1988

State of the Art Evidence under Ohio Strict Products Liability Law

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# STATE OF THE ART EVIDENCE UNDER OHIO STRICT PRODUCTS LIABILITY LAW

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**I. INTRODUCTION**

 Strict products liability law has grown at a feverish pace since the concept was first articulated by Justice Traynor in the 1963 case of *Greenman v. Yuba Power Products, Inc.*¹ As a result of its rapid growth, the law of strict products liability is vast and complex, and has generated a voluminous body of scholarly works, many of which attempt to unravel the complex web of confusion woven over the last twenty-five years. While the evolution of strict products liability has not generated as much jurisprudence in Ohio as it has in other states, the Ohio law that has evolved clearly reflects the national confusion.² Frequently, the confusion

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¹ 59 Cal. 2d 57, 62, 377 P.2d 897, 900, 27 Cal. Rptr. 697, 700 (1963) ("A manufacturer is strictly liable in tort when an article he places on the market, knowing that it is to be used without inspection for defects, proves to have a defect which causes injury to a human being.").

both nationally and in Ohio results from the courts' failure to adequately separate the many issues that arise in a strict products liability action.

The purpose of this Note is to focus on one narrow issue in Ohio strict products liability law—the admissibility of state of the art evidence. The Ohio Supreme Court has never addressed this question, and other jurisdictions are split on the issue. Although it is impossible to completely extricate the issue of the admissibility of state of the art evidence from other strict products liability concerns, the Note attempts, at least as much as possible, to isolate the state of the art thread as it travels through the cases, and deals with related "threads" only when they become seemingly inextricably entwined with the state of the art issue.

II. STATE OF THE ART DEFINED

The threshold problem when considering the admissibility of state of the art evidence is a definitional one. Over the years, a virtual plethora of definitions of state of the art evidence have been offered by courts and commentators alike. Unfortunately, no uniform meaning has emerged.

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3 "State of the art" is defined at infra text accompanying note 11.

4 Robb, A Practical Approach to Use of State of the Art Evidence in Strict Product Liability Cases, 77 NW. U.L. Rev., 1, 11 (1982). Courts not admitting state of the art evidence hold that state of the art evidence is irrelevant under strict liability since it relates to the reasonableness of the manufacturer's design choice. Id. See infra notes 82-90 and accompanying text.

Attempts to pass legislation in Ohio dealing with the relevance and admissibility of state of the art evidence under strict products liability have failed. For example, § 2305.33(B) of S.B. No. 67, 113th Gen Assy., Reg. Sess. (1979-80) passed in the Ohio Senate but failed in the House:

It shall be rebuttably presumed that a product was not defective as manufactured if the design of the product or the method of its manufacture or testing or inspection which is alleged to have caused the bodily injury, death or injury to personal or real property conformed with the state of the art existing at the time the product was designed, manufactured, tested or inspected. For purposes of this division, "state of the art" means the technical, mechanical, scientific and safety knowledge in existence and reasonably feasible for use at the time the product was designed, manufactured, tested, or inspected.

Section 2305.34(A) would have created a rebuttable presumption that a product is not defective if at the time of manufacture the product complied with applicable government statutes, standards or rules regarding product design, manufacturing or timing.


5 See infra notes 82-108 and accompanying text.
The term was first articulated in the products liability context in the 1956 Illinois case of *Day v. Barber-Colman Co.* In that case, the plaintiff unsuccessfully sued the manufacturer of an overhead door for injuries he sustained when the door allegedly fell on him. In rejecting plaintiff's claim that the defendant had negligently manufactured the door, the court stated:

[T]he design having evidently been found safe in the industry by experience and having been many times used safely by installers, the *state of the art* at the time and the prior history of the use of the product would not have indicated or required any material change in the design or manufacture.

Unfortunately, as the term is used by the *Day* court, it is unclear whether it intended "state of the art" to mean that the overhead door was manufactured in accordance with industry custom, in compliance with government standards, or that the door was designed and manufactured as safely as was technologically possible. Consequently, "[t]he . . . result of this undefined birth of state of the art has been a continued confusion over its precise meaning that has persisted to this day."10

The most apt legal definition of state of the art in a strict products liability context is technological feasibility. Under this definition, a product is "state of the art" if its design incorporates the "level of pertinent scientific and technical knowledge existing at the time" the product was designed and manufactured. A number of courts have adopted this meaning or a similar formulation.12

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6 Robb, *supra* note 4, at 3.
7 110 Ill. App. 2d 494, 135 N.E.2d 231 (1956).
8 *Id.* at 498, 135 N.E.2d at 233.
9 *Id.* at 507, 135 N.E.2d at 237 (emphasis added) quoted in Robb, *supra* note 4, at 3.
10 Robb, *supra* note 4, at 3-4. Indeed, at least one commentator prefers a broad definition. See Spradley, *Defensive Use of State of the Art in Strict Products Liability*, 67 Minn. L. Rev. 343 (1982) (State of the art evidence is the "aggregate of product-related technical and scientific knowledge existing at any given time, in the industry itself, and in related fields of inquiry."). *Id.* at 345.
12 *See, e.g.,* Bruce v. Martin-Marietta Corp., 544 F.2d 442, 447 (10th Cir. 1976) (ordinary consumer could not expect airplane made in 1982 to have the safety features of one made in 1970 any more than they would expect a Model T to have safety features which are incorporated in automobiles today); Olson v. Arctic Enters., 349 F. Supp. 761, 765 (D.N.D. 1972) (court must view the alleged defect in light of the engineering standards in effect in the year of manufacture); Balido v. Improved Mach., Inc., 29 Cal. App. 3d 633, 640, 105 Cal. Rptr. 890, 895 (1973) (design defective only when measured "from the state of the art at the time of design"); Lenhardt v. Ford Motor Co., 102 Wash. 2d 208, 210, 683 P.2d 1097, 1099 (1984) ("the technological feasibility of an alternative safer design in existence at the time the product was originally manufactured"). See also Wiska v. St. Stanislaus Social Club,
ity is the most apt legal definition of state of the art for several reasons. First, technological feasibility is the meaning attributed to the term by most laypersons and professionals. 13 Second, while the admissibility of evidence showing technological feasibility under strict products liability law is an open question, 14 evidence of compliance with custom and government standards is relevant only to prove or disprove technological feasibility, 15 and therefore is only admissible if state of the art evidence is admissible. 16 Use of "state of the art" as an umbrella term encompassing all three potential meanings only adds confusion to the already muddled issue of the admissibility of state of the art evidence under strict products liability law. Nevertheless, courts continue to use "state of the art" to mean custom 17 and compliance with government regulations. 18

This Note deals with the question of the admissibility of state of the art evidence (i.e., technological feasibility) under Ohio strict products liability design defect law. 19 Since evidence of custom and compliance with


13 See, e.g., The Barnhart Dictionary of New English Since 1963 442 (1973) (state of the art means "the level of scientific or technological development in a given field or industry at the present, or at any designated, time"); the Oxford American Dictionary 668 (1970) (the "current state of development or knowledge of a subject") and Webster's New Collegiate Dictionary 1136 (1973) ("the level of development (as of a device, procedure, process, technique, or science) reached at any particular time usually as a result of modern methods") as quoted in Robb, supra note 4, at 5 n.15.

14 The bulk of this Note is directed at resolving this question.

15 See infra notes 136-69 and accompanying text. See also Robb, supra note 4, at 4 n.10. ("custom or standards of the industry may be relevant . . . as evidence of what the actual state of the art in that industry is.").

16 See supra note 14 and accompanying text.

17 See, e.g., Caterpillar Tractor Co. v. Beck, 593 P.2d 871, 887 (Alaska 1979) (court approved jury instruction defining state of the art as what other manufacturers of construction equipment were doing at the time); Sturm, Ruger and Co. v. Day, 594 P.2d 38, 44 (Alaska 1979) ("generally speaking, 'state of the art' refers to customary practice in the industry."). See also Smith v. Minster Mach. Co., 669 F.2d 628, 633 (10th Cir. 1982); Robb, supra note 4 at 4 n.10.


19 There are two potential types of product defects in a strict products liability action: manufacturing defects and design defects. Manufacturing defects occur on the production line. A product with a manufacturing defect is one that differs from the rest of the items in the product line because, for whatever reason, it fails to conform to the manufacturing specifications. State of the art evidence is irrelevant in an action alleging manufacturing defect because the inquiry in this situation is whether the product meets the manufacturer's design specifications, not whether a superior design was feasible. With design defects, on the other hand, the product has been manufactured exactly according to specification. The
government standards is relevant to prove or disprove whether a product is state of the art (i.e. technologically feasible), and since Ohio, like many other states, has tended to lump together all three evidentiary types, all are discussed, albeit separately, in Section IV below. Before turning to the discussion of the admissibility of state of the art evidence under Ohio strict products liability law, some background information is necessary. Accordingly, the following Section discusses the admissibility of state of the art evidence in Ohio prior to the adoption of the Restatement (Second) of Torts section 402A, and then traces the evolution of the risk-benefit standard which grew out of section 402A. As will be explained below, the risk-benefit test is the vehicle through which state of the art evidence is either admissible or inadmissible under Ohio strict products liability law.

III. The Ohio Evolution

A. State of the Art Evidence in Ohio Prior to Temple v. Wean

Prior to the Ohio Supreme Court’s adoption of section 402A in the 1977 case of Temple v. Wean, only one Ohio case addressed the admissibility of state of the art evidence in a strict products liability design defect case. In that case, LaMonica v. Outboard Marine Corp., the plaintiff was struck in the eye by an unidentified object that was projected from a lawn mower. As a result of the injury, he lost the vision in his left eye.

LaMonica sued the mower manufacturer in strict tort liability, an available cause of action in Ohio since the 1966 case of Lonzrick v. Republic Steel Corp. The trial court found for the defendant, and the inquiry in that situation is whether the design itself is defective, and state of the art evidence is arguably relevant to gauge whether the product design incorporated the level of technological knowledge existing at the time of manufacture. See Robb, supra note 4, at 13-14.

See supra note 15 and accompanying text.

Restatement (Second) of Torts § 402A (1982). See infra note 37 and accompanying text.


See infra note 37 and accompanying text.


Id. at 43, 355 N.E.2d at 534-35.

6 Ohio St. 2d 227, 218 N.E.2d 185 (1966). Under Lonzrick, in order for a plaintiff to recover she has to prove the following:

(1) That the product was defective;
(2) That the defect existed at the time the product was sold;
(3) That the defect was the proximate cause of the injury;
(4) That the product was being used for its ordinary intended purpose; and,
plaintiff appealed. On appeal, he contended that the trial court erred in restricting the admission of state of the art evidence to showing the state of the art of the lawn mower industry in 1966, the year the allegedly defective mower was manufactured. He sought to have evidence admitted concerning improvements that had been made in the mower design subsequent to 1966.28

Since the Ohio Supreme Court had not addressed the admissibility of state of the art evidence in a strict products liability action, the LaMonica court turned to the Illinois case of Sutkowski v. Universal Marion Corp.29 for guidance. The Sutkowski court held:

The possible existence of alternative designs introduces the feature of feasibility since a manufacturer’s product can hardly be faulted if safer alternatives are not feasible. In this connection feasibility includes not only the elements of economy, effectiveness and practicality but also the technological possibilities viewed in the present state of the art. If the feasibility of alternative designs may be shown . . . we conclude that evidence of a post occurrence change is equally relevant and material in determining that a design alternative is feasible.30

Adopting the rule and rationale of the Sutkowski court, the LaMonica court held, inter alia, that state of the art evidence is admissible for the limited purpose of showing that an alternative design was feasible at the time the item was manufactured or sold.31 Therefore, under LaMonica, state of the art evidence was admissible in an Ohio strict products liability action prior to the 1977 adoption of section 402A.32

B. Temple v. Wean and the Evolution of Ohio’s Risk-Benefit Test

Prior to 1977, strict liability in Ohio was based on an implied warranty theory.33 In the 1977 case of Temple v. Wean,34 the Ohio Supreme Court adopted section 402A,35 the Restatement version of strict liability in tort,

(5) That the plaintiff’s presence reasonably could have been anticipated by the manufacturer. Id. at 237, 218 N.E.2d at 192-93.

28 LaMonica, 48 Ohio App. 2d at 44, 355 N.E.2d at 535.
30 Id. at 319, 281 N.E.2d at 753.
31 LaMonica, 48 Ohio App. 2d at 45, 355 N.E.2d at 535.
32 See infra note 37 and accompanying text.
33 For the elements of a plaintiff’s prima facie case under the implied warranty theory, see supra note 27.
35 Restatement (Second) of Torts § 402A (1982).
"[b]ecause there are virtually no distinctions between Ohio's 'implied warranty' in tort theory and the Restatement version . . . and because the Restatement formulation, together with its numerous illustrative comments, greatly facilitates analysis in this area."36 Under the Restatement, a manufacturer is liable if it sells a product in a "defective condition unreasonably dangerous."37 This phrase is the focal point in the Restatement, because the risk-benefit test,38 which is at the core of today's Ohio strict products liability law, evolved from the Ohio Supreme Court's post-Temple interpretation of those words. Further, the risk-benefit test is the vehicle through which state of the art evidence either is or is not admissable under Ohio strict products liability law. Therefore, an analysis of the transmutation of "defective condition unreasonably dangerous" into the risk-benefit test is essential to the issue of the admissibility of state of the art evidence.

The first Ohio Supreme Court case after Temple that wrestled with "defective condition unreasonably dangerous" is Leichtamer v. AMC.39 In that case, the plaintiffs alleged that a jeep manufactured by the defen-

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36 Temple, 50 Ohio St. 2d at 322, 364 N.E.2d at 271.
37 Restatement (Second) of Torts § 402A (1982). Section 402A of the Restatement reads as follows:

Special Liability of Seller of Product for Physical Harm to User or Consumer.

(1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if

(a) the seller is engaged in the business of selling such a product, and
(b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.

(2) The rule stated in Subsection (1) applies although

(a) the seller has exercised all possible care in the preparation and sale of his product, and
(b) the user or consumer has not bought the product from or entered into any contractual relation with the seller. (emphasis added)

Comment g of the Restatement defines defective condition as "a condition not contemplated by the ultimate consumer which will be unreasonably dangerous to him." Id. at 351. Comment i states that for a product to be unreasonably dangerous, "[t]he article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics." Id. at 352.

Comment g and Comment i are influential in the Ohio Supreme Court's formulation of the consumer expectation test (see infra notes 39-45 and accompanying text). However, as will be seen infra notes 56-58 and accompanying text, the consumer expectations test is of little importance in a strict products liability action, at least as far as state of the art evidence is concerned.

38 See infra note 54 and accompanying text.

dant was defective because of the displacement of the vehicle’s roll bar. The Leichtamer court found that implicit in the concept of “unreasonable dangerousness” is that a product may be found defective in design if it is more dangerous than the ordinary consumer would expect. The court felt that the “unreasonably dangerous” element of the section 402A Restatement formulation was more important than the “defective condition” wording, since “. . . clearly a product cannot be considered defective simply because it is capable of producing injury.” Therefore, noted the Leichtamer court, the concept of “unreasonable danger” is critical in establishing liability under a strict tort liability analysis. Since consumer expectations are inherent in determining reasonableness, the court held that “[a] product will be found unreasonably dangerous if it is dangerous to an extent beyond the expectations of an ordinary consumer when used in an intended or reasonably foreseeable manner.” Thus, the Ohio consumer expectation test was born.

The watershed case in Ohio strict products liability design defect law is Knitz v. Minster Machine Co. In Knitz, the plaintiff was a punch press operator for Toledo Die and Manufacturing Company. On the day she sustained her injuries, she left her work area in search of a more comfortable stool. Upon returning, she noticed that while she was gone her wastebasket had been emptied and the foot pedal which activated the press had been moved. She leaned on the press bolster plate with her right hand and attempted to move the pedal back into place with her foot. While doing so she activated the foot pedal, causing the ram press to descend with sixty tons of force onto the bolster plate. As a result, two of her fingers required amputation.

In her complaint, Knitz alleged, inter alia, that “the press was sold in a defective condition which was dangerous to user of said product.” The trial court granted summary judgment to the defendant and the court of appeals affirmed. After reiterating the Leichtamer consumer expectation test, the Knitz court noted that there are situations in which “the consumer would not know what to expect, because he

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40 Leichtamer, 67 Ohio St. 2d at 458, 424 N.E.2d at 571-72.
41 Id. at 466, 424 N.E.2d at 576.
42 Id. (quoting W. KIMBLE & R. LESHER, PRODUCTS LIABILITY 80 (1979)).
43 Leichtamer, 67 Ohio St. 2d at 466, 424 N.E.2d at 576.
44 In concluding that consumer expectations are inherent in determining reasonableness, the court borrowed from Comments g and i of the Restatement. See supra note 37.
45 Leichtamer at 467, 424 N.E.2d at 577.
46 69 Ohio St. 2d 460, 432 N.E.2d 814 (1982).
47 Id. at 460-61, 432 N.E.2d at 815.
48 Id. at 461-62, 432 N.E.2d at 816.
49 Id. at 462, 432 N.E.2d at 816.
50 See supra notes 41-45 and accompanying text.
would have no idea how safe the product could be made.\footnote{Knitz at 465, 432 N.E.2d at 818 (quoting Wade, On The Nature of Strict Tort Liability for Products, 44 Miss. L.J. 825, 829 (1973)). The main problem with the consumer expectations test is that it allows the manufacturer to avoid liability even though the product is defective. The Knitz court noted that under the consumer expectations test, "[d]ifficulty could arise . . . where the injured party is an innocent bystander who is ignorant of the product and has no expectation of its safety, or where a new product is involved and no expectation of safety has developed." Id. at 465, 432 N.E.2d at 818.} In such cases, stated the court, the policy underlying strict liability\footnote{"[T]he policy underlying the doctrine [is] that the public interest in human life and safety can best be protected by subjecting manufacturers of defective products to strict liability in tort when the products cause harm." Leichtamer, 67 Ohio St. 2d at 464-65, 424 N.E.2d at 575.} requires that a product may be found defective in design, even if it satisfies ordinary consumer expectations, if through hindsight the jury determines that the product’s design embodies “excessive preventable danger,” or, in other words, if the jury finds that the risk of danger inherent in the challenged design outweighs the benefits of such design.\footnote{Knitz, 69 Ohio St. 2d at 466, 432 N.E.2d at 818 (quoting Barker, 20 Cal. 3d at 430, 573 P.2d at 454, 143 Cal. Rptr. at 237).}

Therefore, the Knitz court held that a product design is in a defective condition if (1) it is more dangerous than an ordinary consumer would expect when used in an intended or reasonably foreseeable manner, or (2) if the benefits of the challenged design do not outweigh the risk inherent in such design.\footnote{Knitz, 69 Ohio St. 2d at 466, 432 N.E.2d at 818. Hereinafter, the second part of this test will be referred to as the risk-benefit test. The test as a whole will be referred to as either the Knitz test or the consumer expectations/risk-benefit test. Under the consumer expectations/risk-benefit test, the trial judge first determines whether the nature of the product is such that the consumer would or would not have reasonable expectations of the safety of a particular product. If the nature of the product is such that the consumer would have reasonable expectations, then the jury is instructed to determine whether the product design is defective under the consumer expectations test. If the jury concludes that the product is in a defective condition under that test, the analysis stops there and the}
plaintiff had made out a genuine issue of material fact as to whether the press design was defective, and reversed the appeals court. The Knitz test significantly diminishes the importance of the Leicht-tamer consumer expectations inquiry since under the consumer expectations portion of the Knitz test the manufacturer can never be absolved from liability. The manufacturer's only hope lies in the risk-benefit test. This result led one commentator to note that "[b]urdening a product defect analysis with the conceptual baggage of the hypothetical ordinary consumer adds essentially nothing of substance to a straightforward risk-utility balancing approach . . . the [consumer expectations test] needlessly protracts the analysis." Since the consumer expectations portion of Knitz is of dubious significance, the appropriate focus of the analysis of the admissibility of state of the art evidence under Ohio strict products liability law is the risk-benefit test.

While the Ohio Supreme Court has never addressed the admissibility of state of the art evidence under Ohio strict products liability law, the court intimated in Knitz that such evidence is admissible under the risk-benefit test. In order for the jury to determine whether a product embodies "excessive preventable danger"—that is, whether the risk inherent in the design outweighs the benefits, the Knitz court stated that it may consider "the likelihood that the product will cause injury, the gravity of the danger posed, and the mechanical and economic feasibility of an improved design." The question of whether a product embodies

manufacturer is liable. However, if the jury finds that the product satisfies consumer expectations, it then evaluates the product under the risk-benefit test. On the other hand, if the judge makes a preliminary finding that the product is of the type about which the jury would not know what to expect, the jury is instructed solely on the risk-benefit test.

55 Knitz, 69 Ohio St. 2d at 467, 432 N.E.2d at 819.
56 See supra note 54.
58 Courts using only a consumer expectations test have held that state of the art evidence is admissible because "[s]tate-of-art evidence helps to determine the expectation of the ordinary consumer." Bruce v. Martin-Marietta Corp., 544 F.2d 442, 447 (10th Cir. 1976). See also Brady v. Melody Homes Mfr., 121 Ariz. 253, 589 P.2d 896 (1978).
59 See supra note 53 and accompanying text.
60 Knitz, 69 Ohio St. 2d at 466, 432 N.E.2d at 817 (emphasis added). In Cremeans v. International Harvester Co., 6 Ohio St. 3d 232, 234, 452 N.E.2d 1281, 1284 (1983), the Ohio Supreme Court indicated that this listing of factors was not meant to be exhaustive.

Commentators have been rather prolific in suggesting factors to be considered in a risk-utility analysis. See, e.g., Dickerson, Products Liability: How Good Does a Product Have to Be?, 42 Ind. L.J. 301, 331 (1967) (5 factors); Fischer, Products Liability-The Meaning of Defect, 39 Mo. L. Rev. 339, 359 (1974) (15 factors); Keaton, Manufacturer's Liability: The Meaning of "Defect" in the Manufacture and Design of Products, 20 Syracuse L. Rev. 559, 565 (1969) (4 factors); Robb, supra note 4, at 24 (5 factors); Shapo, A Representational Theory of Consumer Protections: Doctrine, Function, and Legal Liability for Product Disappointment, 60 Va. L. Rev. 1109, 1370-71 (1974) (13 factors); Wade, Strict Tort Liability of Manufacturers,
"excessive preventable danger" necessarily implicates state of the art evidence. This is so because offensive use of state of the art evidence by an injured plaintiff which establishes that a product was not state of the art clearly shows that the product embodies preventable danger, since the manufacturer could have designed a state of the art product. Conversely, defensive use of state of the art evidence by the manufacturer which establishes that the product was state of the art clearly indicates that the product does not embody preventable danger, since, simply stated, a safer product could not have been made. Further, it would be difficult to imagine that the "mechanical feasibility" which the jury is permitted to consider means something other than state of the art. Therefore, although the Knitz court does not per se use the term "state of the art," it is nevertheless inherent in the court's use of the terms "excessive preventable danger" and "mechanical feasibility" that state of the art evidence is admissible under the risk-benefit test. In spite of the Knitz court's seemingly lucid articulation of the admissibility of state of the art evidence under Ohio strict products liability law, courts applying the Knitz risk-benefit test have had difficulty with the state of the art issue, and particularly with the related issues of custom and industry standards. The following Section addresses these problems.

IV. Applying the Knitz Risk-Benefit Test

A. State of the Art Evidence

1. Ohio Cases

From the foregoing discussion, it seems clear that state of the art evidence is admissible in Ohio strict products liability law under the Knitz risk-benefit test as evidence of "mechanical feasibility." Two post-Knitz cases confirm that state of the art evidence is admissible under the risk-benefit test.

In Eldridge v. Firestone Tire and Rubber Co., plaintiff Eddie Eldridge was injured when he tripped over a stump while pulling a push-type rotary lawn mower backwards, thereby losing his balance and causing the mower to back over his left foot. Eldridge filed suit against Firestone, the manufacturer of the mower, alleging under a strict products liability theory that the mower was defective in design because it lacked a guard

19 Sw. L.J. 5, 17 (1965) (7 factors); Wade, On the Nature of Strict Tort Liability for Products, 44 Miss. L.J. 825, 830, 840 (1973) (7 factors—revised list).

61 See infra notes 63-81 and accompanying text.

62 See infra notes 136-69 and accompanying text.

63 See supra notes 59-61 and accompanying text.

that would have prevented his injury. At trial, the plaintiff "conceded that defendant's mower met the industry standard in effect in 1968," the year the mower was manufactured. Plaintiff's expert testified that several types of guards that would have prevented plaintiff's injury were available in 1968. He further testified that

[Platents had been issued for a number of guards] during the years preceding 1968; that placing blades or rear guards on lawn mowers was economically feasible; that the hazards of unguarded rotary-blade mowers, the severity of the injury they could inflict, and the technological feasibility of constructing mowers with guards were all known in 1968; that defendant's mower was a defective mower when it was manufactured; that it was more dangerous than an ordinary consumer would expect; that it embodied excessive preventable danger for which there were feasible alternatives; and that the defendant's lawn mower was not a state-of-the-art machine in 1968.

In spite of the persuasiveness of this testimony, the trial court directed a verdict in favor of the defendant. In finding that the mower was a "state of the art" machine in 1968, the trial court stated that since the industry standard in 1968 did not include guards, and the defendant's mower was in conformity with this standard, the defendant had not "fallen below the standard of the industry," and therefore "[i]t is a state of the art machine from 1968." The court of appeals reversed and remanded. In reversing, the court opined that

65 Id.
66 Id. "Industry standards" as used here could mean either custom or compliance with government standards.
67 Id.
68 Id. at 95-96, 493 N.E.2d at 294-95.
69 Id. at 96, 493 N.E.2d at 296.
70 Id.
71 Id. at 97, 493 N.E.2d at 295. The trial court added "[i]t is a standard ordinary old lawn mower. Every time any of us use one, there is a risk." Id.

The trial court's opinion shows the confusion courts have had with state of the art evidence. Here, the judge concludes that the lawn mower is a state of the art machine merely because it was manufactured in conformance with custom and/or industry standards. Evidence of adherence to industry customs and standards should never be dispositive in a strict liability action, since it is evidence of the manufacturer's level of care, which is irrelevant in strict liability. Evidence of custom and industry standards is relevant in strict liability only to show whether a product was state of the art at the time of manufacture. See infra notes 136-69 and accompanying text.
72 Eldridge, 24 Ohio App. 3d at 98, 493 N.E.2d at 297.
[t]he issue is not whether the lawn mower in question was the state of the art, or that the lawn mower was similar to most other lawn mowers built in 1968; the issue in a strict tort liability case for an alleged design defect in a consumer product is to be determined by the test stated in Knitz.73

The court further noted that the statistics offered by plaintiff’s expert “could have formed the basis for a jury’s determination that the mower in question embodied an excessive preventable danger.”74

In sum, the Eldridge trial court erred in confusing “industry standards” with “state of the art.” The Eldridge appeals court rectified this error by holding in essence that while “industry standards” may be admissible as one facet of “state of the art” evidence, such evidence is by no means dispositive. Rather, it was within the jury’s province to determine whether the guards were economically and mechanically feasible, and to consider this finding along with the other Knitz factors to determine whether the product was in fact defectively designed.

The question of the effect of state of the art in an Ohio strict products liability action was also addressed in Sabel v. Newbury Indus., Inc.75 In Sabel, the plaintiff was injured while operating a plastic injection molding machine. After losing at trial, she alleged on appeal that the trial court erred in refusing to instruct the jury that a manufacturer’s compliance with state of the art is no defense in an action for strict liability. The appeals court held that under the Knitz test a manufacturer’s compliance with the state of the art is not a defense but rather is one factor for the jury to consider.76 This decision is consistent with Eldridge, since both hold that state of the art evidence is admissible under the risk-benefit test to show the mechanical feasibility of an alternative design.

While Knitz, Eldridge and Sabel indicate that state of the art evidence is admissible under Ohio strict products liability law to establish mechanical feasibility of an alternative design, it is not clear whether either compliance or noncompliance with the state of the art can ever be dispositive on the issue of liability. The Ohio Supreme Court indicated in Knitz that mechanical feasibility is just one factor to be considered;77 this implies that state of the art can never be dispositive. If this is true, it means that under the risk-benefit test at least two facially objectionable scenarios can occur: (1) a manufacturer can be absolved from liability where its injury-producing product design does not embody state of the

73 Id. at 97, 493 N.E.2d at 296.
74 Id. at 98, 493 N.E.2d at 296.
76 Id.
77 See supra notes 59-61 and accompanying text.
art safety features,78 and (2) a manufacturer can be held liable for designing a product that causes injury even though the product contains every possible state of the art safety feature.79 It is unclear from the Knitz opinion whether the court intended these results when it stated that mechanical feasibility is merely one factor to be considered. Indeed, the California court80 that originally formulated the risk-benefit test subsequently adopted by the Ohio Supreme Court in Knitz admitted, "we have no occasion to determine whether a product which entails a substantial risk of harm may be found defective even if no safer alternative is feasible."81 In order to understand the effect of state of the art evidence on liability, an examination of the opposing theories regarding the admissibility of state of the art evidence is necessary.

2. The Negligence/Strict Liability/Absolute Liability Debate

One of the keys to understanding the issue of the admissibility of state of the art and related evidence in a strict products liability design defect case is an appreciation of the various arguments in the ongoing negligence/strict liability/absolute liability debate. Basically, there are two opposing theories: one is that evidence of technological and economic feasibility82 should not be admissible under strict liability,83 while the other theory is that evidence of technological and economic feasibility is entirely appropriate under a strict liability analysis.84

The thrust of the argument that evidence of technological and economic feasibility is irrelevant under a strict products liability analysis is that such evidence relates to the reasonableness of the manufacturer's design choice, and therefore should be admissible only under a negligence

78 See infra notes 109-29 and accompanying text.
79 See infra notes 125-35 and accompanying text.
81 Id. at 430 n.10, 573 P.2d at 455 n.10, 143 Cal. Rptr. at 237 n.10.
82 "Economic feasibility" refers to the extent it is possible to incorporate state of the art safety features in a product without increasing the cost of the product to such an extent that no one would buy it. As one court explained:

[P]rice is also a factor to be considered, if a change in design would appreciably add to cost, add little to safety, and take an article out of the price range of the market to which it was intended to appeal, it may be "unreasonable" as well as "impractical" for the courts to require the manufacturer to adopt such change . . . .[A] Cadillac may be expected to include more in the way of both conveniences and "crashworthiness" than the economy car.

83 See Birnbaum, supra note 57; Wildman & Farrell, Strict Products Liability in California: An Ideological Overview, 19 U.S.F. L. Rev. 139 (1985); Wade, supra note 60; See also Vandall, Design Defect in Products Liability: Rethinking Negligence and Strict Liability, 43 Ohio Sr. L.J. 61, 87 (1982).
84 See infra notes 91-108 and accompanying text.
theory. This argument is premised on the provision of section 402A which states that strict liability applies even though "the seller has exercised all possible care in the preparation and sale of his product." The case of Cunningham v. MacNeal Memorial Hospital illustrates this point. The plaintiff in Cunningham contracted hepatitis from blood supplied by the defendant hospital. The hospital argued that since the state of medical science at the time plaintiff received blood did not provide a method whereby serum hepatitis could be detected, it should not be held strictly liable. The Illinois Supreme Court disagreed:

[W]hatever be the state of the medical sciences in this regard, we disagree with the defendant's contention. . . . [t]o allow a defense to strict liability on the ground that there is no way, either practical or theoretical, for a defendant to ascertain the existence of impurities in this product would be to emasculate the doctrine and in a very real sense would signal a return to a negligence theory.

Proponents of this argument believe that there is no place in strict liability for any consideration of questions of "feasibility," since feasibility deals with the manufacturer's level of care, and should be admitted only under a negligence theory.

The problem with this approach is that it ignores the difference between strict and absolute liability. Strict liability does not require a manufacturer to design the safest possible product. Although some

88 Robb, supra note 4, at 11, 14.
89 Id. at 453, 266 N.E.2d at 902.
90 Id. But see Olson v. Arctic Enters., Inc., 349 F. Supp. 761, 764-65 (D.N.D. 1972) ("to refuse to consider the 'state of the art' . . . would be . . . in effect placing absolute liability upon the manufacturer.").
91 Robb, supra note 4, at 23 n.93:
If manufacturers had to adopt every possible safety device in their product design to avoid liability, the vast majority of consumers would be priced out of the market for the bulk of consumer goods. As an example, every electrical appliance would be required to have complex safety switches and electrical current regulators to prevent the danger of shock. Like other commodities, safety is a function of economic supply and demand, such that an artificially imposed safety device requirement would cost more than consumers are willing to pay.

See also Weakley v. Fishbach & Moore, Inc., 515 F.2d 1260, 1267 (5th Cir. 1975); Evans v.
scholars have stated otherwise,92 most agree that manufacturers are not insurers.93 The original purpose of strict liability was to "insure that the cost of injuries resulting from defective products are borne by the manufacturers that put such products on the market rather than by injured persons who are powerless to protect themselves."94 Therefore, manufacturers should not be held strictly liable whenever a product causes injury; liability should result only upon a finding of defective design.95

There is some merit to the argument that allowing evidence of technological and economic feasibility signals a return to a negligence theory,96 since it is clear that questions of the feasibility of a safer design go not only to the product,97 but also to the manufacturer's level of care in choosing a particular design.98 The problem with both arguments discussed above99 is that neither acknowledges that a strict liability theory may incorporate some features of negligence without signaling a return to a negligence theory.100 The Barker101 court aptly observed that the risk-benefit balancing test is distinguishable from its counterpart in negligence since, under a strict liability balancing test, "the jury's focus is properly directed to the condition of the product itself, and not to the

General Motors Corp., 359 F.2d 822, 824 (7th Cir. 1965), cert. denied, 385 U.S. 836 (1966); Henderson v. Ford Motor Co., 519 S.W.2d 87, 93 (Tex. 1974).

92 See Justice Traynor's concurring opinion advocating absolute liability in Escola v. Coca Cola, 24 Cal. 2d 453, 462, 150 P.2d 436, 441 (1979) ("the risk of injury can be insured by the manufacturer and distributed among the public as a cost of doing business").

93 See, e.g., Calabrese, Toward a Test for Strict Liability in Torts, 81 Yale L.J. 1055, 1056 (1970) ("strict liability has never meant that the party held strictly liable is to be a general insurer of the victim no matter how or where the victim comes to grief"); and Birnbaum, supra note 82, at 600-01, quoting P. Keeton & J. O'Connell, Basic Protection for the Traffic Victim, 242 (1965):

Underlying the whole body of tort law is an awareness that the need for compensation, alone, is not a sufficient basis for an award... An award is not to be made unless there exists some reason other than the mere need of the victim for compensation. Otherwise, the award will be an arbitrary shifting of loss from one person to another at a net loss to society due to the economic and sociological costs of adjudication.


95 See Keaton, Product Liability and the Meaning of Defect, 5 Sr. Mary's L.J. 30, 33 (1973) ("the product must be defective as marketed in order to subject the manufacturer to liability").

96 See supra notes 85-90 and accompanying text.

97 See infra note 102 and accompanying text.

98 See supra notes 85-90 and accompanying text.

99 See supra notes 82-95 and accompanying text.

100 See, e.g., Robb, supra note 4, at 16 ("[w]ith conduct ruled out as a subject of inquiry [under strict products liability analysis] the negligence concept simply has no content.").

reasonableness of the manufacturer’s conduct.\textsuperscript{102} While this may appear to be an “artificial distinction,”\textsuperscript{103} the Barker court’s explanation is enlightening:

The fact that the manufacturer took reasonable precautions in an attempt to design a safe product or otherwise acted as a reasonably prudent manufacturer would have under the circumstances, while perhaps absolving the manufacturer of liability under a negligence theory, will not preclude the imposition of liability under strict liability principles if . . . the trier of fact concludes that the products’ design is unsafe to consumers, users, or bystanders.\textsuperscript{104}

The “elements of negligence” that are admissible under strict products liability include state of the art and economic feasibility, because their admission prevents strict liability from becoming absolute liability. This is so because even under strict liability, a manufacturer should have the option to design a product that does not embody a state of the art design in order to keep it within the realm of economic feasibility.\textsuperscript{105} Whether the manufacturer exercised reasonable care (i.e. whether the manufacturer was negligent) in making this decision is irrelevant; the manufacturer’s duty under strict liability is to manufacture a defect-free product.\textsuperscript{106} A product is by definition defective under strict liability if the jury finds that “the benefits of the challenged design do not outweigh the risk inherent in such design.”\textsuperscript{107} Therefore, the implication of the Knitz court that evidence of mechanical and economic feasibility should not be dispositive was correct, since such evidence is dispositive only under a negligence theory.\textsuperscript{108}

\textsuperscript{102} Id. at 432, 573 P.2d at 457, 143 Cal. Rptr. at 239.

\textsuperscript{103} Wildman & Farrell, supra note 83, at 151.

\textsuperscript{104} Barker, 20 Cal. 3d at 432, 573 P.2d at 457, 143 Cal. Rptr. at 239.

\textsuperscript{105} See supra note 91 and accompanying text.

\textsuperscript{106} See Wade, supra note 83, at 569 (“[a]lthough the actionable conduct of the product may be the same for both actions, in negligence the plaintiff must . . . prove negligent conduct . . . ; in strict liability this is not required”).

\textsuperscript{107} Knitz, 69 Ohio St. 2d 460, 466, 432 N.E.2d 814, 818.

\textsuperscript{108} The practical effect of a showing under a negligence analysis that a product design embodies state of the art safety features is a finding of non-negligence, since a manufacturer can hardly be said to have failed to use reasonable care where the product could not have been made any safer. See Wiska v. St. Stanislaus Social Club, Inc., 390 N.E.2d 1133, 1138 (Mass. App. Ct. 1979), where the plaintiff did not present any evidence showing alternative design improvements, and the court held that “[t]here was no evidence upon which the jury could base a conclusion, even with all reasonable inferences, that GMC had breached a duty to design with reasonable care . . .” Id. See also Larsen v. General Motors Corp., 391 F.2d 495 (8th Cir. 1968) (duty to use reasonable care in design of automobile).

Some courts will allow the negligence issue to go to the jury even though the defendant has demonstrated that its product embodied the state of the art. See, e.g., Dreiling v.
The cases that follow illustrate that neither conformity nor nonconformity with the state of the art should ever be dispositive on the liability issue. The first case provides an example of how a manufacturer can be absolved from liability, even though its product design fails to conform with the state of the art, while the second illustrates how a manufacturer may be subject to liability for defective design even though the product is state of the art.

3. Failure to Comply with State of the Art—the Boatland Decision

In Boatland of Houston v. Bailey, the plaintiff’s deceased, Samuel Bailey, was killed in a boating accident. The accident occurred when the bass boat Bailey was operating struck a tree stump, throwing him into the water. With the motor running, the boat circled back toward him. He was killed by the propeller.

Plaintiffs sued under the Texas wrongful death statute, alleging under a strict products liability theory that the boat was defectively designed because it lacked a kill-switch that would have prevented Bailey’s death. A kill-switch is a safety device that automatically kills the ignition when the driver falls overboard. Kill switches were not commercially available in 1973, the year Bailey’s boat was manufactured, although one inventor testified that he designed his “Quick Kill” kill switch in 1972 and applied for a patent in 1973, that his invention required “no breakthroughts in the state of the art of manufacturing or product,” and that racing boats had been using homemade kill switches for thirty years. His invention consisted of a lanyard connecting the operator’s body to a device that fit over the ignition key; when the lanyard is pulled, as would occur if the operator fell overboard, the

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General Elec. Co., 511 F.2d 768 (5th Cir. 1975) where the court was spared the difficulty of evaluating the plaintiff’s evidence for sufficiency because the jury found that the defendant was not negligent. Id. at 773.

609 S.W.2d 743 (Tex. 1980). Although the defendant in Boatland was the retailer of the product, not the manufacturer, the same test is used to evaluate whether the product is defective.


Boatland, 609 S.W.2d at 743.

111 Plaintiffs were Bailey’s widow and surviving children.

112 Boatland, 609 S.W.2d at 746. The Texas test for determining whether product design is defective under strict products liability is similar to the Ohio test. According to the Boatland court, “[w]hether a product was defectively designed requires a balancing by the jury of its utility against the likelihood and gravity of injury from its use.” Id. at 744.

113 Boatland, 609 S.W.2d at 746-47.

114 Id. at 746.

115 Id. at 746-47.
ignition key device rotated and turned off the ignition switch.\textsuperscript{116} It was clear from his testimony that while it was not the custom in the industry to use kill switches, they were technologically possible in 1973, and therefore within the state of the art.

Even though kill switches were technologically possible, the trial court found for the defendant, and the Texas Supreme Court affirmed.\textsuperscript{117} The basis for the holding of non-liability was the finding that although kill switches were technologically possible, they were not economically feasible\textsuperscript{118} and/or would have detracted from the boat's usefulness.\textsuperscript{119} The court explained:

[W]hen the plaintiff alleges that a product was defectively designed because it lacked a specific feature, attention may become focused on the feasibility of that feature—the capacity to provide the feature without greatly increasing the product's cost or impairing usefulness. This feasibility is a relative, not an absolute, concept; the more scientifically and economically feasible the alternative was, the more likely that a jury may find that the product was defectively designed.\textsuperscript{120}

According to the \textit{Boatland} court, a product that is not as safe as is technologically feasible may nevertheless be non-defective under a strict liability balancing test.\textsuperscript{121} The court based its holding on the concepts of

\textsuperscript{116} Id.

\textsuperscript{117} \textit{Boatland}, 609 S.W.2d at 743. The intermediate court reversed the trial court, but the Texas Supreme Court reinstated the jury verdict for the defendant. The intermediate court found that Boatland's evidence that kill switches were not commercially available in the year Bailey's boat was manufactured and sold should not have been admitted at the trial level since that evidence was "material only to the care exercised by Boatland and thus irrelevant in a strict liability case." \textit{Id.} at 747. This rationale is a good example of the philosophy (discussed \textit{supra} notes 85-90 and accompanying text, and refuted \textit{supra} at 91-108 and accompanying text) that state of the art evidence should not be admissible under a strict products liability theory because it relates to the manufacturer's level of care, a concern relevant only under a negligence theory.

\textsuperscript{118} Economic feasibility is discussed at \textit{supra} note 82.

\textsuperscript{119} \textit{Boatland}, 609 S.W.2d at 749. Impairment of usefulness is an important factor, and may be considered under the Ohio risk-benefit test. See Creameans v. International Harvester Co., 6 Ohio St. 3d 232, 234-35, 462 N.E.2d 1281, 1284-85 (1982) (stating that \textit{Knitz} listing of factors to consider was not meant to be exhaustive, and that "[o]ther factors relevant to the evaluation of the effectiveness of the product design may include ... new or additional harms that may result from an alternative design."). \textit{Id}.

\textsuperscript{120} Id.

\textsuperscript{121} Courts in other jurisdictions have absolved the manufacturer from liability under a strict liability theory even though the product did not conform with the state of the art. See, \textit{e.g.}, Weakley v. Fischbach and Moore, Inc., 515 F.2d 1260, 1267 (5th Cir. 1975) ("[i]t is one thing to show that the defendant might have designed a safer product and quite another to show that the product he did design was unreasonably dangerous."). \textit{See also} McClung v.
economic feasibility and impairment of usefulness. On impairment of usefulness, Dean Wade once noted:

[I]n a collision an automobile may possibly catch fire—no matter where the gas tank is located or how it is protected. Should we require every car to have an automatic sprinkling system, regardless of how that might affect its gasoline mileage? . . . Clearly, safety must be a relative matter, and a balancing process of some sort is necessary to determine whether a product is sufficiently safe—regardless of whether the suit is in negligence or strict liability.\(^{122}\)

As explained above,\(^{123}\) allowing evidence of economic feasibility and state of the art under a strict liability balancing test prevents strict liability from becoming absolute liability. Therefore, as in Boatland, a jury may find under the risk-benefit test that a product is not defective, even though it does not embody the state of the art safety feature(s) that would have prevented the plaintiff’s injury. However, such a finding is permissible only where the improved design would not have been economically or practically feasible, and if, on balance, the jury determines that the benefits of the product design outweigh the risks.\(^{124}\)

4. Compliance with State of the Art—The O’Brien Decision

The 1983 New Jersey case of O’Brien v. Muskin Corp.\(^{125}\) illustrates that a manufacturer may be subject to liability for defective design even

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\(^{122}\) Wade, On Product “Design Defects” and Their Actionability, 33 Vand. L. Rev. 551, 568 (1980). A good case illustrating this point is Wilson v. Piper Aircraft Corp., 282 Or. 61, 577 P.2d 1322, reh’g denied with opinion, 282 Or. 411, 579 P.2d 1287 (1978) (there must be “evidence from which the jury could find that the suggested alternatives [were] not only technically feasible but also practical in terms of cost and the overall design and operation of the project.” Id. at 69, 577 P.2d at 1327). In Piper, the defendant chose to use a carburetor rather than a fuel injector in the engine of a Cherokee airplane. While the plaintiffs were able to show that a fuel injector would have decreased the risks of fuel system icing, the court found that a fuel injector would have adversely affected other aspects of the plane’s safety. Id. at 70, 577 P.2d at 1327.

Another case on point is Self v. GMC, 42 Cal. App. 3d 1, 116 Cal. Rptr. 575 (1974). In that case, the plaintiff was injured when the car in which she was riding exploded. She brought suit against the manufacturer, alleging that the car was defective because the fuel tank had been placed in a particularly vulnerable position in the left rear bumper. The court found that while it was technologically feasible to locate the fuel tank elsewhere in the vehicle, another relevant consideration was whether an alternative design of the car, while averting an accident like the plaintiff’s, would have created a greater risk of injury in other, more common, situations. Id. at 7-8, 116 Cal. Rptr. at 580.

\(^{123}\) See supra notes 73-87 and accompanying text.

\(^{124}\) See supra note 121.

though the product embodies the state of the art. Prior to O'Brien, no court had ever allowed a plaintiff to recover who did not come forth with evidence of a feasible alternative design under a strict liability risk-benefit test.\footnote{Note, Strict Products Liability and the Risk-Utility Test for Design Defect: An Economic Analysis, 84 Colum. L. Rev. 2045, 2048 (1984). See also Justice Schriber's dissenting opinion in O'Brien, 94 N.J. 169, 194, 463 A.2d 298, 311 ("Imly research has disclosed no case where liability was imposed, utilizing the risk-utility analysis, as a matter of law for an accident ascribable to a product in the absence of a defect . . . other than in the absolute liability context").}{126}

In O'Brien, the plaintiff sued the manufacturer of an above-ground swimming pool for injuries he sustained when he dove into one of the defendant's pools. When his outstretched hands hit the vinyl-lined pool bottom they slid apart, causing his head to strike the bottom of the pool.\footnote{O'Brien, 94 N.J. at 178, 463 A.2d at 302.}{127}

In his complaint, O'Brien asserted that the defendant should be held strictly liable for manufacturing a defectively designed pool, because, \textit{inter alia}, but for the slippery quality of the vinyl pool liner, his injury would not have occurred.\footnote{Id.}{128} However, plaintiff was unable to prove the existence of a feasible alternative design.\footnote{Id.}{129} To the contrary, an expert for the defendant testified that vinyl was "the best material because it permitted the outstretched arms of the diver to glide when they hit the liner, thereby preventing the diver's head from striking the bottom of the pool."\footnote{Id. at 179, 463 A.2d at 303.}{130}

The trial court took the issue of design defect from the jury, but the appeals court reversed. The New Jersey Supreme Court found that a product may embody the state of the art and still fail to satisfy the risk-benefit equation.\footnote{Id. at 181, 463 A.2d at 305.}{131} The court reasoned that even where a product's design embraces the utmost in technological know-how, its risks may nevertheless outweigh its benefits, and, if they do, the product is defective.\footnote{Id. at 183, 463 A.2d at 306.}{132} This outcome results, according to the court, when a product for which no alternative design exists, is so dangerous and is of such little use that "under the risk [benefit] analysis, a manufacturer would bear the cost of liability of harm to others."\footnote{Id.}{133} This does not mean, of course, that the plaintiff will automatically prevail in a case such as O'Brien. Rather, it simply means that the jury should have the opportunity to
determine whether the risk inherent in a product outweighs the benefits, even where the product embodies the state of the art.

In his dissent, Justice Schrieber argues that the result dictated by the majority transforms strict liability into absolute liability. Justice Schrieber makes the error of assuming that since there is nothing "wrong" with the product, the manufacturer should not be held liable for defective design. This is a common misconception, and is based on the natural tendency to define "defect" as a layperson would, e.g. as an "identifiable flaw," rather than in legal terms, as where the risks of a product outweigh the benefits. Under the risk-benefit test, a product is *per se* defective if the jury determines that the risks outweigh the benefits, regardless of whether the product has an "identifiable flaw." This is so because under strict liability the manufacturer's duty is not to design state of the art products, but rather to design defect-free products, or, in other words, to design products in which the benefits outweigh the risks.

Therefore, as *O'Brien* illustrates, a manufacturer may be held liable under the risk-benefit test for producing a state of the art design where the risks of that design outweigh the benefits.

In conclusion, under the *Knitz* risk-benefit test, state of the art evidence is admissible to show the mechanical feasibility of an alternative design. However, compliance or non-compliance with the state of the art is never dispositive on the issue of design defect. Rather, an injury-producing design is defective if the trier of fact determines that the risks inherent in the design outweigh the benefits, regardless of whether the design embodies the state of the art.

**B. Custom and Government Standards**

Evidence of industry custom and government standards is admissible under Ohio strict products liability law under the *Knitz* risk-benefit test for the limited purpose of determining the mechanical feasibility of an alternative design. It is not admissible where the state of the art is not an issue in the case, since offered independently it tends only to show the manufacturer's level of care. The manufacturer's level of care, though a

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134 *Id.* at 185, 463 A.2d at 310.

135 *See*, e.g., Robb, *supra* note 4, at 21. Robb writes "[S]ometimes a product incorporates the utmost in scientific know-how, but the manufacturer could be considered negligent merely for placing that product on the market. ... [I]mposing strict liability in this situation emasculates the notion of "correctable wrong" which constitutes the fundamental underpinning of strict products liability." *See also* Robb, *supra* note 4, at 20 ("where the product is designed as safely as possible under the then-existing state of the art, ... then that product should not be considered in a 'defective condition'"); Birnbaum, *supra* note 57, at 645; *Note, State-of-the-Art Evidence Relevant to Risk-Utility Analysis in Design Defect Cases*, 15 *Seton Hall* 120, 140-41 (1984).
critical factor in a negligence action, is irrelevant in strict liability, with the limited exception of proof of the technological and economic feasibility of an improved design.\textsuperscript{136}

The Ohio Supreme Court indirectly addressed the admissibility of industry standards and custom under strict products liability in \textit{Cremeans v. International Harvester},\textsuperscript{137} the only post-\textit{Knitz} case in which the high court discussed the risk-benefit test. In that case, plaintiff\textsuperscript{138} Cremeans was injured while attempting to load a crawler-type tractor onto a trailer, when the tractor slipped and overturned. Subsequently, he filed suit against the defendant manufacturer, International Harvester, alleging that the tractor's lack of roll-over protection rendered it defective under Ohio strict products liability law.\textsuperscript{139} The trial court granted summary judgment for the defendant, but the appellate court reversed, reasoning that "there were sufficient allegations in the pleadings and depositions to establish a genuine issue of material fact as to whether the 'design defect could become unreasonably dangerous' if the benefits of such design do not outweigh the risk[s] of danger inherent in the design."\textsuperscript{140}

International Harvester appealed the case to the Ohio Supreme Court,\textsuperscript{141} which determined that the \textit{Knitz} test was applicable.\textsuperscript{142} The court then affirmed the appeals court, finding that a genuine issue of material fact had been created by the pleadings and depositions, because they established, among other things, that "federal regulations requiring roll-over protection were being formulated at the time of the manufacture of the crawler trailer,"\textsuperscript{143} and that "several models had such

\textsuperscript{136} See \textit{supra} notes 71-112 and accompanying text.
\textsuperscript{137} 6 Ohio St. 3d 232, 452 N.E.2d 1281 (1983).
\textsuperscript{138} Both Cremeans and his wife brought suit against International Harvester. For the sake of simplicity, "plaintiff" will be used to refer to either Cremeans or both him and his wife, as is appropriate.
\textsuperscript{139} \textit{Cremeans}, 6 Ohio St. 3d at 232, 452 N.E.2d at 1282.
\textsuperscript{140} \textit{Id.} at 233, 452 N.E.2d at 1283.
\textsuperscript{141} \textit{Id.}
\textsuperscript{142} \textit{Id.} at 234, 452 N.E.2d at 1284. A disturbing aspect of \textit{Cremeans} is that while the consumer expectation/risk-benefit test stated in the opinion is lifted verbatim from \textit{Knitz}, it is stated differently in the \textit{Cremeans} syllabus. In the syllabus, the court refers to the test as having two prongs: "[i]n determining whether a product design is in a defective condition, a single, two-pronged test should be used." \textit{Cremeans}, 6 Ohio St. 2d at 232, 452 N.E.2d at 1282. The implication is that the plaintiff must satisfy both prongs, e.g., both the consumer expectation and the risk-benefit "prong." This, of course, is incorrect. (See \textit{supra} notes 54-58 and accompanying text.) However, since the opinion expressly states that it is following \textit{Knitz}, and since the very rationale behind the consumer expectation/risk-benefit test is to offer the plaintiff the opportunity to succeed under either part of the test, it will be assumed that in spite of the \textit{Cremeans} syllabus, the \textit{Knitz} formulation of the test is the correct one.
\textsuperscript{143} \textit{Cremeans}, 6 Ohio St. 3d at 235, 452 N.E.2d at 1285.
equipment." In stating that the plaintiff's allegation that federal regulations requiring roll-over protection were being formulated at the time of manufacture created a genuine issue of material fact, the court was indirectly indicating that compliance with or failure to comply with custom and industry standards are both admissible and relevant under Ohio strict products liability design defect law.

Although it is not clear from the opinion, it appears that the plaintiff was trying to show, through evidence of custom and the forthcoming government standards, that the design of the tractor did not embody state of the art roll-over protection. It also appears that the Cremeans court intended this evidence to go to the question of the mechanical feasibility of an alternative design, since the reason the evidence of industry custom and compliance with government standards was declared admissible by the Cremeans court was because it "establish[es] a genuine issue of material fact as to whether the benefits of the challenged design [out-weigh] the risks inherent in such design." This is so, said the Cremeans court, because "[i]n focusing on the product design, basic justice requires that all parties have the right to have attention directed to all relevant factors for consideration in determining whether the particular product is in a defective condition," and those factors include "the likelihood that the product design will cause injury, the gravity of the danger posed, and the mechanical and economic feasibility of an improved design." Although the Cremeans decision makes it fairly clear that evidence of industry custom and compliance with government standards is admissible to show the mechanical and economic feasibility of an improved design, courts subsequent to Cremeans have experienced difficulty with the issue of the admissibility of this type of evidence. The Sixth Circuit, applying Ohio law, has dealt with the issue twice, with confusing and contradictory results. Interestingly, neither case cites the Cremeans decision.

In Sours v. General Motors Corp., plaintiffs father and son sued General Motors (GM) for personal injuries sustained by the son when his 1968 Chevrolet Camaro slid off the road and rolled over in a one-car accident. The son's neck was broken as a result of the partial collapse of the car roof, rendering him a quadriplegic.

Plaintiffs alleged at trial that the structure of the roof constituted a defective product, and the appeals court agreed. On appeal, GM alleged

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144 Id.
145 Id.
146 Id. at 234-35, 452 N.E.2d at 1284.
147 Id. at 234, 452 N.E.2d at 1284 (emphasis added).
148 717 F.2d 1511 (6th Cir 1983).
149 Id. at 1512.
150 Id. at 1512.
that the car roof conformed to industry custom and government standards and therefore could not be defective under strict liability. The Sours court turned to dicta in Knitz to determine the validity of GM's argument. Finding that the Knitz court stated that compliance with industry custom and government standards is "only a guide and not conclusive," the court held that GM's evidence of adherence to industry custom and government standards was "properly left for the jurors to factor into the calculus that comprises reasonable design in a case of strict products liability."152

There are several problems with the Sours court's conclusion. First, under Ohio strict products liability law, "reasonableness" of the design is irrelevant; in order for a plaintiff to succeed, he need only show that the product was defective.153 Second, the Knitz court never stated that under strict products liability evidence of industry custom and government standards is "only a guide;"154 when the Knitz court stated that evidence of industry custom and compliance with government standards is only a guide it was referring to negligence, not strict liability actions.155 Third, as mentioned above, evidence of industry custom and compliance with government standards is not independently relevant in a strict products liability action. Here, GM offered evidence of conformance with custom and government standards to show that it exercised reasonable care in designing the roof, rather than to show that the roof's design embodied the state of the art. Therefore, the Sours holding is incorrect.

The Sixth Circuit addressed the issue again in Bailey v. V & O Press Co.,156 a case in which the facts are strikingly similar to those in Knitz.157 In Bailey, the plaintiff was injured while working on a punch press for the Anchor Template Die Company. While he was working, someone called to plaintiff from across the room. When he turned to respond, he accidently stepped on the press' foot pedal, thereby activating the machine and causing the ram of the press to fall on his left hand at the point of operation. As a result, he lost all or part of four of the fingers on his left hand.158

The press was manufactured by defendant V & O in 1954, without a safety guard which would have prevented the accident described

151 Id. at 1517.
152 Id.
153 Knitz, 60 Ohio St. 2d at 464-65 n.2, 432 N.E.2d at 817 n.2 (1982) ("we focus our inquiry on the nature of 'defect' and dispense with any requirement for strict liability in tort that a defect be unreasonably dangerous.").
154 Sours, 717 F.2d at 1517.
155 69 Ohio St. 2d 460, 464, 432 N.E.2d 814, 817.
156 770 F.2d 601 (6th Cir. 1985).
157 See supra notes 46-47 and accompanying text.
158 Bailey, 770 F.2d at 602.
Among other things, Bailey sought damages based on strict products liability, alleging that V & O's failure to install a safety guard to protect against this type of accident rendered the machine unreasonably dangerous. At trial, Bailey offered expert testimony that other manufacturers had offered presses with more extensive safety features at the time the V & O machine was sold, which, had they been incorporated into the V & O machine, would have prevented plaintiff's injury. The trial court refused to instruct the jury that a defendant may be held strictly liable for failing to comply with industry custom for machine guarding.

The jury returned a general verdict for the defendant, and Bailey appealed. On appeal, he asserted that the trial court reversibly erred in refusing to instruct the jury regarding industry custom. The Sixth Circuit sustained the trial court on this issue, finding that evidence of industry custom and compliance with government standards is irrelevant in a strict products liability action. In so finding, the court stated "Bailey cites no authority in support of his contention that a manufacturer's standard of care is relevant to proving product defectiveness under a strict liability theory, where the product's condition . . . [is] the central [inquiry] and liability may be imposed regardless of the degree of care exercised by the manufacturer."

This statement by the Bailey court is incorrect. Bailey offered evidence of industry custom and government standards to show that GM's machine failed to conform to the state of the art. This is the proper use of custom and industry standards evidence. While the court was correct in upholding the trial court's refusal to instruct the jury that a defendant may be held strictly liable for failing to comply with industry custom, the court erred in its statement that evidence of custom and compliance with government standards is completely irrelevant under Ohio strict products liability law.

Sours and Bailey are confusing cases, since Sours incorrectly allows evidence of industry custom, while Bailey incorrectly disallows it. In Sours, the court admitted evidence of industry custom for the purpose of establishing the manufacturer's level of care, which is clearly irrelevant

159 Id. at 603.
160 Id.
161 Id.
162 Id. at 607.
163 Id.
164 Id.
165 Id. (emphasis added). The court is intimating that this evidence is only relevant under a negligence theory.
166 See supra note 164 and accompanying text.
167 See supra notes 151-52 and accompanying text.
168 See supra note 165 and accompanying text.
in a strict products liability action. In Bailey, the court disallowed evidence of industry custom when it was offered to show that the defendant's product did not embody the state of the art, which is precisely the limited situation in which industry custom is admissible. If nothing else, Sours and Bailey illustrate the difficulty the courts have encountered dealing with the issue of the admissibility of state of the art and related evidence under strict products liability law.169

V. CONCLUSION

Although the Ohio Supreme Court has not directly addressed the issue, it is clear from case law that state of the art evidence is admissible under Ohio strict products liability design defect law. The cases establish that state of the art evidence is admissible under the Knitz risk-benefit test to show the mechanical feasibility of an alternative design. While it is true that an inquiry into the state of the art necessarily involves a limited scrutiny of the manufacturer's level of care in choosing a particular design, this scrutiny does not automatically transform strict liability into negligence. Strict products liability is distinguishable from negligence since under the former, the focus is on the product itself, while under the latter the focus is on the reasonableness of the manufacturer's design choice. Unlike a negligence analysis, mere reasonableness of design choice will not absolve a manufacturer from liability under a strict liability theory. Further, state of the art evidence, as well as evidence of the practicality and economic feasibility of an alternative design, is necessary under strict liability to prevent strict liability from becoming absolute liability.

On the other hand, evidence of compliance with industry custom and government standards is inadmissible under Ohio strict products liability law, unless it is offered for the limited purpose of establishing the state of the art. This evidence is not independently relevant under the Knitz risk-benefit test because, offered alone, it tends to show the reasonableness of the manufacturer's design choice, which is an irrelevant consideration under Ohio strict products liability law.

169 Only one Ohio court has dealt with the issue of the admissibility of compliance with government standards. In that case, the state of the art of injection molding machines was at issue, and the court correctly allowed the jury to consider the government standards in order to determine the "feasibility of a safer design at the time of the manufacture." Sabel v. Newbury Indus., Inc., No. 10-197 (Ohio Ct. App. Dec. 31, 1985) (LEXIS, States Library, Ohio file).
Author's Note

On October 5, 1987, Ohio Governor Richard F. Celeste approved the Ohio Tort Reform Act (the Act). Among other things, the Act codifies Ohio products liability law and includes a state of the art provision. While this Note was written prior to the enactment of the legislation, the analysis remains relevant for statutory construction purposes. Further, the material presented in this Note retains its vitality as to all claims for relief arising before January 5, 1988, the effective date of the Act.

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170 See Ohio Rev. Code Ann. § 2307.75(F).
171 The Act applies to products liability actions that are commenced on or after January 5, 1988 and are based on claims for relief that arise on or after January 5, 1988.