

level and personally bicycles an average of 5,000 miles each year. See id.

According to the plaintiff, Allen will testify that "a positive-torque locking nut was available on the market and used in the manufacture of bicycles at the time the bicycle in question was manufactured and that the use of such a nut to secure the brake assembly on the MacCleery bicycle would have prevented the assembly from coming loose and causing the accident." Plaintiff's Objection at ¶ 1.

Discussion

The admissibility of expert testimony is governed by Rule 702:

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 First Circuit, incorporating the Supreme Court's decision of Daubert v. Merrell Dow Pharmaceutical, Inc., 113 S. Ct. 2786 (1995), requires the proponent of expert testimony to establish that 1) the expert is qualified; 2) his testimony is reliable; and 3) his expert conclusions "fit" the facts of the case. See Grimes v. Hoffmann-LaRoche, Inc., 907 F. Supp. 33, 34-35 (D.N.H. 1995) (citing United States v. Shay, 57 F.3d 126 (1st Cir.

1995)); accord Pacamor Bearings, Inc. v. Minebea Co., Ltd., 918 F. Supp. 491, 506-07 (D.N.H. 1996). Thus, "[q]ualifications alone are insufficient to satisfy the rule's requirements if the expert's testimony is based on unreliable methodology or if it cannot reliably be applied to the facts in issue." Grimes, 907 F. Supp. at 34-45 (citing Daubert v. Merrell Dow Pharmaceutical, 43 F.3d 1311, 1319 (9th Cir. 1995), cert. denied, ___ S. Ct. ___ (1996)). The rule's threshold requirements guide the trial court's exercise of its broad discretion in evidentiary matters, see Shay, 57 F.3d at 132, to ensure that "an expert's testimony both rests on a reliable foundation and is relevant to the task at hand," Vadala v. Teledyne Indus., Inc., 44 F.3d 36, 39 (1st Cir. 1995) (quotation marks omitted). See also Pacamor Bearings, 918 F. Supp. at 506 (listing authority and discussing "gatekeeping function" of court's preliminary assessment of expert evidence under Rule 702). Finally, the proponent of expert testimony must establish by a preponderance of the evidence that Rule 702's requirements have been satisfied. Grimes, 907 F. Supp. at 35 (citing Daubert, 113 S. Ct. at 2796 n.10).

The reliability requirement concerns the process by which an expert arrives at a given conclusion and, thus, demands that the proffered "opinion be based on the methods and procedures of

science rather than on subjective belief or unsupported speculation." Grimes, 907 F. Supp. at 35 (quoting In re Paoli R.R. Yard PCB Litig., 35 F.3d 717, 742 (3d Cir. 1994) (quotation marks omitted), cert. denied, 115 S. Ct. 1253 (1995)). The Supreme Court, concerned that experts have "good grounds" for their beliefs, has distilled the trial court's inquiry into the reliability of a proffered opinion into a non-exhaustive list of considerations:

- 1) Whether the opinion can be or has been tested;
- 2) whether the theory or technique on which the opinion is based has been subjected to peer review and publication;
- 3) the technique's known or potential error rate;
- 4) the existence and maintenance of standards controlling the technique's operations; and
- 5) "general acceptance."¹

¹The "general acceptance" criteria, first applied to expert testimony in Frye v. United States, 293 F. 1013, 1014 (D.C. Cir. 1923), see Grimes, 907 F. Supp. at n.1, is based on the view that

[w]idespread acceptance can be an important factor in ruling particular evidence admissible, and a "known technique that has been able to attract only minimal support within the community" may properly be viewed with skepticism.

Daubert, 113 S. Ct. at 2797 (quoting United States v. Downing, 753 F.2d 1224, 1238 (3d Cir. 1985)). The Supreme Court's recognition of a general acceptance inquiry indicates that the so-called Frye test remains a meaningful, but no longer the predominant, factor in the modern Rule 702 calculus. See Daubert, 113 S. Ct. at 2797; accord Grimes, 907 F. Supp at 35 n.

See Daubert, 113 S. Ct. 2796-97; Grimes, 907 F. Supp. at 34. The criteria are flexible and their application will vary with the facts of a given case. E.g., Daubert, 113 S. Ct. at 2797. Finally, the Supreme Court has indicated that although Rule 702 governs the admissibility of all expert testimony, the relevance of the Daubert factors is diminished to some extent in cases where the expert opinion at issue involves "well-established" -- as opposed to "novel" -- propositions and theories. See 113 S. Ct. at 2796 n. 11; see also Officer v. Teledyne Republic/Sprague, 870 F. Supp. 408, 410 (D. Mass. 1994) ("While Daubert's principles have valuable application in determining the admissibility of controversial and novel scientific hypotheses, they have less use in fields like design engineering where "general acceptance" is the norm, not the exception"); Lappe v. American Honda Motor Co., Inc., 857 F. Supp. 222, 228 (N.D.N.Y. 1994) (finding Daubert inapplicable where proffered opinion was based on "facts, an investigation, and traditional mechanical/technical expertise," where "supported by rational explanations which reasonable men might accept," and where "none of [the expert's] methods strike the court as novel or extreme"), aff'd, ___ F.3d ___ (Table), 1996 WL 170209 (2d Cir. April 11,

1996).

Royce Union, which does not challenge Allen's qualifications or the relevancy of his testimony, asserts that the proffered opinions lack the degree of reliability required by Daubert. See Royce Union's Memorandum of Law in Support of Motion in Limine ("Royce Union's Memorandum") at 4. Specifically, Royce Union dismisses the opinions concerning the alleged defective design of the nut and lock washer as subjective conclusions which have neither been substantiated by actual testing nor otherwise verified. See id. at 6-7. Royce Union further argues that Allen's anticipated testimony concerning the bicycle's lack of a safer alternative design, i.e., the use of a positive-torque nut, is inadmissible because it is not supported by evidence that the alternative design is feasible. See id. at 7-8.

The plaintiff responds, inter alia, that Daubert's individual testing requirement is inapplicable because Allen's expert opinion rests on "elementary principles of physics and mechanical engineering," that the function of free-turning nuts on bicycles is commonly understood in the field, and that use of a positive-torque nut does not constitute an "untested design concept" because such use is common in bicycle brake assemblies. See Plaintiff's Memorandum of Law in Opposition to Motion in Limine ("Plaintiff's Memorandum") at 2-4.

The court finds that, based on the plaintiff's proffer and the absence of evidence to the contrary, Allen's testimony satisfies the reliability requirement of Rule 702.

The plaintiff's proffer concerning the mechanical function and inadequacies of the nut and lockwasher present on the bicycle indicates that Allen's opinions on these matters are based on established engineering principles which are generally accepted by those familiar with bicycle maintenance:

My awareness of the insufficiency of a split lockwasher to secure the bicycle brake caliper in question is based on elementary scientific principles and scientific law, namely that if two objects are not in contact, no force can be transmitted mechanically between them.

Plaintiff's Objection, Attachment B ("Allen Affidavit") at ¶ 3.

The court notes that the proffer ventures beyond conclusory statements of general acceptance of design deficiency by explaining in some detail how fundamental engineering principles operate to render the relevant hardware inadequate:

The lockwasher in question has only one tooth. If this tooth is not bearing against a mating surface, the lockwasher tooth can not prevent the lockwasher and mating parts from rotating. The slotted hole and curved surface of the fender bracket under the lockwasher created a high probability that the tooth of the lockwasher would not contact the fender bracket, thereby eliminating any effectiveness of the lockwasher other than as an ordinary, non-locking washer.

* * * *

In the case of a bicycle brake, two factors operate to

unscrew the nut: the downward slope of the threaded end of the bolt, which puts gravity to work directing the rotation of the nut when vibration reduces its friction against the bolt; and the tension on the bolt when the brake is applied, which also directs the nut toward the end of the bolt. No new scientific experimentation is needed to show that force acts in the direction in which it is applied.

Id. at ¶¶ 4, 5; see also id. at ¶ 8 ("Mechanical wear is a phenomenon so well-known to science as to require no new experiment to demonstrate it. A bicycle brake bolt assembly is particularly vulnerable to wear of this type because the bolt is cyclically stressed in shear and rotation and not only in tension").

Significantly, Allen has testified that the failure of bicycle brakes secured by hardware like that of the defendant's design has been noted in technical bicycling literature, see id. at ¶ 6 (citing 1992 Bicycling magazine article by Dr. David Gordon Wilson), and is consistent with his own observations as "bicyclist, bicycle mechanic, researcher and writer about bicycling," id. at ¶ 7. Accordingly, the court finds that Allen's opinion with respect to the bicycle brake design is based on generally accepted engineering and bicycle maintenance principles and has been subjected to at least some peer review and publication.

The plaintiff's proffer also addresses the feasibility of the positive-torque locknut design as a safer alternative to the

hardware securing her bicycle's brakes:

[N]o lockwasher of any type provides any security whatever against a nut's unscrewing once it has loosened. A positive-torque locking nut, on the other hand, provides this security by actively gripping the bolt onto which it is threaded. As the name "positive-torque locking nut" indicates, considerable torque must be applied to turn it. It can not progressively unthread itself due to ordinary mechanical vibration or other forces.

Id. at ¶ 5. Again, the court attaches significance to the fact that the plaintiff's proffer explains why, under basic engineering principles, the positive-torque design is preferable to the lock washer actually used on the bicycle.

With respect to his theory that the brake assembly would not have failed if equipped with a safer mechanism, Allen has testified that use of the positive-torque locknut to secure bicycle brakes is "widespread." Id. at ¶ 9. The actual use of the design by the bicycling industry renders irrelevant Royce Union's contention that "federal courts cannot [admit an] opinion concerning the feasibility of alternative designs absent evidence that the design alternative has been tested and proven effective." Royce Union's Memorandum at 7-8 (citing Deimer v. Cincinnati Sub-Zero Products, Inc., 58 F.3d 341 (7th Cir. 1995); Buckman v. Bombardier Corp., 893 F. Supp. 547 (E.D.N.C. 1995); Stanczyk v. Black & Decker, Inc., 836 F. Supp. 565 (N.D. Ill.

1993)).² In the opinion of the court, a design which is in current commercial use is presumptively effective and, as such, cannot be dismissed as an untested and novel theory simply because the expert did not also identify a testing procedure which validates the effectiveness. Accordingly, the court finds that Allen's theory of a safer alternative design is based on generally accepted engineering principals which have actually been incorporated into conventional bicycle design.

The court denies Royce Union's motion and will permit Allen to offer his expert opinions with respect to the allegedly deficient design of the plaintiff's bicycle. Of course, the defendants are entitled to cross-examine the witness thoroughly on his testimony, including the deficiencies identified in Royce

²Royce Union's case authority on this point is inapposite. For example, in Stanczyk, the district court relied on Daubert to preclude the plaintiff's expert from offering an opinion that the defendant's product would have been safer if equipped with a saw guard of different design. 836 F. Supp. at 566-67. The court reasoned that the alternative design theory lacked an adequate basis because, unlike the positive-torque locknut, it was not used on other commercially available saws, was not recognized by peer review and publication, and was not supported by evidence that it actually worked. See id. Likewise, there is no indication that the alternative design theory excluded in Buckman was ever applied through practical application in a product similar to the one at issue. See 893 F. Supp. at 557. Finally, the Deimer decision is of minimal relevance because it does not indicate whether the excluded alternative power cord design was ever used in similar products and, in any event, the Seventh Circuit affirmed the trial court's evidentiary rulings under a highly deferential, "manifestly erroneous," standard. See 58 F.3d at 344-45.

Union's motion. See Pacamor Bearings, 918 F. Supp. at 507 ("the full burden of exploration of the facts and assumptions underlying [expert testimony falls] squarely on the shoulders of opposing counsel's cross-examination") (quoting Newell Puerto Rico, Ltd. v. Rubbermaid, Inc., 20 F.3d 15, 20 (1st Cir. 1994)). Moreover, litigants are always entitled to request, by contemporaneous oral or written motion, that the court strike a given expert's testimony to the extent it lacks a proper foundation. See id. (quoting United States v. Sepulveda, 15 F.3d 1161, 1183 (1st Cir. 1993)).

Conclusion

Royce Union's motion in limine (document no. 72) is denied.
SO ORDERED.

Joseph A. DiClerico, Jr.
Chief Judge

June 11, 1996

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