Compared to What? Instructing the Jury on Product Defect Under the Products Liability Act and the Restatement (Third) of Torts: Products Liability †

George W. Conk *

I. INTRODUCTION

Products liability litigation relating to mechanical devices has centered on the concept of design defect, specifically, the unreasonable failure of a manufacturer to take advantage of current design capabilities that would reduce or even eliminate a product's potential dangers. The Restatement (Third) of Torts: Products Liability (Restatement (Third)), promulgated by the American Law Institute in 1997, therefore, places the focus of design-defect litigation on proof of the existence of an alternative, safer design for a product, which demonstrates that the product was not designed to be reasonably safe.[1]

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* Adjunct Professor, Seton Hall School of Law; principal, Tulipan & Conk, P.C.; Certified as a Civil Trial Attorney by the New Jersey Supreme Court; Member, Supreme Court of New Jersey – Model Civil Jury Charge Committee – Products Liability. A.B., College of the Holy Cross, 1967; M.A., Boston University, 1971; J.D., Rutgers Law School – Newark, 1974.

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[1] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2(b) cmt. d (1997). The comment to section 2(b) explains:

> [A] product asserted to have a defective design meets the manufacturer's design specifications but raises the question whether the specifications themselves create unreasonable risks . . . . [T]he test is whether a reasonable alternative design would, at reasonable cost, have reduced the foreseeable risks of harm posed by the product and, if so, whether the omission of the alternative . . . rendered the product

During the four-year debate within the American Law Institute (ALI) that resulted in the Restatement (Third), the alternative safer design test for design defects gained considerable support from a series of cases decided by the appellate division of the Superior Court of New Jersey. In fact, two of the cases in that series were cited in the commentary to the Restatement (Third) as support for the argument that a new consensus had emerged regarding the proper test for design defects.[2] In each of the five cases of the series, which included *Smith v. Keller Ladder Co.*,[3] *Mettinger v. W.W. Lowensten, Inc.*,[4] *Grzanka v. Pfeifer*,[5] *Congiusti v. Ingersoll-Rand Co.*,[6] and *Green v. General Motors*,[7] the New Jersey intermediate court relied on the proposed new test in order to reach its final determination.[8]

Recently, in *Lewis v. American Cyanamid Co.*,[9] the New Jersey Supreme Court embraced this new standard, which requires a plaintiff

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> not reasonably safe . . . . [T]he plaintiff must prove that such a reasonable alternative was, or reasonably could have been, available at time of sale or distribution.

Id. *But see* RESTATEMENT (Third) of TORTS: PRODUCTS LIABILITY § 6 (1997). Section 6, which applies to prescription drugs and medical devices, states:

> [a] *prescription drug or medical device* is not reasonably safe due to defective design if the foreseeable risks of harm posed by the drug or medical device are sufficiently great in relation to its foreseeable therapeutic benefits that reasonable health-care providers, knowing of such foreseeable risks and therapeutic benefits, would not prescribe the drug or medical device for any class of patients.

Id. (emphasis added).

[2] *See* RESTATEMENT (Third) of TORTS: PRODUCTS LIABILITY § 2(b) Reporters' Note (1997) (citing Smith v. Keller Ladder Co., 275 N.J. Super. 280, 284, 645 A.2d 1269, 1271 (App. Div. 1994); Grzanka v. Pfeifer, 301 N.J. Super. 563, 577-78, 694 A.2d 295, 303-04 (App. Div. 1997)). *See generally* James A. Henderson, Jr. & Aaron D. Twerski, *Achieving Consensus on Defective Product Design*, 83 CORNELL L. REV. 867 (1998).

[3] 275 N.J. Super. 280, 645 A.2d 1269 (App. Div. 1994).

[4] 292 N.J. Super. 293, 678 A.2d 1115 (App. Div. 1996), *modified on other grounds*, 153 N.J. 371 (1998).

[5] 301 N.J. Super. 563, 694 A.2d 295 (App. Div. 1997).

[6] 306 N.J. Super. 126, 703 A.2d 340 (App. Div. 1997).

[7] 310 N.J. Super. 507, 709 A.2d 205 (App. Div. 1998).

[8] *See Smith*, 275 N.J. Super. at 284, 645 A.2d at 1271; *Mettinger*, 292 N.J. Super. at 311, 678 A.2d at 1124; *Grzanka*, 301 N.J. Super. at 577-78, 694 A.2d at 303; *Congiusti*, N.J. Super. at 138-39, 703 A.2d at 346; *Green*, 310 N.J. Super. at 517-18, 709 A.2d at 210.

[9] 155 N.J. 544, 715 A.2d 967 (1998). In *Lewis*, the plaintiff claimed that the manufacturer of an insecticide could have used an alternative chemical that was one-third as flammable as the propellant that was actually used in the challenged design. *See id.* at 552, 715 A.2d at 971. The New Jersey Supreme Court stated:

> To succeed on his design-defect claim, plaintiff was required to prove that a practical and feasible alternative design existed that would have reduced or prevented his harm. Plaintiff attempted to meet this burden by submitting P-22 [a stable propellant] as such an alternative.

to show, in order to prove a product defective, that the manufacturer unreasonably failed to adopt a practical and feasible alternative safer design available at the time of the distribution of the product.[10] Moreover, the New Jersey Supreme Court's Model Civil Jury Charge Committee, prior to the decision in *Lewis*, had prepared and approved a new Model Charge regarding design defects, 5.34 C-1 to 4,[11] which provides a good start for changing the way juries are instructed on design-defect issues. The committee, however, was somewhat tentative in its formulations. Noting the absence of New Jersey Supreme Court jurisprudence, the committee was reluctant to state that trial courts are free to abandon the constraints of the boilerplate recitation of the six risk-utility factors formulated twenty-six years ago by ALI Reporter and Vanderbilt Law School Dean John Wade.[12]

In *Lewis*, however, for the first time since it decided *Cepeda v. Cumberland Manufacturing Co.*[13] twenty-one years ago, the New Jersey Supreme Court discussed a defective design case without reference to the Wade risk-utility factors.[14] This omission demonstrates that the time

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> To determine if P-22 was a practical and feasible alternative design, the jury was required to perform a risk-utility analysis.

Id. at 560, 715 A.2d at 975 (citations omitted).

[10] *See id.*

[11] N.J. MODEL JURY CHARGES: CIVIL § 5.34 (1999).

[12] *See* John W. Wade, *On the Nature of Strict Tort Liability for Products*, 44 MISS. L.J. 825, 837-38 (1973) [hereinafter Wade, *On the Nature*]. This reluctance was also evident in *Congiusti*, in which the court supported the Restatement (Third) standard but was cautious about the continued use of the traditional *Wade* factors:

> [I]n this case, as in most other design defect cases that are not controlled by the absolute defenses to design defect claims in the Products Liability Act, N.J.S.A. 2A:58C-3a, the issue centers upon whether, in the words of the Restatement (Third) of Torts: Products Liability § 2(b) (1997 Proposed Final Draft), there was a "reasonable alternative design . . . and the omission of the alternative design renders the product not reasonably safe." This has been recognized in Smith v. Keller Ladder Co., 275 N.J. Super. 280, 284, 645 A.2d 1269, 1271 (App. Div. 1994), and Grzanka v. Pfeifer, 301 N.J. Super. 563, 579, 694 A.2d 295 (App. Div. 1997). *Although other possibly relevant elements of a risk-utility analysis are to be charged unless or until the Supreme Court adopts the Restatement standard*, in most cases the inquiry as framed by the Restatement will most probably present the issue to a jury in a clear and well-defined manner.

Congiusti, 306 N.J. Super. at 138-39, 703 A.2d at 340 (emphasis added).

[13] 76 N.J. 152, 386 A.2d 816 (1978).

[14] *See Lewis*, 155 N.J. at 560, 715 A.2d at 975. In *Cepeda*, the New Jersey Supreme Court stated:

> Dean Wade suggests that before determining whether the case for liability should be given to the jury the trial court should give consideration to whether a balanced consideration of the following factors did not preclude liability as a matter of law:

has come to abandon the rote recitation of the Wade formulation and to stop asking juries simply whether "the risks or dangers of a product outweigh its usefulness."[15] What should be asked instead is whether, in light of the existence of a proposed alternative design, the product as designed and sold was not reasonably safe.

We should begin to instruct juries in a more specific, more flexible, and more product-centered manner about the factors they may consider in deciding whether the challenged product is not reasonably safe and, therefore, defective in design. New Jersey juries should be instructed that they may consider a wide range of factors, such as production costs, aesthetics, environmental concerns, and any other competing considerations that a prudent, practical, and safety-conscious designer should weigh.

Model jury instructions, however, are limited in that they must provide a uniform jury charge for a wide array of cases. Adaptation of the instructions for the individual characteristics of a particular case is given lip service, but departure from the model is uncommon. Juries in New Jersey, as well as those across the country, receive little more instruction than the broad statement of policy values underlying the Wade factors or those factors suggested in *Barker v. Lull Engineering Co.*[16]

> (1)The usefulness and desirability of the product — its utility to the user and to the public as a whole.
> (2)The safety aspects of the product — the likelihood that it will cause injury, and the probable seriousness of the injury.
> (3)The availability of a substitute product which would meet the same need and not be as unsafe.
> (4)The manufacturer's ability to eliminate the unsafe character of the product without impairing its usefulness or making it too expensive to maintain its utility.
> (5)The user's ability to avoid danger by the exercise of care in the use of the product.
> (6)The user's anticipated awareness of the dangers inherent in the product and their avoidability, because of general public knowledge of the obvious condition of the product, or of the existence of suitable warnings or instructions.
> (7)The feasibility, on the part of the manufacturer, of spreading the loss by setting the price of the product or carrying liability insurance.

Cepeda, 76 N.J. at 173-74, 386 A.2d at 826-27 (citing Wade, *On the Nature*, *supra* note 12, at 837-38 (1973)). The seventh factor, relating to insurance and price as risk-spreading devices, has not been given to juries. *See* Fiorino v. Sears Roebuck & Co., 309 N.J. Super. 556, 566-67, 707 A.2d 1053, 1058 (App. Div. 1998) (holding that charging the jury with the seventh risk-utility factor was an error requiring a new trial).

[15] N.J. MODEL JURY CHARGES: CIVIL § 5.34B(2) (1989).

[16] 573 P.2d 443 (Cal. 1978). In *Barker*, the California Supreme Court stated that a jury may consider the following as relevant factors in a design-defect case:

> the gravity of the danger posed by the challenged design, the

The quality of decisions will be better served if jury instructions invite the presentation of evidence and spur arguments that evoke the full vibrancy of the moment of design for the jury (and the court it assists). The clamor of the competing considerations in the good and prudent designer's mind should be heard in the courtroom and in the jury room. If we can concretize the relevant design-defect considerations, we will be better able both to hold the designer to the ideal of prudence and to avoid the uncritical sympathy for the injured that courts have long seen as a danger of unclear limitations on liability.[17]

II. PRODUCT DEFECT — CHANGING FROM SECOND GEAR TO THIRD GEAR

The New Jersey Products Liability Act,[18] much like the Restatement (Third),[19] states that a defense to a product-defect claim exists if, at the

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likelihood that such danger would occur, the mechanical feasibility of a safer alternative design, the financial cost of an improved design, and the adverse consequences to the product and to the consumer that would result from an alternative design.

Id. at 455.

[17] The line of expansion of bases for manufacturers' liability can readily be traced from *Winterbottom v. Wright*, 10 W. & M. 109, 152 Eng. Rep. 402 (Ex. 1842) (privity requirement stated for product defect claim), through *McPherson v. Buick Motor Co.*, 111 N.E. 1050, 1051 (N.Y. 1916) (finding that auto purchaser has action against manufacturer), to *Greenman v. Yuba Power Products*, 377 P.2d 897, 900 (Cal. 1963) (general abandonment of privity requirement and announcement of strict liability for defective consumer products, presaging section 402A and modern "strict liability" era), to *Borel v. Fibreboard Paper Products Corp.*, 493 F.2d 1076, 1087 (5th Cir. 1973) (applying section 402A to asbestos products liability claim for failure to test and failure to warn of product dangers), and *Beshada v. Johns Manville Products Corp.*, 90 N.J. 191, 209, 447 A.2d 539, 549 (1982) ("As between those innocent victims and the distributors, it is the distributors — and the public which consumes their products — which should bear the unforeseen costs of the product."), and *O'Brien v. Muskin Corp.*, 94 N.J. 169, 463 A.2d 298 (1982) (allowing jury to find that risks of recreational product outweigh its utility and impose liability even in absence of safer design).

The archetypal decisions of the present era may not yet have been written, but we should look for candidates in tobacco, breast implant, blood product, handgun, drug, and other cases of mass-marketed products with powerfully symbolic health consequences.

[18] N.J. STAT. ANN. § 2A:58C-1 to C-7 (West 1987).

[19] The Restatement (Third) provides:

> A product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings. A product:
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> > (b)is defective in design when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a *reasonable alternative design* by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the alternative design renders the product not reasonably safe.

time of distribution of the product, there "was not a practical and technically feasible alternative design that would have prevented the harm."[20]

The Restatement (Third), in its core sections — section 2(b) (design defect) and section 2(c) (inadequate warning) — has grounded the main body of products liability litigation[21] unmistakably in the law of negligence. By reference to section 283 of the Restatement (Second) of Torts,[22] in the comments to section 2,[23] the ALI has expressly embraced negligence, i.e., the "reasonable man" standard, and (except for manufacturing defects) announced its practical abandonment of the strict liability approach.[24] The strict liability approach was undertaken first by the California Supreme Court in 1963 in *Greenman v. Yuba Power Products, Inc.*,[25] and subsequently adopted by the Restatement (Second) of Torts.[26] Even though the New

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RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2(b) (1997) (emphasis added).

[20] N.J. STAT. ANN. § 2A:58C-3 a(1) (West 1987).

[21] Manufacturing defects, defined in section 2(a) as unintended departures from design specifications, and the vicarious liability of sellers for design defects they did not create, remain the only truly "strict" liability elements under the Restatement (Third), despite the continued preference of many courts for the language of strict liability. *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 cmt. a (1997).

[22] *See* RESTATEMENT (SECOND) OF TORTS § 283 (1965) ("Unless the actor is a child, the standard of conduct to which he must conform to avoid being negligent is that of a reasonable man under like circumstances.").

[23] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 cmt. d (1997). The comments explain that "[t]he policy reasons that support use of a reasonable-person perspective in connection with the general negligence standard also support its use in the products liability context." *Id.*

[24] *See* David G. Owen, *Defectiveness Restated: Exploding the "Strict" Products Liability Myth*, 1996 U. ILL. L. REV. 743, 743, 748 [hereinafter Owen, *Defectiveness Restated*]. Owen states:

> Strict liability in tort has occupied the core of modern products liability doctrine ever since Dean Prosser first penned the most often cited Restatement section in history — section 402A of the Second Restatement of Torts . . . . More specifically, by pulling design and warnings cases away from those involving manufacturing defects, section 1 permits the retention of strict liability in the latter context, where almost all agree that it belongs, while abandoning the strict liability concept for negligence principles in design and warning cases which comprise the bulk of products liability law and litigation.

Id.

[25] 377 P.2d 897, 901 (Cal. 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 that causes injury to a human being. Recognized first in the case of unwholesome food products, such liability has now been extended to a variety of other products that create as great or greater hazards if defective.").

[26] RESTATEMENT (SECOND) OF TORTS § 402A (1965). Section 402A provides the following:

Jersey Supreme Court has made clear that the use of a risk-utility balancing test means that the "reasonably prudent" standard will apply to product manufacturers in design-defect (and warning) cases,[27] the language of strict liability has continued to adhere firmly to products liability law.

In certain rare cases, the question arises of whether a manufacturer is reasonable to sell a particular product in any form. For example, in *O'Brien v. Muskin Corp.*,[28] the manufacturer of above-ground swimming pools argued that its product could not be made safer and that the risk of catastrophic injury could not be eliminated.[29] The New Jersey Supreme Court responded:

> To establish sufficient proof to compel submission of the issue to the jury for appropriate fact-finding under risk-utility analysis, it was not necessary for plaintiff to prove the existence of alternative, safer designs. Viewing the evidence in the light most favorable to plaintiff, even if there are no alternative methods of making bottoms for above-ground pools, the jury might have found that the risk posed by the pool outweighed its utility.[30]

The New Jersey Products Liability Act (the Act) has relegated such gross risk-utility assessments to cases of products like that in *O'Brien*,

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> (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
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> (a)the seller is engaged in the business of selling such a product, and
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> (b)it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.
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> (2)The rule stated in Subsection (1) applies although
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> (a)the seller has exercised all possible care in the preparation and sale of his product, and
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> (b)the user or consumer has not bought the product from or entered into any contractual relation with the seller.

Id.

[27] *See* Cepeda v. Cumberland Eng'g Co., 76 N.J. 152, 175 n.5, 386 A.2d 816, 827 n.5 (1978). In *Cepeda*, the New Jersey Supreme Court stated:

> It must be recognized that since this formulation of liability is based upon whether a "reasonable prudent" manufacturer (with assumed knowledge of the dangerous proclivity of the article) would have marketed the article, Subsection (2)(a) of Rest. 2d Sec. 402A *is not applicable in design defect cases. Subsection (2) states: "the rule stated in Subsection (1) applies although (a) the seller has exercised all possible care in the preparation and sale of his product."*

Id. (emphasis added).

[28] 94 N.J. 169, 463 A.2d 298 (1983).

[29] *See id.* at 184-85, 463 A.2d at 306.

[30] *Id.*

products that present egregious risk and have little social utility.[31] Environmental torts, such as asbestos exposure, were excluded from the Act and remain the subject of strict liability causes of action.[32] But the bulk of products liability litigation has not been focused on such an equation — the walk-the-plank choice between an inherently, unavoidably dangerous product and its general social utility. In the ordinary case, it has been necessary to choose between two versions of the same product. Products liability design litigation has centered on the reasonableness of the design choices of the manufacturer. Successful New Jersey plaintiffs, as with successful plaintiffs elsewhere,[33] have proven their design-defect claims by posing an alternative design for the same product.

The new Model Charge abandons the routine recitation of the Wade risk-utility factors. Moreover, in design-defect cases, the new

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[31] *See* N.J. STAT. ANN. § 2A:58C-3(b) (West 1987). That section provides that a manufacturer will not be able to claim the absence of a safer design as a defense if there is clear and convincing evidence showing:

> (1)The product is egregiously unsafe or ultra-hazardous;
> (2)The ordinary user or consumer of the product cannot reasonably be expected to have knowledge of the product's risks, or the product poses a risk of serious injury to persons other than the user or consumer; and
> (3)The product has little or no usefulness.

Id.

[32] *See* N.J. STAT. ANN. § 2A:58C-6 (West 1987) ("The provisions of this act shall not apply to any environmental tort action."). The New Jersey Products Liability Act defines an environmental tort action as a civil action seeking damages for harm when the cause of the harm is exposure to toxic chemicals or substances, but does not mean actions involving drugs or products intended for personal consumption or use." N.J. STAT. ANN. § 2A:58C-1(4) (West 1987). Also, the New Jersey Supreme Court, in *Beshada v. Johns Manville Products Corp.*, stated that "[i]f that product caused more harm than good, it was not reasonably fit for its intended purposes. We can therefore impose strict liability for the injuries it caused without having to determine whether it could have been rendered safer." 90 N.J. 191, 201, 447 A.2d 539, 545 (1982). However, in *Becker v. Baron Bros., Coliseum Auto Parts, Inc.*, the New Jersey Supreme Court stated:

> The Appellate Division's determination, which approved the trial court's charge to the jury, that all asbestos-containing products without warnings are defective as a matter of law was error. That error deprived the jury of the opportunity to determine whether the asbestos product was in fact dangerous, and rendered premature and unfounded the court's application of the risk-utility analysis and its conclusion that without a warning the asbestos product was defective as a matter of law.

138 N.J. 145, 166, 649 A.2d 613, 623 (1994).

[33] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 reporters' notes (1997) (citing Kallio v. Ford Motor Co., 407 N.W.2d 92, 96 (Minn. 1987) (stating that, in establishing that a product was unreasonably dangerous, "[e]xamination of our cases . . . [alleging] defective design demonstrates that, as a practical matter, successful plaintiffs, almost without fail, introduce evidence of an alternative safer design").

Model Charge omits the usual macro-balance[34] question that has been a fixture of New Jersey's jury instructions, namely, whether "the risks or dangers of using a product outweigh its usefulness and, therefore, a reasonably careful manufacturer or supplier would not have sold the product at all in the form in which it was sold."[35]

Liability based on a comparison of the product's overall utility with its risks of harm (an equation practically impossible to establish in the courtroom),[36] is, as Professor Green has persuasively argued, based on an irrelevancy.[37] If such a theory is to be used, it is certainly left to the

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[34] *See* David G. Owen, *Toward a Proper Test for Design Defectiveness: "Micro-Balancing" Costs and Benefits*, 75 TEX. L. REV. 1661, 1664 (1997) [hereinafter Owen, *Micro-Balancing*]. In his article, Owen

> argues that design defectiveness is best determined by using a form of "micro-balance" which focuses on the costs and benefits of adopting the particular alternative design feature proposed by the plaintiff, rather than by attempting a global "macro-balance" of all the risks and benefits of either the chosen or the alternative design. Thus, if the plaintiff frames the issue in terms of the defectiveness of an outboard motor not equipped with a propeller guard, the proper inquiry concerns the balance of costs and benefits that would result from adding such a guard — not the costs and benefits of outboard motors generally, without such guards, and certainly not the broader costs and benefits of power boats propelled by motors.

Id.

[35] N.J. MODEL JURY CHARGES: CIVIL § 5.34B(2) (1989).

[36] How would one do it? On the costs side, how can one show the actual rate of accidents and severity of loss absent the rare epidemiological study based on the type of machine? How long should one assume the risk will exist — what is the useful life of the machine? On the benefit side, how would one estimate the social utility of punch presses? Or automobiles, trains, or planes? *See* Michael D. Green, *Negligence = Economic Efficiency: Doubts*, 75 TEX. L. REV. 1605, 1638-39 (1997) (stating that, even when one has moved to evaluating the marginal advantage of one design over another, estimating frequency and severity of loss is highly problematic).

[37] *See* Michael D. Green, *The Schizophrenia of Risk-Benefit Analysis in Design Defect Litigation*, 48 VAND. L. REV. 609, 620 (1995) [hereinafter Green, *Schizophrenia*]. Green makes the following observations:

> What of the utility of the product? Irrelevant to the analysis. What we are interested in is the marginal utility of the existing design, not the overall societal benefits of the product. To put the point another way, imagine that we have identified a one hundred percent effective vaccine for AIDS. Suppose the vaccine causes a mild auto-immune reaction — a rash that lasts for a week — in one out of a million persons who take the vaccine. The side effect can be eliminated by changing one of the inert ingredients with which the vaccine is coated to another inert ingredient, no more expensive and equally adept at serving its purpose. The vaccine is defectively designed despite its enormous social utility. Risk-benefit analysis operates at the margin — the utility of the existing design compared to the alternative — not at the level of the entire product.

Id. at 619.

rare case. Justice Pollock recognized the dichotomy in *Lewis v. American Cyanamid Co.*[38]

We typically make such a search in a case like *Truchan v. Nissan Motor Corp. in U.S.A.*[39] In *Truchan*, the plaintiff, a rear-seat passenger, suffered catastrophic injuries allegedly due to a poor seat belt design.[40] In such a situation, we do not question the utility of automobiles, or of seat belts. Rather, the safety of the defendant's design is challenged by the posing of a hypothetical design alternative.

The new Model Charge, therefore, directs the jury to focus on the comparative benefits or dangers of the product as sold versus those of the hypothetical alternative proposed by the plaintiff. The essential message of the charge is this: A safer mousetrap is the heart of a products liability case, as Judge Cook observed a few years ago.[41] The safer mousetrap must not be too expensive, must allow the machine to perform its essential rodenticidal function, and must not create practical problems, such as new dangers as worrisome (to the hunter) as the original.

As comfortable as we are with the Restatement (Third) standard, we should avoid suggesting that New Jersey has or should adopt by reference section 2 of the Restatement (Third). As with any such document, the Restatement (Third) is persuasive authority only. Our law cannot and should not be simply a reflection of a scholarly consensus document, no matter how appealing the approach presented by that document may be. New Jersey has partially codified its products liability law and will continue to develop its own common law, guided by the broad parameters the Legislature set forth in the Products Liability Act.[42]

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[38] 155 N.J. 544, 570, 715 A.2d 967, 980 (1998). The New Jersey Supreme Court stated:

> Our decision to sustain the denial of defendant's motion for a judgment notwithstanding the verdict should not be interpreted as altering the parties' burden of proof. In a design-defect case, the plaintiff bears the burden of proof. *A plaintiff must prove either that the product's risks outweighed its utility or that the product could have been designed in an alternative manner so as to minimize or eliminate the risk of harm.* Plaintiffs who assert that the product could have been designed more safely must prove under a risk-utility analysis the existence of an alternative design that is both practical and feasible.

Id. (citations omitted) (emphasis added).

[39] 316 N.J. Super. 554, 720 A.2d 981 (App. Div. 1998).

[40] *See id.* at 558, 720 A.2d at 983.

[41] *See* William J. Cook, *A Better Mousetrap: The Heart of a Product Liability Case*, CIV. TRIAL B. SEC. NEWSL. (New Jersey State Bar Association), Spring/Summer 1993, at 9.

[42] The new Model Charge does not "adopt" section 6(c) of the Restatement (Third), which, unlike our statute, would exclude drug products liability cases —

This tension is dramatically illustrated in *Perez v. Wyeth Laboratories, Inc.*,[43] in which the New Jersey Supreme Court held that the realities of direct, massive advertising of drugs to consumers "belies each of the premises on which the learned intermediary doctrine [defense] rests."[44] The court concluded that the doctrine, an exception to the manufacturer's duty to warn consumers directly, simply "drops out of the calculus, leaving the duty of the manufacturer to be determined in accordance with the general

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setting a strict, "objective standard." *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 6 (1997). That section provides that a drug product or medical device is not defective if a reasonable medical practitioner would find that it is a net benefit to at least one class of patients. *See id.* The classic example of the principle is the new-found utility of the teratogen thalidomide as a treatment for leprosy.

The effect of the section 6 rule — which is inconsistent with our statute — is to place the entire burden of a prescription drug or medical device's dangers on the physician. In contrast, the Products Liability Act makes no distinction between medical devices and other products. *See* N.J. STAT. ANN. § 2A:58C-1 to C-7 (West 1987). The Restatement (Third) continues a rule that existed in the Restatement (Second) that excluded drugs from strict liability. The rule has never been accepted by the New Jersey Supreme Court. In *Feldman v. Lederle Laboratories Inc.*, the New Jersey Supreme Court saw "no reason to hold as a matter of law and policy that all prescription drugs that are unsafe are unavoidably so. Drugs, like any other products, may contain defects that could have been avoided by better manufacturing or design." Feldman v. Lederle Laboratories Inc., 97 N.J. 429, 447, 479 A.2d 374, 384 (1984).

The Restatement (Third) authors argue that the restrictive drug and medical device rule is needed to assure that "manufacturers have ample discretion to develop useful drugs and devices without subjecting their design decisions to the ordinary test applicable to products generally." RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 6 cmt. b (1997). Regardless of the rule, now, as before, most drug and medical device cases will focus on the warnings, rather than on the design.

There are some exceptions to the warning focus in drug and medical device cases. One exception is the failure to develop blood pasteurization techniques for hemophiliacs who receive blood products, which the National Academy of Sciences criticized in a 1995 report. *See* INSTITUTE OF MEDICINE, HIV AND THE BLOOD SUPPLY 95 (1995). Another exception are the design-defect claims over silicone gel breast implants. Those devices, despite the inability to date to connect them convincingly to serious systemic injury, have been sharply criticized because of industry failure to adequately test them for safety. *See generally* Rebecca S. Dresser et al., *Breast Implants Revisited: Beyond Science on Trial*, 1997 WIS. L. REV. 705 (1997). The usual focus on warnings and medical malpractice, however, will be seen in the "fen-phen" litigation now shaping up around the country.

[43] 161 N.J. 1, 734 A.2d 1245 (1999).

[44] *Id.* at 19, 734 A.2d at 1256. These premises, which the majority finds to be based on a "Norman Rockwell," doctor-knows-best image of doctors that is no longer present in this era of managed care, are: (1) reluctance to undermine the doctor-patient relationship; (2) absence in the era of "doctor knows best" of the need for the patient's informed consent; (3) inability of the drug manufacturer to communicate with patients; and (4) complexity of the subject. *See id.* at 18, 734 A.2d at 1255.

principles of tort law."[45] Prescription drug manufacturers that market their products directly may, therefore, be liable to consumers if their advertising fails to provide adequate warning of the products' dangers. Dissenting, Justices Pollock and Garibaldi suggested that the majority had overstepped its bounds because the Product Liability Act[46] adopted the learned intermediary doctrine.[47] The dissenting justices also stated that the majority could not properly rely on, much less expand, the Restatement (Third)'s suggestion that imposing a duty to warn the patient directly is warranted "when the manufacturer knows or has reason to know that health-care providers will not be in a position to reduce the risks of harm in accordance with the instructions or warnings."[48]

III. MACRO-BALANCING VS. MICRO-BALANCING

The Reporters of the Restatement (Third), Professors Twerski and Henderson, are, of course, correct in their assertion that the core concept of products liability law is design defect. The professors describe design defect as "the conceptual linchpin that holds products liability law together" and note that "a system of liability without defect is beyond the capacity of courts to implement."[49] These fears aside, no one has ever seriously challenged that proposition — the trick has been to define "defect".

Successful instructions under the Restatement (Third) and the New Jersey products liability statute must be defect-focused. In a trenchant criticism of the Wade factors, Professor David G. Owen, editorial advisor for the Restatement (Third), developed a new

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[45] *Id.* at 19, 734 A.2d at 1256.

[46] N.J. STAT. ANN. § 2A:58C-1 to C-11 (West 1987).

[47] *See Perez*, 161 N.J. at 35, 734 A.2d at 1266; *see also* N.J. STAT. ANN. § 2A:58C-4 (West 1987) (codifying the learned intermediary doctrine in the Products Liability Act).

[48] *Perez*, 161 N.J. at 38, 734 A.2d at 1267.

[49] James A. Henderson, Jr. & Aaron D. Twerski, *Closing the American Products Liability Frontier: The Rejection of Liability Without Defect*, 66 N.Y.U. L. REV. 1263, 1267 (1991). The future co-reporters sounded an alarm against the supposed threat of "liability without defect." *See id.* at 1266-69.

Henderson and Twerski traced the "intellectual roots" of the asserted threat of widespread "liability without defect . . . to the beginnings of the strict products liability movement." *Id.* at 1267. In particular, Henderson and Twerski identified Dean Wade's seven "risk-utility factors" as having "anticipated the liability-without-defect movement." *Id.* An exemplar of the feared trend, in the view of Henderson and Twerski, was Justice Pollock's opinion in *O'Brien v. Muskin Corp.*, 94 N.J. 169, 463 A.2d 298 (1983), which they feared would open the floodgates to "product-category" liability claims against products of low utility and high risk, such as alcoholic beverages, cigarettes, or handguns. *See id.* at 1267.

approach to jury instructions. Addressing a problem that has created great confusion, the fact that juries are instructed to decide whether a product's dangers "outweigh" its utility as a whole, Professor Owen explains:

> [d]eep within the interior of design defect jurisprudence, balancing bedlam prevails. Courts and commentators increasingly comprehend that ascertaining design defectiveness in products liability cases requires some kind of "risk-utility" balancing, but neither courts nor commentators seem to understand just what that balance should entail. In case after case, courts uphold verdicts rooted in risk-utility proof and argument — on the balance of costs and benefits of improving the safety of a product's design — without inquiring closely into how to formulate the balance properly. And when most courts and commentators do attempt to define the balance, to state with some precision just what should be balanced against what, they quickly lose themselves, conceptually and linguistically, in a tangled thicket of "risks" and "benefits" and "costs" and "utility."[50]

The utility of automobiles is great and surely outweighs their dangers. Even the utility of the "unsafe at any speed" Corvair probably outweighed its dangers. But utility does not mean that such a car has no defect. The traditional jury charge failed to convey the meaning of "defective": that the dangers created by the product reasonably could have been reduced without destroying the transportation utility of the car, and thus the failure to reduce those dangers was an unreasonable safety choice.

New Jersey's Model Charge has, until now, articulated the risk-utility discussion as follows:

> A design defect (also) may be established by proof *that the risks or dangers of using a product outweigh its usefulness* and, therefore, a reasonably careful manufacturer or supplier would not have sold the product at all in the form in which it was sold. A product may not be considered reasonably safe unless the risks have been reduced to the greatest extent possible consistent with the product's continued utility.[51]

The explicit message of this charge is to weigh the usefulness of the product as a whole against its particular avoidable dangers. Of course, one can counter correctly that the question the court is really asking is whether the manufacturer reasonably could have avoided the dangers with an alternative design and whether the manufacturer should have

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[50] David G. Owen, *Risk-Utility Balancing in Design Defect Cases*, 30 U. MICH. J.L. REFORM 239, 239-40 (1997) [hereinafter Owen, *Risk-Utility Balancing*].

[51] N.J. MODEL JURY CHARGES: CIVIL § 5.34B(2) (1989) (emphasis added).

altered the product for safety reasons. The New Jersey Model Charge, however, has not clearly expressed that question. Professor Owen attributes the problem to appellate courts, rather than to trial judges and lawyers:

> A national survey of recent appellate court decisions reveals that courts generally define the balance in terms of the product's risks and utility, a formulation which appears to call for weighing the product's global costs against the product's global benefits. So defined, the design defect test is incorrect. What appellate courts mean for juries to decide, and what juries ordinarily do in fact decide, is the much more narrow "*micro-balance*" of the costs and benefits of the particular design feature that the plaintiff claims the manufacturer ought to have adopted. If courts reformulate the test of design defectiveness in this more precise and focused manner, design defect litigation should be improved.[52]

The primary question that must be addressed is how to restructure the Model Charge, a subject that Professor Owen addressed in a later article.[53] Professor Owen's essential point is that juries should balance the costs and benefits of the alternative design against those of the original design and should ask if the decision of the manufacturer to sell the product in the form in which it was designed was reasonable in light of the existence of a practical, feasible alternative (the absence of which is a statutory defense in New Jersey).[54]

IV. REVISED CHARGE FOCUSES ON THE PRECAUTION NOT TAKEN

Under a revised charge, the risks that a jury must compare are those of the product as it was designed and those of the alternative design. The essential question for the jury remains the same: Was the product reasonably safe in the form in which it was sold? A more probative question, however, is whether the safety gains that the alternative would provide demonstrate that the decision to sell the product as it was actually designed was an unreasonable decision. This modified approach has the advantage of conveying the hornbook legal principle that, in order to fairly impose liability, the burden of avoiding harm must be reasonable in light of the risk and seriousness of the foreseeable harm. This is a notion that every law student knows, having read Judge Learned Hand's opinion in *United States v. Carroll Towing Co.*[55]

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[52] Owen, *Risk-Utility Balancing, supra* note 50, at 239 (emphasis added).

[53] *See* Owen, *Micro-Balancing, supra* note 34, at 1661.

[54] *See* N.J. STAT. ANN. § 2A:58C-3 (West 1987).

[55] 159 F.2d 169 (2d Cir. 1947).

The new Model Charge 5.34 C-1 to 4 adopts the narrower micro-balancing approach. Under the new charge, New Jersey courts will instruct juries in design-defect cases as follows:

> Plaintiff claims that the [*product*] was defectively designed because it did not employ a reasonable safer design. To establish his/her claim of design defect, [*plaintiff*] must prove by the greater weight of the credible evidence that:
>
> a. The product was designed in a defective manner.
>
> A design defect exists if the foreseeable risks of harm posed by the [*product*] could have been reduced or avoided by the adoption of a reasonable design and the omission of the alternative design renders the product not reasonably safe.
>
> (*Presumption of Knowledge*)
>
> In proving a defect in the design of a product, [*plaintiff*] need not prove that [*defendant manufacturer/seller*] knew that the accident in this case could happen as it did. Knowledge of the dangers of the product and the possibility of such an event is legally placed upon the manufacturer/seller. The question for you to decide is whether, assuming the defendant(s) knew the dangers of the product, it (they) were nevertheless reasonably careful in the manner in which it (they) designed (marketed or sold) the [*product*].
>
> [*Plaintiff*] claims that the [product] should have contained the following: [*briefly describe reasonable safer design feature*].
>
> [*Defendant*] on the other hand claims that the [*product*] should not have contained the alternative design because [briefly describe the reasons for rejecting proposed reasonable safer design feature].
>
> You are to decide whether the safety benefits from altering the design as proposed by [*plaintiff*] were greater than the resulting costs or disadvantages caused by the proposed design, including any diminished usefulness or diminished safety. If the failure to incorporate a practical and technically feasible safer alternative design made the [*product*] not reasonably safe, then the [*product*] was designed in a defective manner.
>
> If, on the other hand, [*plaintiff*] has not proven there existed a practical and technically feasible safer alternative, or if you find that the [*product*] as designed was reasonably safe, then the [*product*] was not designed in a defective manner.[56]

This new Model Charge centers on a comparison between the challenged design and the plaintiff's alternative design. Although the

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[56] N.J. MODEL JURY CHARGES: CIVIL § 5.34C-3 (1999).

test still involves a risk-utility analysis, the test functions by requiring differing designs to compete as whole products, rather than by weighing the benefits the product provides against the dangers the product can cause. Thus, in *Truchan*, the case should turn on issues such as whether the manufacturer was reasonable in supplying only lap belts in the back seat, whether a lap and shoulder belt combination would have prevented the plaintiff's dreadful injuries, and, perhaps, if the seat belt as designed was dangerous to a reclining passenger, or whether warnings would have sufficed.[57] These issues still involve a risk-utility analysis, but the focus is placed on the reasonableness of the challenged aspects of the design.[58]

The objective of this new model jury charge is to present squarely to the jury the central issue — the micro-balance — of whether the manufacturer's decision to market the product was reasonable when the risks of the product are compared against the feasibility, practicability, and increased safety of the plaintiff's alternative design.

V. WHAT MORE CAN WE DO?

Having shifted the focus of jury instructions to the micro-balance approach, I suggest that three more issues must be addressed:

(1) How should courts instruct juries beyond the bare-bones formulation of the new charge to assist them in evaluating the plaintiffs' proofs and the defenses raised in a product-specific context?

(2) How should courts instruct juries on the issue of availability of the alternative safer design? It depends on what the meaning of "was" is.[59]

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[57] Likely not. Even if Nissan were able to prove that the dangerous "characteristics of the product are known to the ordinary consumer or user," a defense under the Products Liability Act, the exception for feasible alternative designs means that "if a plaintiff proves by a preponderance of the evidence that the defendant could have eliminated the danger without impairing the usefulness of the product, then *the product might be defectively designed even though the defendant has proved the 3a(2) defense.*" Roberts v. Rich Foods, Inc., 139 N.J. 365, 379, 654 A.2d 1365, 1372 (1995) (emphasis added).

[58] Here, we identify the seller of the product, whether the manufacturer or the distributor, with the designer and extend the moment of design to the time of distribution. Also, we should recognize that, like the reasonably prudent man of section 283 of the Restatement (Second), the reasonably prudent designer is a fiction — and probably not a person at all, but an organization.

[59] Compare how we now instruct juries on knowledge of the harmful effects of products in warning cases:

> In this case *[Defendant]* contends that *[describe danger]* was not knowable at the time the *[Product]* was manufactured/sold. If *[Defendant]* proves that the danger in question was not knowable by it at the time of

(3) Should courts instruct juries that the duty of the manufacturer is to "minimize or eliminate" harm, as the New Jersey Supreme Court writes in *Lewis*, or should the duty be stated simply as the achievement of reasonable safety?

Professor Green has observed that a "schizophrenia" permeates the risk-utility analysis.[60] This schizophrenia is manifested in the tension between "first, the rigorous, precise, green-eyeshade version provided by welfare economics and, second, the softer, reasonableness version."[61] The first approach, the law and economics mode of analysis that asserts societal wealth maximization as the driving force of tort law, is contrasted with the "tort law with a human face" approach.[62] The former is identified foremost with writers such as Judge Richard A. Posner[63] and Professor W. Kip Viscusi.[64] The latter, according to

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manufacture or sale, then it had no duty to warn of the danger and cannot be held liable for failure to do so. In evaluating this defense of *[Defendant]*, you may consider evidence relating to *[Defendant's]* knowledge of the danger of the *[Product]*. A duty to warn arises if *[Defendant]* (the manufacturer/seller) actually knew or should have known of the need to issue a particular warning.

In determining what *[Defendant]* should have known, you must understand that the law requires a manufacturer/seller to keep reasonably familiar with and to know reliable information generally available or reasonably obtainable in the industry. In that regard, *[Defendant]* is deemed to be an expert in its field. This information may come from experts and literature in the field. Moreover, information from other sources such as complaints from users, sellers or distributors of an untoward effect of a product may be sufficient to require an appropriate warning.

N.J. MODEL JURY CHARGES: CIVIL § 5.34B (1999). For background on the handling of the presumed knowledge issue in New Jersey, see John E. Keefe & Richard C. Henke, *Presumed Knowledge of Danger: Legal Fiction Gone Awry?*, 19 SETON HALL L. REV. 174 (1989). Keefe and Henke state that, since its 1982 decision in *Beshada v. Johns Manville Products Corp.*, 90 N.J. 191, 447 A.2d 539 (1982), the New Jersey Supreme Court has recoiled from the theory (sometimes called the Wade-Keeton rule) that knowledge at the time of trial, not the time of distribution, governs liability determinations. *See id.* at 174. The authors also noted that "strict products liability law in New Jersey" should embrace Wade's abandonment of the Wade-Keeton rule. *See id.* at 175 (citing John W. Wade, *On the Effect in Products Liability of Knowledge Unavailable Prior to Marketing*, 58 N.Y.U. L. REV. 734, 761-64 (1983)).

[60] *See generally* Green, *Schizophrenia*, *supra* note 37, at 609 (1995).

[61] *Id.* at 613.

[62] *See id.* at 618. By contrast with the economic version of risk-benefit analysis, one commentator has observed that "[t]ort law is law with a human face." Peter H. Schuck, *Introduction: The Context of the Controversy*, *in* TORT LAW AND THE PUBLIC INTEREST 21 (Peter H. Schuck ed., 1991).

[63] *See, e.g.*, RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW (4th ed. 1992).

[64] *See, e.g.*, Todd v. Societe BIC, 9 F.3d 1216, 1221 (7th Cir. 1993) (en banc) (providing an excellent example of Viscusi's green-eyeshade mode of analysis). In

Professor Green, is identified with Dean Wade and others who reject the monetization of risk as a mode of analysis adequate for tort law.[65]

Professor Green also has observed that the new "Restatement stands right about in the middle, unwilling to make an explicit choice between the two."[66] I suggest that New Jersey stands in just about the same place; and such positioning is a good thing.

The problem of incommensurability — of diverse and competing values — in tort law cannot be wished away.[67] The commonly accepted

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discussing child-resistant cigarette lighter safety, the Seventh Circuit stated:

> Both costs and benefits are elusive. The [Consumer Products Safety Commission] estimates that child-resistant lighters would cost approximately 15 to 20 cents more per unit in the marketplace . . . . About 678 million lighters are sold in the United States each year. The CPSC could not estimate total costs because it did not know what would happen to sales at the higher prices (particularly for "specialty" lighters, which sell in smaller quantities and therefore would incur much higher per-unit costs of compliance). Users of the lighters will suffer some inconvenience, which also counts as a cost — especially to older users whose fingers may not be strong or nimble enough. The benefits look clear enough: by the CPSC's estimate, the total cost of fires set by children under five playing with lighters is $385 million per year . . . . At first glance, the benefits easily exceed the costs. But child-resistant lighters will not eliminate the fires. Child-resistant is not child-proof; the CPSC estimates that 15 percent of children will be able to use the lighters notwithstanding the safeguards and will set 30 percent of the former number of fires . . . . The cost and inconvenience will lead some adults to switch from lighters to matches, posing fire hazards of their own (which CPSC estimates at one-third of the risk of lighters), or to refillable lighters, which are not covered by the rule. And all child-resistant designs present a subtle risk. Parents who (mistakenly) believe that the products are child-proof are more likely to leave them within youngsters' reach. Instead of having zero ability to play with lighters, formerly out of their grasp, these children now have a 15 percent chance of being able to set a fire. A false sense of security could be fatal. The introduction of child-resistant medicine bottles actually led to an increase in certain kinds of poisonings as parents relaxed their vigilance.

Id. (citing W. Kip Viscusi, *Consumer Behavior and the Safety Effects of Product Safety Regulation*, 28 J.L. & ECON. 527, 537-48 (1985)).

[65] *See* Green, *Schizophrenia*, *supra* note 37, at 618.

[66] *Id.* at 615-16.

[67] Judge Hand, whose *Carroll Towing Co.* formula is the talisman of the law and economics approach to tort law, observed in *Conway v. O'Brien*:

> The degree of care demanded of a person by an occasion is the resultant of three factors: the likelihood that his conduct will injure others, taken with the seriousness of the injury if it happens, and balanced against the interest which he must sacrifice to avoid the risk. All these are practically not susceptible of any quantitative estimate, and the second two are generally not so, even theoretically. For this reason a solution always involves some preference, or choice between incommensurables, and it is consigned to a jury because their decision

standards the jury brings to court will not accept a simple calculus of life and safety. The punitive damages award based on the famous Ford Motor Company memo in the Pinto cases (which balanced the costs of wrongful death actions against a safer, non-explosive gas tank) demonstrates that a deep strain of animosity can be tapped by monetizing safety.[68]

But part of the stark reality is, as Professor Green observes, that lives are to be balanced with dollars.[69] Jurors must take into account the economic market factors that drive manufacturers' design choices. Those factors are part of the reasonably prudent manufacturer's circumstances, as articulated by section 283 of the Restatement (Second) of Torts. Jurors, however, also bring a diverse array of values appropriate to the manufacturer's circumstances by recognizing that not all conflicting demands can be placed on a "single metric." In fact, courts should instruct jurors to recognize that in order to invoke the diversity of competing values. We should confront, not side-step, the deep challenge that such incommensurability of values presents to valuation in the law.[70]

> is thought most likely to accord with commonly accepted standards, real or fancied.

11 F.2d 611, 612 (2d Cir. 1940).

[68] Green describes the case, *Grimshaw v. Ford Motor Co.*, 174 Cal. Rptr. 348 (Ct. App. 1981), as follows:

> The case involved a rear-end collision of a Ford Pinto, in which a thirteen year old passenger suffered devastating burns when the Pinto's gas tank ruptured and the leaking gasoline caught fire. The location of the gas tank, behind the rear axle, its construction, and the strength of the rear structure of the Pinto were alleged to constitute design defects that resulted in the fire. The question of a risk-benefit analysis of the gas tank and rear structure design played a central role in the case, in the jury's award of $125 million in punitive damages against Ford, and in the public outrage that the case engendered . . . . The risk-benefit analysis concluded that 180 burn deaths could be avoided with a design change and assigned a value of $200,000 for each life saved. Compared with these deaths was a cost of $11 per car for 12.5 million vehicles that amounted to $137 million. Even with burn injuries and property damage added to the deaths caused by the existing design, the costs of changing the fuel tank design to conform with the NHTSA standard exceeded the value of the risk by almost $90 million.

Green, *Schizophrenia*, *supra* note 37, at 625-26.

[69] *See id.* at 628.

[70] *See* Cass R. Sunstein, *Incommensurability and Valuation in Law*, 92 MICH. L. REV. 779, 842-43 (1994). Speaking of regulatory cost-benefit analysis, Sunstein observes:

> [Cost benefit analysis] may offer a less than full description of what is really at stake, but perhaps it counteracts the forms of inconsistency and ultimate irrationality that result in the public sector if we proceed without quantitative help. This is a plausible defense of [cost benefit analysis] in the real world. Whether it is right depends on pragmatic

The account-ledger approach has its merits.[71] New Jersey courts have embraced the law and economics stance in tort and products liability cases.[72] The monetized, digital mode of analysis is a powerful one, though it lacks the "needle-vibrating-in-the-grooves" tension of analog methods of reproduction of experience. Missing from the monetized digital model is the beat of the heart.[73]

> judgments that cannot be resolved in the abstract. My point is that if goods are diverse and valued in different ways, there will be considerable crudeness in this approach to regulation. Much will be lost even if much is also gained. We should therefore have a presumption in favor of a much more disaggregated accounting of the effects of regulation, one that exposes to public view the full set of effects.

Id.

[71] *See* Green, *Schizophrenia*, *supra* note 37, at 617-18 (explaining the account ledger approach).

[72] *See, e.g.*, Snyder v. American Ass'n of Blood Banks, 144 N.J. 269, 676 A.2d 1036 (1996) (Garibaldi, J., dissenting). In her dissent, Justice Garibaldi stated:

> The ordinary negligence rule is designed to encourage actors to act only when the benefits outweigh the costs. Ordinarily, the threat of liability will deter a person from acting if the costs outweigh the benefits because the actor will be forced to pay those costs in a lawsuit; if the benefits outweigh the costs, the actor will proceed knowing that it will not be held liable and will enjoy the benefits. As a result, the optimal outcome is achieved.

Id. at 311 (citing Richard A. Posner, *A Theory of Negligence*, 1 J. LEGAL STUD. 29, 32-33 (1972)). Other examples of the law and economics approach include *Jurado v. Western Gear Works*, 131 N.J. 375, 619 A.2d 1312 (1993), *Devin v. Borough of Bogota*, 124 N.J. 570, 592 A.2d 199 (1991), and *Promaulayko v. Johns Manville Products Corp.*, 116 N.J. 505, 562 A.2d 202 (1989) ("In general, the effect of requiring the party closest to the original producer to indemnify parties farther down the chain is to shift the risk of loss to the most efficient accident avoider.").

[73] *See* Cass R. Sunstein, *On Analogical Reasoning*, 106 HARV. L. REV. 741, 787-89 (1993). Sunstein states:

> There can be no question that instrumental rationality is highly pertinent to those designing legal rules. Economic analysis is, for this reason, exceptionally valuable for lawyers. Here it has a major advantage over analogical reasoning, which is far less helpful on the matter of consequences. One cannot discover consequences by examining other judicial holdings.
>
> In its normative form, however, economic analysis depends on too thin a repertoire for inquiry — that is, the notion that legal rules should be designed so as to maximize wealth. This intuition can be shown to be too crude and general to be right, and by making reference to particular cases that appear to disprove it. . . .
>
> The hard question, not yet fully elaborated in the philosophical literature, remains: How does one make choices in cases in which incommensurable social goods are at stake, and in which some of these goods must be sacrificed? An exploration of how analogical reasoning actually works may well be helpful in this important endeavor. The analogical thinker is alert to the manifold dimensions of social

Unimpassioned and unromantic though it may be, muddling through the middle of this diverse road, as the Restatement (Third) does, is an advisable way to proceed for those of us seeking to better assist the jury and to improve the quality of justice.

VI. FACTORS TO CONSIDER

Freed from the constraints of the *Wade* factors, we can now examine a wider range of considerations to assist juries in their analysis in products liability cases. Keeping in mind the middle approach of New Jersey and the Restatement (Third) "middle" approach, I suggest that a laundry list of factors should be posed from which a trial judge can choose. We should inform jurors that they may consider these factors in their analysis of the fundamental question. The question is not whether manufacturers have reduced risk to the greatest extent possible,[74] nor whether manufacturers have eliminated every element of danger, as courts have instructed juries in Pennsylvania.[75] On the contrary, the fundamental question is whether the product, at the time of distribution, was reasonably fit, suitable, and safe for foreseeable uses.[76]

In determining what factors to employ, we can work from the familiar *Wade* factors, of which several remain useful in the effort to combine the "soft," value-oriented negligence approach with the "hard-edged" utilitarianism of the law and economics approach to tort law. For instance, one *Wade* factor still useful is "the safety aspects of the

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> situations and to multiple relevant similarities and differences. Unequipped with (or unburdened by) a unitary theory of the good or the right, she is in a position to see clearly and for themselves the diverse and plural goods that are at stake and to make choices among them. The very search for relevant similarities and differences places a premium on this process of perceiving particulars.

Id. (footnotes omitted).

[74] *See* Michalko v. Cooke Color & Chem., 91 N.J. 386, 402, 451 A.2d 179, 187 (1982) ("At the core of our strict liability cases is the requirement that 'the risk from the product be reduced to the greatest extent possible without hindering its utility. [I]t is not reasonably safe if the same product could have been made or marketed more safely.'") (quoting Beshada v. Johns-Manville Prods. Corp., 90 N.J. 191, 201, 447 A.2d 539, 544-45 (1982)).

[75] *See, e.g.*, Azzarello v. Black Bros. Co., 391 A.2d 1029 (Pa. 1978).

[76] *See* N.J. STAT. ANN. § 2A:58C-2 (West 1987). That provision states:

> A manufacturer or seller of a product shall be liable in a Products Liability Action only if the claimant proves by a preponderance of the evidence that the product causing the harm was *not reasonably fit, suitable or safe* for its intended purpose because it . . . was designed in a defective manner.

Id. (emphasis added).

product — the likelihood that it will cause injury, and the probable seriousness of the injury."[77] This restatement of the right side of Judge Learned Hand's famous equation[78] is a necessary aspect of any fault-based negligence analysis. The issue, however, now should be restated in a bilateral way as follows: *The safety aspects of the product — the likelihood that it will cause injury, and the probable seriousness of the injury; and the safety aspects of the proposed alternative — the likelihood that it will cause injury, and the probable seriousness of those injuries.* Another *Wade* factor that retains vitality is "[t]he availability of a substitute product which would meet the same need and not be as unsafe."[79] This factor, though, must be revised as such: *Does the proposed alternative design or alternative product meet or adequately serve the same needs as the challenged product, with improved safety?*

At some point, a change in design departs so far from the product that it no longer forms a fair basis for comparison of the challenged product. The competing utility of killed-virus polio vaccine and live-attenuated virus polio vaccine are two products that could arguably be called alternative designs or competing products. Considering that the two products serve essentially identical functions, the safety of the killed-virus polio vaccine reasonably can be used to challenge the risk inherent in the live-virus. A similar issue might be presented by a challenge to the dangers of the atherectomy device, a device that uses blades to cut out coronary plaque. The substitute product, a balloon angioplasty catheter, which cracks up the plaque, reasonably may be posed as an alternative safer design given the essential identity of their functions.

The *Wade* factor that most resembles the alternative safer design test is also affected by the defenses established in the New Jersey

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[77] Wade, *On the Nature*, *supra* note 12, at 837.

[78] *See* United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947). Judge Hand stated:

> Since there are occasions when every vessel will break from her moorings, and since, if she does, she becomes a menace to those about her; the owner's duty, as in other similar situations, to provide against resulting injuries is a function of three variables: (1) The probability that she will break away; (2) the gravity of the resulting injury, if she does; (3) the burden of adequate precautions. Possibly it serves to bring this notion into relief to state it in algebraic terms: if the probability be called P; the injury, L; and the burden, B; liability depends upon whether B is less than L multiplied by P: i.e., whether B is less than PL.

Id.

[79] Wade, *On the Nature*, *supra* note 12, at 837.

Products Liability Act.[80] That factor, as articulated in *Wade*, required consideration of "[t]he manufacturer's ability to eliminate the unsafe character of the product without impairing its usefulness or making it too expensive to maintain its utility."[81] When revised under the new approach to the Model Charge, this factor presents an opportunity to consider the diverse values appropriately at play in the risk-utility design-defect analysis. The new model jury charge would permit a court to expand its instructions to the jury as follows:

> In assessing the proposed alternative design you should consider whether it would unreasonably impair any essential function of the defendant's product. You may also consider the impact on price of the product in considering the reasonableness or unreasonableness of the safety and the risks of harm associated with the product as designed by the defendant or the proposed alternative or substitute product.
>
> You may also consider the other aspects of the product which designers and purchasers and users may reasonably consider in deciding whether a product is reasonably safe. These may include:
>
> – the reliability, longevity and durability of the product and the alternative.

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[80] *See* N.J. STAT. ANN. § 2A:58C-3. That section provides:

> In any Products Liability Action against a manufacturer or seller for harm allegedly caused by a product that was designed in a defective manner, the manufacturer or seller shall not be liable if:
>
> (1) At the time the product left the control of the manufacturer, there was not a practical and technically feasible alternative design that would have prevented the harm without substantially impairing the reasonably anticipated or intended function of the product; or
>
> (2) The characteristics of the product are known to the ordinary consumer or user, and the harm was caused by an unsafe aspect of the product that is an inherent characteristic of the product and that would be recognized by the ordinary person who uses or consumes the product with the ordinary knowledge common to the class of persons for whom the product is intended, except that this paragraph shall not apply to industrial machinery or other equipment used in the workplace and it is not intended to apply to dangers posed by products such as machinery or equipment that can feasibly be eliminated without impairing the usefulness of the product; or
>
> (3) The harm was caused by an unavoidably unsafe aspect of the product and the product was accompanied by an adequate warning or instruction as defined in section 4 of this act.

Id.

[81] Wade, *On the Nature*, *supra* note 12, at 837.

> - the repair and maintenance costs of the product and the alternative design.
>
> - subjective considerations — the aesthetic, emotional or other psychological effects of use of the product and the personal pleasures, satisfaction, and emotional rewards that users associate with the product.
>
> But the law cannot provide you with a formula to answer the question of how much weight should be given to any single factor. The decision is entrusted to you, to your collective wisdom as representatives of the community, to answer the essential question: "was the product, as sold, reasonably safe?"

The final two *Wade* factors state:

> (5)The user's ability to avoid danger by the exercise of care in the use of the product.
>
> (6)The user's anticipated awareness of the dangers inherent in the product and their avoidability, because of general public knowledge of the obvious condition of the product, or of the existence of suitable warnings or instructions.[82]

In certain cases, these two factors can be useful elaborations of the Learned Hand formula. These factors, however, should be supplemented by the instruction that even a product that has obvious dangers may be found defective if the jury concludes that the manufacturer failed to adopt an available reasonable and safer design.[83] Thus, the charge would read as follows:

> It is a complete defense if you find that the dangers of the product were known to the ordinary consumer or user. But in order to establish that defense the defendant manufacturer must show that the danger could not have been feasibly reduced or eliminated without impairing an essential feature of the product, measurably reducing its appropriateness for its essential function. You should therefore weigh the extent to which the elimination of the inherent danger would impair usefulness against the extent to which the change would improve a hazardous condition.[84]

In cases of medical devices and pharmaceuticals, the last two *Wade* factors are particularly apt. The trade-off between health risks and psychological benefits is a subtle one — one in which the value of individual autonomy should be included in the calculus. In

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[82] *Id.*

[83] *See* N.J. STAT. ANN. § 2A:58C-3(a)(2) (West 1987); *see also* Roberts v. Rich Foods, Inc., 139 N.J. 365, 382, 654 A.2d 1365, 1373-74 (1995).

[84] *See Roberts*, 139 N.J. at 382, 654 A.2d at 1373-74 (stating that "juries will inevitably weigh the extent to which the elimination of the inherent danger would impair usefulness against the extent to which change would improve a hazardous condition").

considering, for example, the health risks of a breast implant, a woman reasonably may trade-off some risk for the psychological rewards of a normal appearance after mastectomy. A man's election to trade risk for psychological gain is equally easy to recognize in the case of medication to treat erectile dysfunction after prostate surgery. In this area, the value of individual autonomy tends to expand liability for breach of duty to warn and to contract the potential for liability for design defects.

VII. WHAT THE MEANING OF "WAS" IS

The Products Liability Act states that it is a complete defense if: "At the time the product left the control of the manufacturer, there *was* not a practical and technically feasible alternative design that would have prevented the harm without substantially impairing the reasonably anticipated or intended function of the product."[85] "Practical and technically feasible" generally are taken to mean economically practical and within current (at the time of distribution) technological capabilities. As suggested above, "practicality" should be read broadly to include aesthetic and psychological considerations, which some persons justifiably may consider worth certain health risks.

The utilization of the word "was" and the frequent use by the Restatement (Third) of the word "available," however, show that we must instruct the jury that the decisive issue is not the availability of an alternative on the market at the time of distribution. After all, the designer is bringing something new to the market. The decisive issue centers on the availability of a meaningful design choice to the designer — one that existed and that the manufacturer rejected (or failed to recognize) at a time when the choice might have reduced or avoided the harm that the plaintiff suffered. To hold otherwise would be simply to ratify the existing state of affairs and thus gut design-defect products liability litigation of its meaning and importance.[86]

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[85] N.J. STAT. ANN. § 2A:58C-3(a)(2) (West 1987) (emphasis added).

[86] If the rules of evidence are employed aggressively to exclude expert opinion regarding untested designs, this principle, which is basic to products liability law, could be undermined. *See, e.g.*, Pestel v. Vermeer Mfr. Co., 64 F.3d 382, 384 (8th Cir. 1995) (excluding evidence of alternative safer design under Rule 702 of the Rules of Evidence and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993)). In *Pestel*, the proposed guard on a "stump cutter" had not been "tested," been "subject to peer review," published, nor "generally accepted" in the field. *See id.* The court stated:

> Mr. Vidal [the expert witness] was hired to show that a guard could be made which would have prevented the injury from occurring. He was not prepared, however, to show that such a guard was ready for the market — his design was not finished. Therefore, his fabricated guard was not relevant to show that a guard could be made that would offer

The question that must be asked is: What should a prudent person in the designer's position have done? This is not a low standard. The prudent person is an ideal person, not a person like any one of us. The prudent person is never negligent and always utilizes his foresight. The prudent person always uses his best efforts and his full intelligence.[87] As Victor E. Schwartz put it in arguing for a negligence standard of care in drug product cases:

> [The] risk benefit analysis *must* be viewed at the time of marketing, not later . . . . [T]he pharmaceutical company is held to the very *highest* of standards. The pharmaceutical company must act as a reasonable person would have acted in the same or similar circumstances. The circumstances in which pharmaceutical manufacturers must deal directly involve serious risks to human life. Thus, the standard of care is not the "reasonableness" of a person who repairs a television set or drives a car — it is the most serious and intense obligation that one can find in the entire body of negligence law.[88]

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protection, and yet not inhibit the use or practicality of the machine.

Id. The decision in *Kumho Tire Co. v. Carmichael*, 119 S. Ct. 1167 (1999), should stem any such trend. Emphasizing that "the test of reliability is 'flexible,' and *Daubert*'s list of specific factors neither necessarily nor exclusively applies to all experts or in every case," the Supreme Court stated:

> We can neither rule out, nor rule in, for all cases and for all time the applicability of the factors mentioned in *Daubert*, nor can we now do so for subsets of cases categorized by category of expert or by kind of evidence. Too much depends upon the particular circumstances of the particular case at issue . . . . [T]he jury must decide among the conflicting views of different experts, even though the evidence is "shaky."

Kumho Tire Co., 119 S. Ct. at 1177.

[87] *See* RESTATEMENT (SECOND) OF TORTS § 283 cmt. c (1965). The comment to section 283 explains the "reasonable man" standard as follows:

> In dealing with this problem the law has made use of the standard of a hypothetical "reasonable man." Sometimes this person is called a reasonable man of ordinary prudence, or an ordinarily prudent man, or a man of average prudence, or a man of reasonable sense exercising ordinary care. It is evident that all such phrases are intended to mean very much the same thing. The actor is required to do what this ideal individual would do in his place. The reasonable man is a fictitious person, who is never negligent, and whose conduct is always up to standard. He is not to be identified with any real person; and in particular he is not to be identified with the members of the jury, individually or collectively. It is therefore error to instruct the jury that the conduct of a reasonable man is to be determined by what they would themselves have done.

Id.

[88] Victor E. Schwartz, *Unavoidably Unsafe Products: Clarifying the Meaning and Policy Behind Comment K*, 42 WASH. & LEE L. REV. 1139, 1144-45 (1985).

The Restatement (Third) notes that the requirement of availability should not be used to create "artificial and unreasonable barriers to recovery."[89] The Restatement (Third) therefore makes clear that no "prototype" need be produced. Nor need the proposed alternative actually have been on the market at the time of distribution of the challenged product as long as a manufacturer could have adopted a reasonable alternative at the time of sale.[90] The essence of fault-based tort liability, that the party charged had a fair chance to avoid the harm, must be respected.[91]

I suggest, therefore, that courts charge juries on the meaning of "was" along these lines:

> – If you find that there is a practical and feasible alternative design which would have reduced or prevented the harm the plaintiff suffered here, you must also ask if that choice was reasonably available before the product left the defendant's control. In essence, you must ask the question — did the designers of the product have a fair chance to reduce or avoid the harm which you have found the product caused?
>
> – In assessing the existence of a meaningful design choice, you may take into account the technology that existed at the time of sale and the availability of or absence of the alternative design in the market place. But it is not necessary for the plaintiff to prove that a safer alternative was actually available for purchase or sale at the time the product was sold. It is enough for the plaintiff to prove that it reasonably could have been available. The plaintiff need not present you with a prototype. It is sufficient if the plaintiff presents the alternative with sufficient concreteness for you to fairly conclude that such an alternative design could have been adopted and that it was practical and feasible at the time the challenged product left the defendant's hands.
>
> – In assessing the defense that no practical and feasible alternative was available, you may consider such questions as

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[89] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 cmt. g (1997).

[90] *See id.*

[91] This idea was famously expressed by Oliver Wendell Holmes, Jr. *See* OLIVER WENDELL HOLMES, JR., THE COMMON LAW 115 (Mark DeWolfe Howe ed., 1963). Holmes stated:

> The true explanation of the reference of liability to a moral standard, in the sense which has been explained, is not that it is for the purpose of improving men's hearts, but that it is to give a man a fair chance to avoid doing the harm before he is held responsible for it. It is intended to reconcile the policy of letting accidents lie where they fall, and the reasonable freedom of others with the protection of the individual from injury.

Id.

> whether the defendant or others in its industry conducted reasonable research, testing, and product development measures. Likewise, you may consider whether the harm that could be foreseen was so slight or so unlikely that no substantial effort was reasonably required. Similarly, you may conclude that any change in the design at that time was so clearly impractical or unfeasible that its pursuit was not reasonably required.

VIII. MAXIMIZING SAFETY

Pursuant to the current jury charge, following precedent such as *Beshada v. Johns Manville Products Corp.*[92] and *Michalko v. Cooke Color & Chemical Co.*,[93] New Jersey courts have instructed juries that "[a] product may not be considered reasonably safe unless the risks have been reduced to the greatest extent possible consistent with the product's continued utility."[94] In formulating the new alternative safer design charge, the committee omitted that instruction, feeling that it did not defer sufficiently to the jury's process of valuing all relevant factors in its reasonableness analysis. The New Jersey Products Liability Act uses the phrase "reasonably fit, suitable and safe."[95] The Restatement (Third) articulates that the primary goal is the achievement of an "optimal" level of safety.[96] In one of its moves toward the green-eyeshade version[97] of design-defect analysis, the Restatement (Third) emphasizes the cost of safety measures and the impracticality of putting safety above all else, such as limiting automobiles to an unreasonably low speed.[98]

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[92] 90 N.J. 191, 447 A.2d 539 (1982).

[93] 91 N.J. 386, 451 A.2d 179 (1982).

[94] N.J. MODEL JURY CHARGES: CIVIL § 5.34D (1989).

[95] N.J. STAT. ANN. § 2A:58C-2 (West 1987).

[96] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 cmt. a (1997).

[97] *See supra* notes 60-61 and accompanying text.

[98] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2 cmt. a (1997). The comment to section 2 states:

> Subsections (b) and (c), which impose liability for products that are defectively designed or sold without adequate warnings or instructions and are thus not reasonably safe, achieve the same general objectives as does liability predicated on negligence. The emphasis is on creating incentives for manufacturers to achieve optimal levels of safety in designing and marketing products. Society does not benefit from products that are excessively safe — for example, automobiles designed with maximum speeds of 20 miles per hour — any more than it benefits from products that are too risky. *Society benefits most when the right, or optimal, amount of product safety is achieved.* From a fairness perspective, requiring individual users and consumers to bear appropriate responsibility for proper product use prevents careless users and consumers from being subsidized by more careful users and consumers, when the former are paid damages out of funds to which

New Jersey courts long have spoken of safety as an objective to be maximized and of danger as something to be reduced to the "greatest extent possible." As the Restatement (Third) notes, as early as 1266 victualers were subject to legal control to make sure the food supply was safe.[99] The advancement of technology has encouraged us to look for steady advances in safety, and our products liability law has encouraged that goal.[100] Safety, however, is a matter of reasonable calculation.[101]

New Jersey courts have charged juries that a manufacturer has a duty to make products as safe as possible. That charge is an appealing formulation, but not one that juries should take too literally. The strength of the huge Lincoln Navigator sport utility vehicle, which protects its occupants in a crash, may present a grave hazard to the occupant of a Fiat 500 that might be crushed by the larger, higher, heavier vehicle. Permitting only one size automobile would eliminate that hazard, but at a price that would be met with universal derision.

Nonetheless, life and limb are favored values. Given these favored values, courts should charge juries in products defect cases that, as *Lewis* suggests, "it is the duty of the manufacturer to reduce or eliminate the dangers of its products as much as existing technology and practicality permit."[102]

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the latter are forced to contribute through higher product prices.

Id. (emphasis added).

[99] *See* RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 cmt. a (1997); *see also* GEORGE ROSEN, A HISTORY OF PUBLIC HEALTH 34-35 (2d ed., 1993) ("Medieval life centered in the market place . . . . Great care was taken to keep the market clean because of the widely held belief that dangerous foci of disease could arise wherever food, especially spoiled food, was sold.").

[100] In *Fabian v. Minster Machine Co.*, the New Jersey Supreme Court noted that it is a complete defense if a defendant proved that its product met the "state-of-the-art" standard. *See* 258 N.J. Super. 261, 274, 609 A.2d 487, 493 (App. Div. 1992). The New Jersey Products Liability Act articulates the "state-of-the-art" defense as follows:

> The burden on a defendant who claims a state-of-the-art defense is to prove only the technological state-of-the-art when the product was manufactured . . . . It remains plaintiff's burden, unaffected by the Products Liability Act, to prove non-conformity.

N.J. STAT. ANN. § 2A:58C-3(c) (West 1987). Judge Dreier, who wrote the *Fabian* opinion, commented that the "state of the art is not the same thing as the custom of an industry, although they may be the same if the industry employs the latest scientific and technical development." WILLIAM A. DREIER ET AL., N.J. PRODUCTS LIABILITY & TOXIC TORTS 304 (1996).

[101] John W. Wade, *On Product 'Design Defects' and Their Actionability*, 33 VAND. L. REV. 551, 568-70 (1980) ("Clearly safety is a relative matter . . . [A] coherent analysis in design defect cases requires a balancing process. An absolute test for liability is not feasible unless one wishes to impose an insurer's liability.").

[102] Lewis v. American Cyanamid Co., 155 N.J. 544, 559, 715 A.2d 967, 974 (1998).

IX. CONCLUSION

The tension between the soft version of negligence and the green-eyeshade version that Michael Green has identified as a form of schizophrenia is one manifestation of a tension that appears in many areas of the law. In the law of scientific evidence, the tension is between knowledge as socially conditioned and knowledge as hard-edged statistical calculation.[103] The same tension exists regarding the nature of causes.[104]

As in those situations, the tension in products liability can be muddled through. The competing design considerations needed to resolve the issues presented in design-defect litigation inevitably invoke competing values. Although the market metaphor is strong and its rationalizing function appealing, the problem of the incommensurability of values is with us permanently. Unlike business contract disputes in which money is both the object and the remedy, in personal injury litigation the choice between the money and the injury will never be a matter of indifference to the injured person. The soft value-diverse sense of negligence, with its appeal to wrongfulness, must therefore be preserved. At the same time, we must present to juries the stark fact that the green-eyeshade calculation of risk and benefit is a

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[103] *See, e.g.*, SHEILA JASANOFF, SCIENCE AT THE BAR: LAW, SCIENCE, AND TECHNOLOGY IN AMERICA 63 (1995) (stating that the *Daubert* decision's "fine disregard" for a "philosophically coherent decision rule" embraced "the view of the philosopher Karl Popper that science proceeds through clear falsifications of erroneous claims and the view of constructivist sociologists of science that knowledge accumulates through negotiation and consensus among members of the scientific community"); *see also* Heidi Li Feldman, *Science and Uncertainty in Mass Exposure Litigation*, 74 TEX. L. REV. 1, 10 (1995) (stating that, despite its citations to logical empiricism, the *Daubert* court ultimately, if unintentionally, endorsed revised empiricism by putting peer review, publication, and general acceptance on an equal footing with testability, treating all as equally distinctive features of science).

[104] *See, e.g.*, Charles Nesson, *Agent Orange Meets the Blue Bus: Factfinding at the Frontier of Knowledge*, 66 B.U. L. REV. 521 (1986). Nesson states:

> My thesis, broadly stated, is that "probability" as we use the term in law, particularly in the civil standard of proof, is not a hard-edged mathematical concept. It is, rather, a concept that incorporates less rigid ideas of justice and reflects the judicial function of resolving disputes in the real world, where values shift and knowledge is uncertain. An outcome is "probable" if it best accomplishes a just and acceptable resolution of the dispute. Probability, as a legal concept in the law of proof, suggests wisdom, probity, and approbation — not favorable betting odds.

Id. at 521; *see generally* George W. Conk, *Against the Odds, Proving Causation of Disease with Epidemiological Evidence*, SHEPARD'S SCI. AND EXPERT EVIDENCE Q. 103 (1995) (arguing for use of flexible criteria for judgments of causation).

powerful and important tool of governance. And it is to aid in governance that the jury is assembled.