor Lamm received his master's and doctor of medicine degrees from the University of Southern California. He has served as a consultant in birth-defect epidemiology for the National Center for Health Statistics and has published numerous articles on the magnitude of risk from exposure to various chemical and biological substances. App. 34–44.

2 For example, Shanna Helen Swan, who received a master's degree in biostatistics from Columbia University and a doctorate in statistics from the University of California at Berkeley, is chief of the section of the California Department of Health and Services that determines causes of birth defects and has served as a consultant to the World Health Organization, the Food and Drug Administration, and the National Institutes of Health. *Id.,* at 113–114, 131–132. Stuart A. Newman, who received his bachelor's degree in chemistry from Columbia University and his master's and doctorate in chemistry from the University of Chicago, is a professor at New York Medical College and has spent over a decade studying the effect of chemicals on limb development. *Id.,* at 54–56. The credentials of the others are similarly impressive. See *Id.,* at 61–66, 73–80, 148–153, 187–192, and Attachments 12, 20, 21, 26, 31, and 32 to Petitioners' Opposition to Summary Judgment in No. 84–2013–G(I) (SD Cal.).

3 For a catalog of the many cases on either side of this controversy, see P. Giannelli & E. Imwinkelried, Scientific Evidence § 1–5, pp. 10–14 (1986 and

Supp.1991).

4 See, *e.g.*, Green, Expert Witnesses and Sufficiency of Evidence in Toxic Substances Litigation: The Legacy of *Agent Orange* and Bendectin Litigation, 86 Nw.U.L.Rev. 643 (1992) (hereinafter Green); Becker & Orenstein, The Federal Rules of Evidence After Sixteen Years—the Effect of "Plain Meaning" Jurisprudence, the Need for an Advisory Committee on the Rules of Evidence, and Suggestions for Selective Revision of the Rules, 60 Geo.Wash.L.Rev. 857, 876–885 (1992); Hanson, James Alphonzo Frye is Sixty–Five Years Old; Should He Retire?," 16 West.St.U.L.Rev. 357 (1989); Black, A Unified Theory of Scientific Evidence, 56 Ford.L.Rev. 595 (1988); Imwinkelried, The "Bases" of Expert Testimony: The Syllogistic Structure of Scientific Testimony, 67 N.C.L.Rev. 1 (1988); Proposals for a Model Rule on the Admissibility of Scientific Evidence, 26 Jurimetrics J. 235 (1986); Giannelli, The Admissibility of Novel Scientific Evidence: *Frye v. United States*, a Half–Century Later, 80 Colum.L.Rev. 1197 (1980); The Supreme Court, 1986 Term, 101 Harv.L.Rev. 7, 119, 125–127 (1987).

Indeed, the debates over *Frye* are such a well-established part of the academic landscape that a distinct term—"*Frye*–ologist"—has been advanced to describe those who take part. See Behringer, Introduction, Proposals for a Model Rule on the Admissibility of Scientific Evidence, 26 Jurimetrics J. 237, 239 (1986), quoting Lacey, Scientific Evidence, 24 Jurimetrics J. 254, 264 (1984).

5 Like the question of *Frye*'s merit, the dispute over its survival has divided courts and commentators. Compare, *e.g.*, *United States v. Williams*, 583 F.2d 1194 (CA2 1978) (*Frye* is superseded by the Rules of Evidence), cert. denied, 439 U.S. 1117, 99 S.Ct. 1025, 59 L.Ed.2d 77 (1979) with *Christophersen v. Allied–Signal Corp.*, 939 F.2d 1106, 1111, 1115–1116 (CA5 1991) (en banc) (*Frye* and the Rules coexist), cert. denied, 503 U.S. 912, 112 S.Ct. 1280, 117 L.Ed.2d 506 (1992), 3 J. Weinstein & M. Berger, Weinstein's Evidence ¶ 702[03], pp. 702–36 to 702–37 (1988) (hereinafter Weinstein & Berger) (*Frye* is dead), and M. Graham, Handbook of Federal Evidence § 703.2 (3d ed. 1991) (*Frye* lives). See generally P. Giannelli & E. Imwinkelried, Scientific Evidence § 1–5, at 28–29 (citing authorities).

6 Because we hold that *Frye* has been superseded and base the discussion that follows on the content of the congressionally enacted Federal Rules of Evidence, we do not address petitioners' argument that application of the *Frye* rule in this diversity case, as the application of a judge-made rule affecting substantive rights, would violate the doctrine of *Erie R. Co. v. Tompkins*, 304 U.S. 64, 58 S.Ct. 817, 82 L.Ed. 1188 (1938).

7 THE CHIEF JUSTICE "do[es] not doubt that Rule 702 confides to the judge some gatekeeping responsibility," *post*, at 2800, but would neither say how it does so nor explain what that role entails. We believe the better course is to note the nature and source of the duty.

8 Rule 702 also applies to "technical, or other specialized knowledge." Our discussion is limited to the scientific context because that is the nature of the expertise offered here.

9 We note that scientists typically distinguish between "validity" (does the principle support what it purports to show?) and "reliability" (does application of the principle produce consistent results?). See Black, 56 Ford.L.Rev., at 599. Although "the difference between accuracy, validity, and reliability may be such that each is distinct from the other by no more than a hen's kick," Starrs, *Frye v. United States* Restructured and Revitalized: A Proposal to Amend Federal Evidence Rule 702, 26 Jurimetrics J. 249, 256 (1986), our reference here is to *evidentiary* reliability—that is, trustworthiness. Cf., *e.g.*, Advisory Committee's Notes on Fed.Rule Evid. 602, 28 U.S.C.App., p. 755 (" '[T]he rule requiring that a witness who testifies to a fact which can be perceived by the senses must have had an opportunity to observe, and must have actually observed the fact' is a 'most pervasive manifestation' of the common law insistence upon 'the most reliable sources of information' " (citation omitted)); Advisory Committee's Notes on Art. VIII of Rules of Evidence, 28 U.S.C.App., p. 770 (hearsay exceptions will be recognized only

"under circumstances supposed to furnish guarantees of trustworthiness"). In a case involving scientific evidence, *evidentiary reliability* will be based upon *scientific validity.*

10 Rule 104(a) provides:

"Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b) [pertaining to conditional admissions]. In making its determination it is not bound by the rules of evidence except those with respect to privileges." These matters should be established by a preponderance of proof. See *Bourjaily v. United States,* 483 U.S. 171, 175–176, 107 S.Ct. 2775, 2778–2779, 97 L.Ed.2d 144 (1987).

11 Although the *Frye* decision itself focused exclusively on "novel" scientific techniques, we do not read the requirements of Rule 702 to apply specially or exclusively to unconventional evidence. Of course, well-established propositions are less likely to be challenged than those that are novel, and they are more handily defended. Indeed, theories that are so firmly established as to have attained the status of scientific law, such as the laws of thermodynamics, properly are subject to judicial notice under Federal Rule of Evidence 201.

12 A number of authorities have presented variations on the reliability approach, each with its own slightly different set of factors. See, *e.g., Downing,* 753 F.2d, at 1238–1239 (on which our discussion draws in part); 3 Weinstein & Berger ¶ 702[03], pp. 702–41 to 702–42 (on which the *Downing* court in turn partially relied); McCormick, Scientific Evidence: Defining a New Approach to Admissibility, 67 Iowa L.Rev. 879, 911–912 (1982); and Symposium on Science and the Rules of Evidence, 99 F.R.D. 187, 231 (1983) (statement by Margaret Berger). To the extent that they focus on the reliability of evidence as ensured by the scientific validity of its underlying principles, all these versions may well have merit, although we express no opinion regarding any of their particular details.

13 This is not to say that judicial interpretation, as opposed to adjudicative factfinding, does not share basic characteristics of the scientific endeavor: "The work of a judge is in one sense enduring and in another ephemeral.... In the endless process of testing and retesting, there is a constant rejection of the dross and a constant retention of whatever is pure and sound and fine." B. Cardozo, The Nature of the Judicial Process 178, 179 (1921).

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