

Ford Motor Co. v. Ledesma
 Tex., 2007.

Supreme Court of Texas.
 FORD MOTOR COMPANY, Petitioner,
 v.
 Tiburcio LEDESMA, Jr., Respondent.
No. 05-0895.

Argued Feb. 14, 2007.
 Decided Dec. 21, 2007.


Background: Owner of pickup truck brought products liability action against truck manufacturer, relating to truck's collision with two parked cars, and alleging that truck's rear leaf spring and axle assembly came apart and that such separation caused the drive shaft to dislodge from the transmission. The 335th Judicial District Court, Bastrop County, Terry L. Flenniken J., [2003 WL 25298517](#), entered judgment on jury's verdict for plaintiff. Defendant appealed. The Austin Court of Appeals, [173 S.W.3d 78](#), affirmed. Review was granted.

Holdings: The Supreme Court, [Don R. Willett, J.](#), held that:


- (1) testimony of plaintiff's expert witness, who was a metallurgical and mechanical engineer, was sufficiently reliable;
- (2) pattern jury charge's definition of manufacturing defect was erroneous;
- (3) appropriate remedy was reversal and remand rather than reversal and rendering of judgment for defendant; and
- (4) "producing cause" is a substantial factor in bringing about an injury, without which the injury would not have occurred, abrogating [Brown v. Bank of Galveston, Nat'l Ass'n](#), 963 S.W.2d 511, [Union Pump Co. v. Allbritton](#), 898 S.W.2d 773, [Haynes & Boone v. Bowser Bouldin, Ltd.](#), 896 S.W.2d 179, and [Rourke v. Garza](#), 530 S.W.2d 794.

Reversed and remanded.


West Headnotes

[1] Evidence 157  555.2


[157] Evidence
[157XII] Opinion Evidence
[157XII(D)] Examination of Experts
[157k555] Basis of Opinion
[157k555.2] k. Necessity and Sufficiency. [Most Cited Cases](#)
 An expert's testimony, to be admissible, must possess a reliable foundation.

[2] Evidence 157  555.2


[157] Evidence
[157XII] Opinion Evidence
[157XII(D)] Examination of Experts
[157k555] Basis of Opinion
[157k555.2] k. Necessity and Sufficiency. [Most Cited Cases](#)
 Admission of expert testimony that does not meet the reliability requirement is an abuse of discretion.

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 Expert testimony is unreliable, and therefore inadmissible, if it is based on unreliable data, or if the expert draws conclusions from his underlying data based on flawed methodology.

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 Expert testimony is unreliable, and therefore inadmissible, if there is simply too great an analytical gap between the data and the opinion proffered.

[5] Evidence 157  555.2


[157 Evidence](#)

[157XII Opinion Evidence](#)

[157XII\(D\) Examination of Experts](#)

[157k555 Basis of Opinion](#)

[157k555.2](#) k. Necessity and Sufficiency. [Most Cited Cases](#)
An expert's opinion is unreliable, and therefore inadmissible, if based solely upon his subjective interpretation of the facts.

[\[6\] Evidence 157](#)  [555.8\(1\)](#)

[157 Evidence](#)

[157XII Opinion Evidence](#)

[157XII\(D\) Examination of Experts](#)

[157k555 Basis of Opinion](#)

[157k555.8 Automobile Cases](#)

[157k555.8\(1\)](#) k. In General. [Most Cited Cases](#)

Testimony of plaintiff pickup truck owner's expert witness, who was a metallurgical and mechanical engineer, that truck's rear leaf spring and axle assembly was defectively manufactured, was sufficiently reliable to warrant admission of the testimony as expert opinion, in manufacturing-defect products liability action against vehicle manufacturer, relating to truck's collision with two parked cars, which accident allegedly occurred, according to plaintiff, because rear leaf spring and axle assembly came apart and such separation caused drive shaft to dislodge from transmission; witness based his testimony on deviations between manufacturer's own specifications as to torque on u-bolts, alignment of flattened portion of u-bolt with rear axle housing, and tolerance for difference in u-bolt leg lengths, and he relied on observations and measurements of tangible truck components, which were documented with photographs and videotape of his initial examination of truck.


[\[7\] Products Liability 313A](#)  [8](#)

[313A Products Liability](#)

[313AI Scope in General](#)

[313AI\(A\) Products in General](#)

[313Ak8](#) k. Nature of Product and Existence of Defect or Danger. [Most Cited Cases](#)

[Products Liability 313A](#)  [96.1](#)

[313A Products Liability](#)

[313AII Actions](#)

[313Ak96 Instructions](#)

[313Ak96.1](#) k. In General. [Most Cited Cases](#)

Pattern jury charge's definition of manufacturing defect, in manufacturing-defect products liability action, was erroneous, because it did not include requirement that product must deviate from its specifications or planned output in a manner that renders the product unreasonably dangerous; such requirement distinguishes a manufacturing defect from a design defect, the charge referred to a "manufacturing defect" in the product "at the time it left" the manufacturer, and a jury, without further guidance, might view a design defect in a product at the time it left the manufacturer as satisfying the charge's reference to "manufacturing defect" at the time the product left the manufacturer.

[\[8\] Products Liability 313A](#)  [8](#)

[313A Products Liability](#)

[313AI Scope in General](#)

[313AI\(A\) Products in General](#)

[313Ak8](#) k. Nature of Product and Existence of Defect or Danger. [Most Cited Cases](#)
In a manufacturing-defect products liability action, the requirement, for a manufacturing defect, that product must deviate from its specifications or planned output in a manner that renders the product unreasonably dangerous, is separate from, and in addition to, requirements that product was defective when it left the manufacturer and that defect was a producing cause of plaintiff's injuries.

[\[9\] Products Liability 313A](#)  [8](#)

[313A Products Liability](#)

[313AI Scope in General](#)

[313AI\(A\) Products in General](#)

[313Ak8](#) k. Nature of Product and Existence of Defect or Danger. [Most Cited Cases](#)
The requirement, in a manufacturing-defect products liability action, of a deviation from the product manufacturer's specifications or planned output serves the essential purpose of distinguishing a manufacturing defect from a design defect.

[\[10\] Products Liability 313A](#)  [11](#)

[313A](#) Products Liability

[313AI](#) Scope in General

[313AI\(A\)](#) Products in General

[313Ak11](#) k. Design. [Most Cited Cases](#)

Products Liability 313A 71

[313A](#) Products Liability

[313AII](#) Actions

[313Ak71](#) k. In General. [Most Cited Cases](#)

A design defect claim requires proof and a jury finding of a safer alternative design. [V.T.C.A., Civil Practice & Remedies Code § 82.005](#).

[11] Products Liability 313A 76

[313A](#) Products Liability

[313AII](#) Actions

[313Ak75](#) Presumptions and Burden of Proof

[313Ak76](#) k. Inference from Fact of Injury.

[Most Cited Cases](#)

Texas law does not generally recognize a product failure or malfunction, standing alone, as sufficient proof of a product defect.

[12] Products Liability 313A 82.1

[313A](#) Products Liability

[313AII](#) Actions

[313Ak82](#) Weight and Sufficiency of Evidence

[313Ak82.1](#) k. In General. [Most Cited Cases](#)

Expert testimony is generally encouraged if not required to establish a products liability claim.

[13] Appeal and Error 30 216(3)

[30](#) Appeal and Error

[30V](#) Presentation and Reservation in Lower Court of Grounds of Review

[30V\(B\)](#) Objections and Motions, and Rulings

Thereon

[30k214](#) Instructions

[30k216](#) Requests and Failure to Give Instructions

[30k216\(3\)](#) k. Correcting Erroneous Instructions. [Most Cited Cases](#)

Appeal and Error 30 231(9)

[30](#) Appeal and Error

[30V](#) Presentation and Reservation in Lower Court of Grounds of Review

[30V\(B\)](#) Objections and Motions, and Rulings Thereon

[30k231](#) Necessity of Specific Objection

[30k231\(9\)](#) k. Instructions. [Most Cited](#)

[Cases](#)

Vehicle manufacturer preserved appellate review of omission, from instruction defining manufacturing defect in products liability action, of requirement that product must deviate from its specifications or planned output in a manner that renders the product unreasonably dangerous; in the trial court, manufacturer made plain objection identifying error with sufficient specificity, by objecting that instruction did not accurately reflect the law, submitting in writing an alternative definition of manufacturing defect as physical departure from product's intended design that renders it unreasonably dangerous, and providing authorities supporting such alternative definition. [Rules App.Proc., Rule 33.1\(a\)\(1\)\(A\); Vernon's Ann.Texas Rules Civ.Proc., Rules 274, 278.](#)

[14] Appeal and Error 30 231(9)

[30](#) Appeal and Error

[30V](#) Presentation and Reservation in Lower Court of Grounds of Review

[30V\(B\)](#) Objections and Motions, and Rulings Thereon

[30k231](#) Necessity of Specific Objection

[30k231\(9\)](#) k. Instructions. [Most Cited](#)

[Cases](#)

Generally, in order to preserve appellate review of a jury charge, a party objecting to the charge must point out distinctly, in the trial court, the objectionable matter and the grounds of the objection. [Vernon's Ann.Texas Rules Civ.Proc., Rule 274.](#)

[15] Appeal and Error 30 230

[30](#) Appeal and Error

[30V](#) Presentation and Reservation in Lower Court of Grounds of Review

[30V\(B\)](#) Objections and Motions, and Rulings Thereon

[30k230](#) k. Necessity of Timely Objection.

[Most Cited Cases](#)

Appeal and Error 30 ↪242(1)

[30](#) Appeal and Error

[30V](#) Presentation and Reservation in Lower Court of Grounds of Review

[30V\(B\)](#) Objections and Motions, and Rulings Thereon

[30k242](#) Necessity of Ruling on Objection or Motion

[30k242\(1\)](#) k. In General. [Most Cited Cases](#)

Preservation of error for appellate review generally depends on whether the party made the trial court aware of the complaint, timely and plainly, and obtained a ruling. [Vernon's Ann.Texas Rules Civ.Proc., Rule 274.](#)

[16] Appeal and Error 30 ↪1064.1(8)

[30](#) Appeal and Error

[30XVI](#) Review

[30XVI\(J\)](#) Harmless Error

[30XVI\(J\)18](#) Instructions

[30k1064](#) Prejudicial Effect

[30k1064.1](#) In General

[30k1064.1\(2\)](#) Particular Cases

[30k1064.1\(8\)](#) k. Negligence and Torts in General. [Most Cited Cases](#)

Omission, from instruction defining manufacturing defect in products liability action, of requirement that product must deviate from its specifications or planned output in a manner that renders the product unreasonably dangerous, was reversible error; jury was not asked to decide an essential element of a manufacturing defect claim.

[17] Trial 388 ↪238

[388](#) Trial

[388VII](#) Instructions to Jury

[388VII\(C\)](#) Form, Requisites, and Sufficiency

[388k231](#) Sufficiency as to Subject-Matter

[388k238](#) k. Matters of Law. [Most Cited Cases](#)

[Cases](#)

Parties have the right to be judged by a jury properly instructed in the law.

[18] Trial 388 ↪351.2(1.1)

[388](#) Trial

[388IX](#) Verdict

[388IX\(B\)](#) Special Interrogatories and Findings

[388k351](#) Requests for Special Findings or Interrogatories

[388k351.2](#) Necessity and Sufficiency of Requests

[388k351.2\(1\)](#) Necessity and Burden of Making Request

[388k351.2\(1.1\)](#) k. In General.

[Most Cited Cases](#)

It is the plaintiff's burden to obtain affirmative answers to jury questions as to the necessary elements of his cause of action.

[19] Appeal and Error 30 ↪1177(5)

[30](#) Appeal and Error

[30XVII](#) Determination and Disposition of Cause

[30XVII\(D\)](#) Reversal

[30k1177](#) Necessity of New Trial

[30k1177\(5\)](#) k. Errors in Rulings and Instructions at Trial. [Most Cited Cases](#)

Proper remedy, upon appellate court's determination that instruction defining manufacturing defect, in products liability action, omitted the requirement that product must deviate from its specifications or planned output in a manner that renders the product unreasonably dangerous, was to reverse and remand, rather than to reverse and render judgment for defendant; such requirement was a controlling issue on plaintiff's sole cause of action, and interests of justice favored remand, since trial court had followed a pattern jury instruction which the appellate court clarified in the case at bar.

[20] Appeal and Error 30 ↪1177(5)

[30](#) Appeal and Error

[30XVII](#) Determination and Disposition of Cause

[30XVII\(D\)](#) Reversal

[30k1177](#) Necessity of New Trial

[30k1177\(5\)](#) k. Errors in Rulings and Instructions at Trial. [Most Cited Cases](#)

If the plaintiff submits a jury question on his claim that is merely defective, as opposed to immaterial, the appropriate remedy is to remand for a new trial rather than to render judgment.

[21] Appeal and Error 30  **1178(1)**

30 Appeal and Error

30XVII Determination and Disposition of Cause

30XVII(D) Reversal

30k1178 Ordering New Trial, and Directing Further Proceedings in Lower Court

30k1178(1) k. In General. **Most Cited**

Cases

Appellate court may, in the interest of justice, remand a case to the trial court, even if a rendition of judgment is otherwise appropriate. **Rules App.Proc., Rule 60.3.**

[22] Products Liability 313A  **15**

313A Products Liability

313AI Scope in General

313AI(A) Products in General

313Ak15 k. Proximate Cause and Foreseeable Injury; Intended or Foreseeable Use. **Most Cited Cases**

“Producing cause,” in products liability action, is a substantial factor in bringing about an injury, without which the injury would not have occurred; abrogating ***Brown v. Bank of Galveston, Nat'l Ass'n*, 963 S.W.2d 511, *Union Pump Co. v. Allbritton*, 898 S.W.2d 773, *Haynes & Boone v. Bowser Bouldin, Ltd.*, 896 S.W.2d 179, and *Rourke v. Garza*, 530 S.W.2d 794.**

***35** **Craig A. Morgan**, Attorney At Law, **Michael W. Eady** and **William Leonard Mennucci**, Thompson, Coe, Cousins & Irons, L.L.P., Austin, for Petitioner. **Kenneth Oden Jr.**, **Brian Johnson Roark**, Minton, Burton, Foster & Collins, Austin, **Amanda Eileen Staine Peterson** and **Andy Taylor**, Andy Taylor and Associates, P.C., Houston, TX, for Respondent. **Stephen E. Garner**, Stephen E. Garner, P.C., Houston, TX, for Intervenor.

Justice **WILLETT** delivered the opinion of the Court. In this products liability case, Ford Motor Co. argues

that the trial court reversibly erred in charging the jury by giving an incomplete definition of “manufacturing defect.” We agree. Additionally, we hold that a frequently submitted definition of “producing cause” should no longer be used. We remand the case for a new trial under a jury charge that reflects our applicable caselaw, including our decision today.

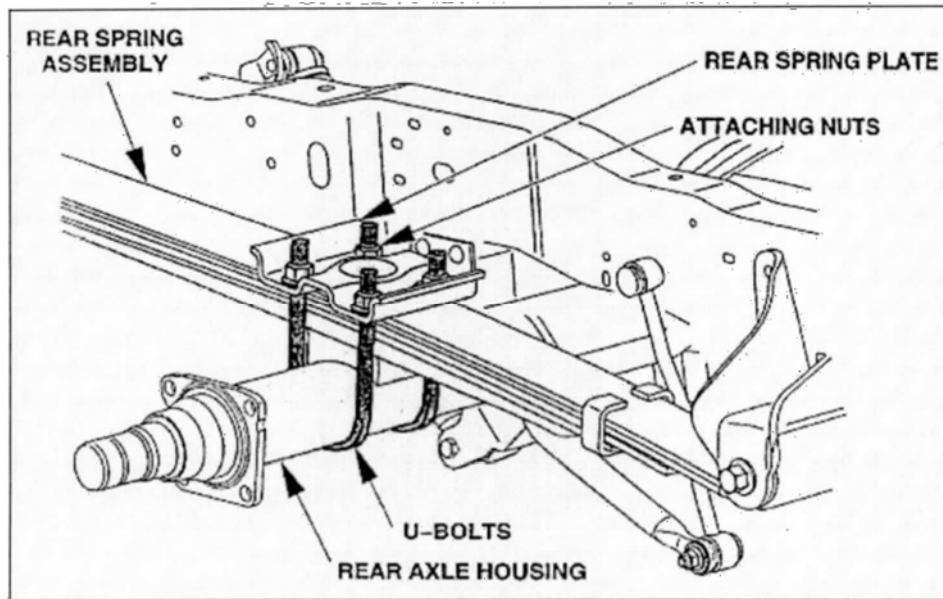
I. Background

In March 1999, Tiburicio Ledesma, Jr. purchased a new Ford F-350 Super Duty pickup truck for his construction business. The truck had four rear tires, two on each side, surrounded by fiberglass fenders extending beyond the sides of the truck.

On June 5, 1999, Ledesma turned onto a two-lane street in Austin and began to accelerate. He testified that after shifting gears the truck suddenly began to lurch, and he lost control, striking two parked cars, a Firebird and a Civic, on the side of the street. The truck then hit the street curb and came to rest. At the time of the accident, the truck's odometer read about 4,100 miles.

Power from the truck engine is conveyed to the rear axle by the drive shaft, which connects the transmission in the front of the truck with the differential/rear axle assembly in the rear. As seen in the trial exhibit reproduced below, the rear-axle housing is attached to two sets of rear leaf springs by u-bolts, which wrap around the axle housing and are bolted to a rear spring plate that sits on top of the leaf-spring assembly. On each side of the truck, two u-bolts attach the rear-axle housing to a spring plate and set of leaf springs.

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Both parties agree that the truck's rear leaf spring and axle assembly came apart and that this separation caused the drive shaft to dislodge from the transmission. The core dispute centers on *when* and *why* this malfunction occurred and whether it *caused* the collision or *resulted* from it. That is, did a manufacturing defect trigger the right rear-axle displacement and cause Ledesma to lose control of the truck and strike the parked cars (as Ledesma claims), or did the right rear axle detach when Ledesma struck the parked cars and curb (as Ford claims)?

At trial, Ledesma claimed that he lost control of the truck when its drive shaft separated from the transmission and “pronged” on the pavement, causing him to hit the parked cars. A police officer testified that he investigated the accident scene and prepared a report based on Ledesma's description of the accident. The report makes no mention of any other witnesses. Ledesma also presented two expert witnesses in support of his manufacturing defect claim, as discussed below.

Ford presented an expert, Dan May, in support of its theory that the axle-to-spring attachment failed, not because of a manufacturing defect, but because of the forces exerted on it when Ledesma struck the parked vehicles and curb. Among other efforts to discredit May, Ledesma emphasized to the jury that May was

a long-time Ford employee and had never found a defect in a Ford product.

Ford also called the owner of the Firebird, Edward Plyant, who testified by deposition that he witnessed the accident from a driveway. Plyant testified that Ledesma was speeding and inattentive and struck the Firebird at a high rate of speed. Ledesma testified that Plyant did not see the accident, but came outside after hearing the ensuing commotion, and that Plyant had unsuccessfully sued Ledesma.

The jury sided 11-1 with Ledesma, finding that a manufacturing defect caused the accident and that Ledesma was not contributorily negligent, and awarding economic damages of \$215,380. The court of *37 appeals affirmed.^{FN1}

[FN1.173 S.W.3d 78, 92.](#)

II. Discussion

A. Admissibility of Ledesma's Expert Testimony

Ford argues that the trial court erred in admitting the testimony of Ledesma's two expert witnesses because their opinions were unreliable.^{FN2}

[FN2.](#) Because this argument, if accepted, would compel us to reverse and render

judgment in favor of Ford, we address it before reaching Ford's complaint of alleged charge error, which for the reasons discussed below only affords Ford the lesser relief of a remand for a new trial. Ford also argues that the trial court improperly restricted the testimony of its expert, an issue we do not reach.

1. What Ledesma's Two Experts Said

Ledesma's expert David Hall, an accident reconstructionist, testified by deposition that he believed a mark in the road showed that the drive axle struck the pavement before the truck struck the Firebird, consistent with Ledesma's theory that the truck malfunctioned and caused the collision. He reached this conclusion by reviewing a number of photographs. Based on the photographic evidence of damage to the Firebird and an engineering paper providing a method for estimating speed based on the Firebird's body damage, Hall also estimated that Ledesma's truck was traveling at a very slow speed when it struck the Firebird, again consistent with Ledesma's theory of the accident and inconsistent with Ford's theory that Ledesma was speeding and otherwise driving carelessly.

Ford raises numerous complaints about the reliability of Hall's testimony. Ford notes that the post-accident photographs of the road were taken by Ledesma and his father with a low-quality disposable camera, that there are many spots and marks on the grainy photographs, and that the marks do not reliably indicate that the drive shaft struck the road prior to the crash with the Firebird. Ford stresses that the investigating police officer found no gouges in the pavement despite a careful search of the accident scene. Ford also raises numerous complaints about Hall's estimate of the truck's speed at the time of the Firebird collision. These complaints include two observations: (1) the engineering paper on which Hall relied states that it should not be used when examining side swipes such as the accident in issue; and (2) the damage to the Firebird, as confirmed by the car's owner and a repair estimate, was far more severe than Hall assumed, rendering his estimate of a very slow impact unreliable.

Ford complains that the testimony of Ledesma's principal expert, metallurgical and mechanical

engineer Geert Aerts, was likewise unreliable. Ledesma counters that Aerts is a leading expert on truck leaf springs; Aerts has investigated about 150 leaf-spring failures. Ford does not claim that Aerts was unqualified to testify as an expert on the accident in issue but contends that his theory of the accident was unreliable for various reasons.

Aerts focused on the u-bolts holding the rear axle to the rear springs and concluded that one of them was defectively manufactured. His theory was that a rear passenger-side u-bolt was loose, causing it to vibrate. This vibration eventually fatigued and fractured a center pin holding the leaf springs to the rear spring plate, which in turn allowed the u-bolts, spring plate, and rear axle to slide backwards, pulling the drive shaft from the transmission. Aerts examined the truck's u-bolts while they were still on the truck and found the torque*38 on each bolt to be well below that required by Ford's specifications. While he conceded that the torques might have changed due to the accident, he concluded that the u-bolt in issue was under-torqued when Ford assembled the truck.

Aerts testified extensively about how the u-bolt came to be under-torqued. One explanation was that one leg of the u-bolt was manufactured a few millimeters higher than the other, which could have caused the nut on the shorter leg to receive an insufficient torque when it and other nuts were simultaneously tightened. Aerts claimed that, according to a Ford "product engineering" sheet for the u-bolt, admitted into evidence, this slight difference in heights of the legs exceeded the tolerance in Ford's own specifications. The engineering sheet provided diagrams and various specifications for the u-bolts.

Aerts also testified that the product engineering sheet required the bottom, curved portion of the u-bolt to be flattened to allow for a better grip on the axle, and that the flattened portion on the allegedly defective bolt was off center by about three-quarters of an inch. According to Aerts, this manufacturing defect reduced the surface area of the bolt in contact with the axle, thus reducing the bolt's grip on the axle. This defect also allegedly allowed the bolt to dig into and deform the axle housing, causing the bolt to further loosen over time. The product engineering sheet clearly shows that the flattened portion of the u-bolt is to be centered at the bottom of the curved portion of the bolt, with flattening forty-five degrees

up from either side of the bottom of the bolt, and a blend from flat to round for another forty-five degrees on both sides of the bolt.

As further evidence of a pre-accident defect, Aerts focused on the rear spring plate. The u-bolts went through this plate, which sits on top of the leaf springs. The u-bolts were tightened onto the plate with four nuts. The rear spring plate also had a center pin attaching the leaf springs to the plate. Aerts claimed that rust and marks on the spring plate near the hole for the center pin indicated that the u-bolt was loose, allowing the assembly to vibrate and the pin to scratch the spring plate over a period of time. These observations were consistent with his theory of a u-bolt that was loose before the accident, resulting in vibration that caused the center pin to suffer a [fatigue fracture](#) and precipitate the u-bolt slippage and drive shaft dislocation.

Aerts also theorized that, perhaps for a reason other than the uneven u-bolt ends and flattened portion of the bolt, Ford simply failed to tighten the u-bolts to the torque required by its own specifications, causing the assembly to vibrate and eventually fail after a few months of driving.

Ford challenged Aerts's testimony at every turn. It argued that Aerts never confirmed the existence of denting in the axle housing and that Ford's expert May testified that he could find no such denting. Ford contended that the u-bolt was deformed because of the tremendous forces of the accident. It further offered evidence from May, who was familiar with Ford's manufacturing process, that the sockets on its "four spindle nut runner," the machine used to tighten the nuts onto the u-bolts, are four inches deep, easily deep enough to properly tighten the nuts despite the slight difference in the height of the u-bolt legs. May claimed that the difference in the u-bolt lengths was within Ford's "allowable tolerances." May also testified that he could not see the .75-inch misalignment of the flattened portion of the u-bolt that Aerts observed.

2. Whether Their Testimony Was Sufficiently Reliable

[1][2][3][4] An expert's testimony, to be admissible, must possess a reliable foundation.*39^{FN3} "Admission of expert testimony that does not meet

the reliability requirement is an abuse of discretion." ^{FN4} Expert testimony is unreliable if it is based on unreliable data, or if the expert draws conclusions from his underlying data "based on flawed methodology." ^{FN5} Expert testimony is also unreliable if "there is simply too great an analytical gap between the data and the opinion proffered." ^{FN6}

[FN3.Cooper Tire & Rubber Co. v. Mendez, 204 S.W.3d 797, 800 \(Tex.2006\).](#)

[FN4.Id.](#)

[FN5.Merrell Dow Pharms., Inc. v. Havner, 953 S.W.2d 706, 714 \(Tex.1997\).](#)

[FN6.Gammill v. Jack Williams Chevrolet, Inc., 972 S.W.2d 713, 726 \(Tex.1998\)](#) (quoting [Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146, 118 S.Ct. 512, 139 L.Ed.2d 508 \(1997\)](#)).

[5] In [E.I. du Pont de Nemours & Co. v. Robinson, 923 S.W.2d 549 \(Tex.1995\)](#) we set out six factors courts may consider in deciding whether expert testimony is reliable:

1. the extent to which the theory has been or can be tested;
2. the extent to which the technique relies on the subjective interpretation of the expert;
3. whether the theory has been subjected to peer review and/or publication;
4. the technique's potential rate of error;
5. whether the underlying theory or technique generally has been accepted as valid by the relevant scientific community; and
6. the nonjudicial uses which have been made of the theory or technique.^{FN7}

[FN7.923 S.W.2d 549, 557 \(Tex.1995\).](#)

We have recognized that the [Robinson](#) factors are nonexclusive ^{FN8} and have specifically noted that "the [Robinson](#) factors are not always useful in evaluating

expert testimony in automobile accident cases.” ^{FN9}
As in *Gammill v. Jack Williams Chevrolet, Inc.*, another automobile accident case, the *Robinson* factors do not readily lend themselves to a review of the expert testimony in the pending case, ^{FN10} but “there must be some basis for the opinion offered to show its reliability.” ^{FN11} And as in *Volkswagen of America, Inc. v. Ramirez*, yet another automobile accident case, “[a]n expert's bare opinion will not suffice” and is unreliable if “based solely upon his subjective interpretation of the facts.” ^{FN12}

^{FN8.}*Cooper Tire*, 204 S.W.3d at 801.

^{FN9.}*Id.* at 802.

^{FN10.}See *Gammill*, 972 S.W.2d at 727.

^{FN11.}*Id.* at 726.

^{FN12.}159 S.W.3d 897, 906 (Tex.2004).

[6] We need not assess the reliability of Hall's testimony, because we hold that Aerts's testimony was sufficiently reliable to warrant admission and is some evidence that a manufacturing defect caused the accident.

Ford never challenged Aerts's credentials. His testimony offered a plausible theory of how the accident occurred. Aerts based his testimony on deviations between Ford's own specifications as to torque, alignment of the flattened portion of the u-bolt, and the tolerance for the difference in u-bolt leg lengths. He relied on observations and measurements of tangible truck components, which were documented with photographs and a videotape of his initial examination of the truck. The u-bolts and rear-axle assembly were admitted into evidence. The jury was free to examine this evidence and the Ford *40 specifications that were also admitted into evidence.

To a significant extent, deciding whether the truck lost its drive shaft *before* striking the Firebird, or instead the drive shaft dislodged *after* striking the parked cars and the street curb, turned on whether the jury believed Ledesma or Plyant. Ledesma insisted he was driving carefully when suddenly he lost control of the truck and veered into the Firebird. He claims that the truck started lurching before the

impact, consistent with a truck malfunction that caused the drive shaft to drop to the street. Plyant's testimony was inconsistent with the investigating police officer's report and testimony, which indicated that Plyant talked to the officer but did not claim to have witnessed the accident. Ledesma likewise observed no witnesses to the accident, claiming instead that Plyant and others came outside after hearing the accident. The jury was of course entitled to weigh the credibility of these lay witnesses and apparently believed Ledesma's account. The jury was also entitled to take into account that Ford's expert May had worked for Ford for decades and had never found a defect in a Ford product.

We also conclude that Ford overstates the effectiveness of its cross-examination of Aerts. While May explained that Ford's tightening equipment provided sockets easily deep enough to tighten the uneven legs of the u-bolt, Aerts claimed that the uneven legs might still cause the equipment to slip off the shorter leg, or under-tighten the shorter leg if the equipment lacked the flexibility to properly tighten uneven legs, although May contended that each socket was “on the same head” but “driven independently.” Aerts conceded that the u-bolt could have been stretched in the accident, perhaps accounting for the inadequate torques he measured, but he also found that the overall length of the allegedly defective u-bolt was the same length as exemplar u-bolts provided by Ford and was within one millimeter of the length of another u-bolt from the truck. He conceded that he had no photographic proof of indentation of the axle caused by the asymmetrical flat portion of the u-bolt and that “I never came back here to check that,” but he opined that the asymmetrical manufacture, regardless of indentation of the axle housing, reduced the area of contact between the u-bolt and axle. The jury could infer that Ford would not have specified flattening of the curved end of the u-bolt, which indisputably required an extra manufacturing step, unless Ford thought that procedure was needed. Aerts also testified that regardless of the shape of the u-bolt, Ford might have failed to tighten the u-bolt nuts to Ford's own torque specification because the air pressure on the tightening equipment was incorrect or for some other reason, thus explaining the inadequate torque and vibration damage he observed. His review of the accident scene photographs further persuaded him that the accident did not cause the u-bolt slippage and to opine that “I don't think [the u-bolt] should

have come loose with what I saw happen there on that street.”

Ford presented a strong defense, but ultimately the jury rejected it. Aerts's testimony does not present a case where “there is simply too great an analytical gap between the data and the opinion proffered,” ^{FN13} or where the expert's testimony amounted to nothing more than a recitation of his credentials and a subjective opinion.^{FN14} We conclude that Ford's complaints about Aerts's testimony go to its *41 weight, not its admissibility. The trial court therefore did not abuse its discretion in admitting Aerts's testimony.

[FN13.Gammill, 972 S.W.2d at 726.](#)

[FN14,See Cooper Tire, 204 S.W.3d at 801.](#)

B. Jury Charge

Ford complains that, over its objection, the trial court improperly instructed the jury on the definitions of manufacturing defect and producing cause. The jury affirmatively answered Question No. 1 of the jury charge, which asked:

Was there a manufacturing defect in the 1999 Ford F-350 pickup truck at the time it left Ford's possession that was a producing cause of the June 5, 1999 incident in question?

A “defect” means a condition of the product that renders it unreasonably dangerous. An “unreasonably dangerous” product is one that is dangerous to an extent beyond that which would be contemplated by the ordinary user of the product, with the ordinary knowledge common to the community as to the product's characteristics.

“Producing cause” means an efficient, exciting, or contributing cause that, in a natural sequence, produces the incident in question. There may be more than one producing cause.

In defining defect, the trial court followed Texas Pattern Jury Charge (PJC) 71.3.^{FN15} As specified in the comment to PJC 71.3, the trial court included in the question the definition of producing cause found in PJC 70.1. Ford objected that both PJC 71.3 and

PJC 70.1 were “not accurate under the law” and failed to track this Court's precedent. We agree. Ledesma may have *argued* a manufacturing defect to the jury, but the law requires the jury to determine specifically whether he had *proven* one. The jury here received a legally incorrect charge that omitted an indispensable element: that the product deviated, in its construction or quality, from its specifications or planned output in a manner that rendered it unreasonably dangerous.

[FN15. COMM. ON PATTERN JURY CHARGES, STATE BAR OF TEX., TEXAS PATTERN JURY CHARGES-MALPRACTICE, PREMISES & PRODUCTS PJC 71.3 \(2d ed.2002\).](#)

1. The Court's Charge on Manufacturing Defect Failed to Include the Essential Element of a Deviation from Design

^{[7][8]} The trial court submitted the pattern jury charge's definition on manufacturing defect. We agree with Ford, however, that the model charge is erroneous, as it does not include the requirement that a manufacturing defect must deviate from its specifications or planned output in a manner that renders the product unreasonably dangerous. We established this standard in [American Tobacco Co. v. Grinnell](#),^{FN16} and in three other cases since [Grinnell](#) was issued a decade ago, we have recognized, with essentially identical statements, the “deviation from specifications or planned output” requirement.^{FN17} This *42 requirement is separate from, and in addition to, the requirements that the product was defective when it left the manufacturer and that the defect was a producing cause of the plaintiff's injuries.^{FN18}

[FN16.951 S.W.2d 420, 434 \(Tex.1997\)](#) (“Under Texas law, a plaintiff has a manufacturing defect claim when a finished product deviates, in terms of its construction or quality, from the specifications or planned output in a manner that renders it unreasonably dangerous.”).

[FN17.Cooper Tire & Rubber Co. v. Mendez, 204 S.W.3d 797, 800 \(Tex.2006\)](#) (“A manufacturing defect exists when a product deviates, in its construction or quality, from

the specifications or planned output in a manner that renders it unreasonably dangerous.”) (quoting [Ford Motor Co. v. Ridgway](#), 135 S.W.3d 598, 600 (Tex.2004); [Torrington Co. v. Stutzman](#), 46 S.W.3d 829, 844 (Tex.2000) (“A product has a manufacturing defect if its construction or quality deviates from the specifications or planned output in a way that is unreasonably dangerous.”); see also [In re Bridgestone/Firestone, Inc.](#), 106 S.W.3d 730, 736 (Tex.2003) (O’Neill, J., concurring) (“In order to establish a manufacturing defect, the plaintiffs must prove that ‘the finished product deviates, in terms of its construction or quality, from the specifications or planned output in a manner that renders it unreasonably dangerous.’ ” (quoting [Grinnell](#), 951 S.W.2d at 434)).

[FN18](#). See, e.g., [Ridgway](#), 135 S.W.3d at 600.

We note that the current Restatement of Torts essentially follows the same concept of a deviation from the manufacturer’s design by providing that a product “contains a manufacturing defect when the product departs from its intended design even though all possible care was exercised in the preparation and marketing of the product....” [FN19](#)

[FN19.RESTATEMENT \(THIRD\) OF TORTS: PRODUCTS LIABILITY § 2\(a\) \(1998\)](#); see also *id.* § 1 cmt. a (“A manufacturing defect is a physical departure from a product’s intended design.”).

[9] The requirement of a deviation from the manufacturer’s specifications or planned output serves the essential purpose of distinguishing a manufacturing defect from a design defect. PJC 71.3 refers to a “manufacturing defect” in the product “at the time it left” the manufacturer. A jury—without further guidance—may view any defect in a product at the time it leaves the manufacturer as satisfying the PJC’s reference to a “manufacturing defect,” rather than making the essential distinction between a manufacturing and design defect. As it stood, the court’s charge merely inquired whether a “condition” of the product rendered it unreasonably dangerous. That “condition” could have been a design defect or a

manufacturing defect.

[10] The distinction is material. The danger of allowing a jury to conclude that the defect was or might have been a design defect is that “[a] design defect claim requires proof and a jury finding of a safer alternative design.” [FN20](#) The charge did not make such an inquiry.

[FN20.Cooper Tire](#), 204 S.W.3d at 807 (citing [TEX. CIV. PRAC. & REM.CODE § 82.005](#)).

[11] Moreover, requiring a deviation from specifications or planned output permits a jury to determine whether a specific defect caused the accident, rather than premising liability on a belief that a product failure, standing alone, is enough to find a product defect. Texas law does not generally recognize a product failure or malfunction, standing alone, as sufficient proof of a product defect. [FN21](#) Instead, we have held that “a specific defect must be identified by competent evidence and other possible causes must be ruled out.” [FN22](#) Our law requires more than finding an undifferentiated “condition” that renders the product unreasonably dangerous, which is all the court’s charge mandated. While a products liability claim does not of course require proof of manufacturer negligence, the deviation from design that caused the injury must be identified. Otherwise, the jury is invited to find liability based on speculation as to the cause of the incident in issue.

[FN21](#). See *id.* at 807.

[FN22.Nissan Motor Co. v. Armstrong](#), 145 S.W.3d 131, 137 (Tex.2004) (discussing [Ridgway](#), 135 S.W.3d at 601).

[12] Requiring proof of a deviation from manufacturer specifications or planned output also comports with our recognition that expert testimony is generally encouraged if not required to establish a products liability claim. [FN23](#) If juries were *43 generally free to infer a product defect and injury causation from an accident or product failure alone, without any proof of the specific deviation from design that caused the accident, expert testimony would hardly seem essential. Yet we have repeatedly said otherwise. [FN24](#)

[FN23](#), See [Mack Trucks, Inc. v. Tamez](#), 206 S.W.3d 572, 583 (Tex.2006) (holding that expert testimony was required to establish causation in products liability case, because “[a] lay juror’s general experience and common knowledge do not extend to whether design defects such as those alleged in this case caused releases of diesel fuel during a rollover accident”); [Nissan Motor Co.](#), 145 S.W.3d at 137 (holding, in a case where the plaintiff alleged and the jury found design, manufacturing, and marketing defects, that “[i]n all of these [prior] cases, it was not enough that a vehicle accelerated when claimants swore they had done nothing. Instead, we have consistently required competent expert testimony and objective proof that a defect caused the acceleration.... These requirements are not peculiar to unintended acceleration cases.”).

[FN24](#), See cases cited *supra* note 26.

For these reasons, we hold that the court’s charge was fundamentally flawed in omitting the requirement that the product deviate, in its construction or quality, from its specifications or planned output in a manner that renders it unreasonably dangerous.

2. The Erroneous Definition of Manufacturing Defect Is Reversible Error

Having determined that the court’s charge was erroneous, there remains the question of whether this charge error is reversible error.

[\[13\]\[14\]\[15\]](#) Ledesma contends that Ford did not preserve error on this complaint. Generally, “[a] party objecting to a charge must point out distinctly the objectionable matter and the grounds of the objection.” [FN25](#) Preservation of error generally depends on “whether the party made the trial court aware of the complaint, timely and plainly, and obtained a ruling.” [FN26](#) “Failure to submit a definition or instruction shall not be deemed a ground for reversal of the judgment unless a substantially correct definition or instruction has been requested in writing and tendered by the party complaining of the judgment.” [FN27](#) In this case, Ford objected to the definition of manufacturing defect on grounds that it

did not accurately reflect the law, and submitted in writing a proposed question that included an alternative definition of a manufacturing defect. The alternative definition provided that a manufacturing defect “is a physical departure from the product’s intended design that renders it unreasonably dangerous.” The trial court refused Ford’s alternative charge.

[FN25.TEX.R. CIV. P. 274.](#)

[FN26.State Dep’t of Highways & Pub. Transp. v. Payne](#), 838 S.W.2d 235, 241 (Tex.1992).

[FN27.TEX.R. CIV. P. 278.](#)

The proposed definition addresses the essential omission in the court’s charge described above, namely, the omission of a requirement that the product deviate from its intended design. The proposed definition is consistent with the Restatement definition of a manufacturing defect, discussed above, that includes the requirement that the “product departs from its intended design,” as well as our own caselaw. In support of its proposed definition, Ford also provided the trial court with quotations from [Grinnell](#) and [Torrington Co. v. Stutzman](#), giving their definitions of a manufacturing defect that include the requirement of a deviation from specifications or planned output. [FN28](#) The objection, proposed question and instruction, and supporting authorities provided the trial court with a plain objection identifying the *44 error in the charge that we recognize today, “with sufficient specificity to make the trial court aware of the complaint.” [FN29](#)

[FN28](#), See *supra* notes 16-17.

[FN29](#), See [TEX.R.APP. P. 33.1\(a\)\(1\)\(A\)](#).

[\[16\]\[17\]\[18\]](#) Since Ford preserved error, we turn to whether the charge error is reversible. We hold that it is. “It is fundamental to our system of justice that parties have the right to be judged by a jury properly instructed in the law.” [FN30](#) “There can be no question that it was [the plaintiff’s] burden to obtain affirmative answers to jury questions as to the necessary elements of his cause of action.” [FN31](#) The jury was not asked to decide an essential element of a

manufacturing defect claim, namely whether the u-bolt deviated from Ford's specifications or planned output.

[FN30.Crown Life Ins. Co. v. Casteel, 22 S.W.3d 378, 388 \(Tex.2000\).](#)

[FN31.Ramos v. Frito-Lay, Inc., 784 S.W.2d 667, 668 \(Tex.1990\).](#)

If a cause of action consists of more than one element, and an element is omitted from the charge “without request or objection,” the missing element can be found by the trial court or deemed found if certain requirements are met.^{FN32} But where, as here, a proper objection is made about the omission of an essential element, the failure to include it is reversible error.^{FN33}

[FN32.](#) See [TEX.R. CIV. P. 279](#).

[FN33.](#) See [Stutzman, 46 S.W.3d at 836-41](#) (reversing and remanding because broad-form question submitted over defendant's objection omitted elements necessary to establish undertaking claim); [Clayton W. Williams, Jr., Inc. v. Olivo, 952 S.W.2d 523, 529-30 \(Tex.1997\)](#) (reversing and rendering because essential elements of premises liability claim were not submitted as instructions or definitions and elements were not “necessarily referable” under [Rule 279](#) to elements submitted); [State Dep't of Highways & Pub. Transp. v. Payne, 838 S.W.2d 235, 241 \(Tex.1992\)](#) (reversing and rendering because plaintiff failed to obtain, over defendant's objection, the lack of knowledge finding required to establish premise defect claim).

[19] Ford argues that we should reverse and render judgment in its favor because of its objected-to charge error, as we did in [State Department of Highways & Public Transportation v. Payne](#),^{FN34} but we disagree. In [Spencer v. Eagle Star Insurance Co. of America](#),^{FN35} we distinguished [Payne](#) and explained that where, as in the pending case, the theory of recovery was defectively submitted, as opposed to a situation where the plaintiff “refused to submit a theory of liability” after defendant's objection, the proper remedy is to remand for a new

trial.^{FN36}

[FN34.838 S.W.2d at 241.](#)

[FN35.876 S.W.2d 154 \(Tex.1994\).](#)

[FN36.Id. at 157.](#)

[20] [Spencer](#) distinguished cases that reversed and rendered where the plaintiff “failed to submit any jury question on a controlling issue.”^{FN37} We further explained, in [Spencer](#) and in [Stutzman](#), that if the plaintiff submits a jury question on his claim that is merely “defective,” as opposed to “immaterial,” the appropriate remedy is to remand for a new trial rather than to render judgment.^{FN38} In the pending case, Ledesma proffered a question on his manufacturing defect claim based on the PJC for this cause of action. He “attempted to submit a controlling issue”^{FN39} on his sole cause of action, and the question submitted “was the heart of [Ledesma's]*45 case,”^{FN40} so the question cannot be characterized as immaterial, and we cannot say that Ledesma failed to submit a jury question on a controlling issue.

[FN37.Id.](#)

[FN38.Stutzman, 46 S.W.3d at 839-41;Spencer, 876 S.W.2d at 155, 157.](#)

[FN39.Stutzman, 46 S.W.3d at 840.](#)

[FN40.Spencer, 876 S.W.2d at 157.](#)

[21] Further, we “may, in the interest of justice, remand the case to the trial court even if a rendition of judgment is otherwise appropriate.”^{FN41} “[W]e have remanded in the interest of justice when our decisions have altered or clarified the way in which a claim should be submitted to the jury.”^{FN42} In the pending case, the trial court followed the PJC. On one occasion we not only approved a PJC issue and instruction for design defect cases, we expressly disapproved of the use of any other instructions in such cases,^{FN43} prompting one court of appeals to remark that “[o]ur highest court has made it abundantly clear that to deviate from the pattern jury charges in products liability cases is a perilous journey.”^{FN44} Given that our trial courts routinely rely on the Pattern Jury Charges in submitting cases

to juries,^{FN45} and we rarely disapprove of these charges, we conclude that the interests of justice would not be served by reversing and rendering judgment in favor of Ford. The more appropriate remedy is to reverse and remand for a new trial.

[FN41.TEX.R.APP. P. 60.3.](#)

[FN42.Stutzman, 46 S.W.3d at 840.](#)

[FN43.Acord v. Gen. Motors Corp., 669 S.W.2d 111, 116 \(Tex.1984\).](#)

[FN44.Wilson v. Kaufman & Broad Home Sys., 728 S.W.2d 874, 875-76 \(Tex.App.-Beaumont 1987, writ ref'd n.r.e.\).](#)

^{FN45}. Indeed, Ford's own brief contends that until this Court corrects the PJC 71.3, "it will continue to be used in every case in Texas in which [a manufacturing] defect is alleged."

3. Producing Cause

Ford separately complains that the trial court improperly instructed the jury on producing cause. The trial court, following PJC 70.1, instructed the jury: " 'Producing cause' means an efficient, exciting, or contributing cause that, in a natural sequence, produces the incident in question. There may be more than one producing cause." Ford contends that this definition is an incorrect statement of Texas law, and that a valid definition would state that producing cause "means that cause which, in a natural sequence, was a substantial factor in bringing about an event, and without which the event would not have occurred. There may be more than one producing cause." Ford requested the trial court to use this definition.

We agree with Ledesma that the second part of the court's definition, recognizing that there may be more than one producing cause of an event, is correct. And we have seemed to sanction the first part, employing it ourselves several times in describing producing cause.^{FN46} But we have also described a producing cause as one "that is a substantial factor that brings about injury and without which the injury would not have occurred,"^{FN47} the definition Ford asks us to

adopt.

^{FN46}. See [Brown v. Bank of Galveston, Nat'l Ass'n, 963 S.W.2d 511, 514 \(Tex.1998\)](#) ("A producing cause is an efficient, exciting, or contributing cause, which in the natural sequence of events, produces injuries or damages."); [Union Pump Co. v. Allbritton, 898 S.W.2d 773, 775 \(Tex.1995\)](#) ("A producing cause is 'an efficient, exciting, or contributing cause,' which in a natural sequence, produced injuries or damages complained of, if any.") (quoting [Haynes & Boone v. Bowser Bouldin, Ltd., 896 S.W.2d 179, 182 \(Tex.1995\)](#) (quoting [Rourke v. Garza, 530 S.W.2d 794, 801 \(Tex.1975\)](#))).

^{FN47}. [Trinity Universal Ins. Co. v. Bleeker, 966 S.W.2d 489, 491 \(Tex.1998\)](#); see also [Doe v. Boys Clubs of Greater Dallas, Inc., 907 S.W.2d 472, 481 \(Tex.1995\)](#) ("A producing cause is a substantial factor which brings about the injury and without which the injury would not have occurred."); [Union Pump, 898 S.W.2d at 775](#) (noting that causation in fact is common to both proximate and producing cause, and that "[c]ause in fact means that the defendant's act or omission was a substantial factor in bringing about the injury which would not otherwise have occurred"); [Prudential Ins. Co. of Am. v. Jefferson Assocs., Ltd., 896 S.W.2d 156, 161 \(Tex.1995\)](#) (holding that the element of actual causation in fact common to both proximate and producing cause "requires proof that an act or omission was a substantial factor in bringing about injury which would not otherwise have occurred").

*46 To say that a producing cause is "an efficient, exciting, or contributing cause that, in a natural sequence, produces the incident in question" is incomplete and, more importantly, provides little concrete guidance to the jury. Juries must ponder the meaning of "efficient" and "exciting" in this context. These adjectives are foreign to modern English language as a means to describe a cause, and offer little practical help to a jury striving to make the often difficult causation determination in a products case.

[22] Defining producing cause as being a substantial factor in bringing about an injury, and without which the injury would not have occurred, is easily understood and conveys the essential components of producing cause that (1) the cause must be a substantial cause of the event in issue and (2) it must be a but-for cause, namely one without which the event would not have occurred. This is the definition that should be given in the jury charge.

III. Conclusion

We reverse the court of appeals' judgment and remand this case to the trial court for further proceedings.

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