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THE USE AND ABUSE OF WARNINGS IN PRODUCTS LIABILITY—DESIGN DEFECT LITIGATION COMES OF AGE*

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The age of the design defect in products liability litigation is upon us. The willingness of courts to enter the heretofore sacrosanct world of the design engineer has met with expectedly mixed reactions. Those representing institutional defendants have condemned the substantial intrusion into what they believe to be the manufacturer's exclusive domain¹ while the plaintiff's bar and the academic community² have generally welcomed judicial activism in this area.

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¹ Connolly, *The Liability of a Manufacturer for Unknowable Hazards Inherent in His Product*, 32 INS. COUNSEL J. 303, 306 (1965); German, *Seller Beware—Strict Liability But Not Absolute Liability*, 37 INS. COUNSEL J. 44, 56 (1970); Hoenig & Goetz, *A Rational Approach to "Crashworthiness" Automobiles: The Need for Judicial Responsibility*, 6 SW. U.L. REV. 1 (1974); Hoenig & Werber, *Automobile "Crashworthiness": An Untenable Doctrine*, 20 CLEV. ST. L. REV. 578, 592 (1971), reprinted in 1971 INS. L.J. 583, 597; Malone, *Product Design Liability—1969 Model*, 35 INS. COUNSEL J. 539 (1968); Sales, *Automobile Design Sufficiency and Enhanced Injury: A New Concept for No-Fault Liability*, 38 INS. COUNSEL J. 388, 394 (1971).

² E.g., Donaber, Piehler, Twerski & Weinstein, *The Technological Expert in Products Liability Litigation*, 52 TEXAS L. REV. 1303 (1974) [hereinafter cited as Donaher]; Holford, *The Limits of Strict Liability For Product Design and Manufacture*, 52 TEXAS L. REV. 81 (1973); Keeton, *Product Liability and the Meaning of Defect*, 5 ST. MARY'S L.J. 30 (1973); Keeton, *Manufacturer's Liability: The Meaning of "Defect" in the Manufacture and Design of Products*, 20 SYRACUSE L. REV. 559

And then Professor Henderson stepped into this rather humdrum controversy to declare that the entire legal community was lending credibility to a mirage. In a persuasive article entitled *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*³ Professor Henderson argues that design defect cases that require courts to set *independent product safety standards* by judging existing designs as defective⁴ are beyond the limits of adjudication. Courts simply cannot adjudicate matters that require second-guessing the complex trade-offs which must be made by design engineers. In short, it is Henderson's thesis that courts *cannot* successfully undertake the task of redesigning products.⁵ Being cognizant of this inability, courts have, Professor Henderson contends, refused to intrude themselves into the design defect arena;⁶ moreover, he concludes that they *should not* do so in the future.⁷

Professor Henderson is, in our opinion, wrong on all counts. His arguments, however, merit serious consideration and careful rebuttal. There is a grave danger that courts, already overburdened with difficult and time-consuming products liability litigation, will find solace in the Henderson thesis and seek to remove themselves from this vital area. After all, courts could not be seriously blamed for not doing what they are now told has not been and cannot be done.

To clarify the record, we shall first demonstrate that courts have been actively engaged in setting product safety standards in a broad range of cases. We shall then focus on what we believe to be the true

(1969); Lambert, *Tort Law*, 35 A.T.L.A.L.J. 33, 102, 120 (1974); Nader & Page, *Automobile Design and the Judicial Process*, 55 CALIF. L. REV. 645, 677 (1967); Noel, *Manufacturer's Negligence of Design or Directions For Use of a Product*, 71 YALE L.J. 816 (1962); Wade, *On the Nature of Strict Tort Liability for Products*, 44 MISS. L.J. 825 (1973); Weinstein, Twerski, Piehler & Donaher, *Product Liability: An Interaction of Law and Technology*, 12 DUQ. L. REV. 425 (1974) [hereinafter cited as Weinstein].

³ 73 COLUM. L. REV. 1531 (1973) [hereinafter cited as Henderson].

⁴ Professor Henderson recognizes that courts do not set formal safety standards when they declare a product design unreasonably dangerous. By passing judgment on the reasonableness of a design, the court is by implication utilizing a particularized normative standard against which the product is to be measured. *Id.* at 1533. Henderson contends that although legal duties are often posed in terms of alternative courses of conduct, this does not detract from their status as standards of behavior. *Id.* at 1533 n.13. The peculiar nature of the negative finding (*i.e.*, that a product is not reasonably safe) in a product liability trial is, however, most significant when analyzing whether a court is suited to the task of establishing product safety standards. The courts are never required to set a specific mandatory standard or to choose between alternatives. They need only perceive that such alternatives are reasonable. *See* text accompanying notes 70-71 *infra*.

⁵ Henderson 1539-42.

⁶ *Id.* at 1557-62.

⁷ *Id.* at 1573-78.

litigation problems presently endemic to design defect cases. Finally, we shall indicate why continued judicial presence in overseeing product safety standards remains necessary for the foreseeable future.

I

JUDICIAL ACTIVISM AND THE DESIGN DEFECT

How profound has the impact of the courts been in setting product safety standards? Professor Henderson contends that it has been of limited significance. The Henderson argument is based on a thesis developed by Professor Lon Fuller,⁸ who sought to establish the limits of adjudication by defining what types of conflicts were most susceptible to resolution in a judicial forum. The litigation process, Fuller contends, is a social process of decision which assures an affected party a particular form of participation—"that of presenting proofs and arguments for a decision in his favor."⁹ The key to deciding whether a problem is susceptible of "proofs and arguments" and thus adjudicable is the *separability* of the issues in a lawsuit. In a justiciable lawsuit, although a party's argument on a certain issue may be related to and dependent upon the resolution of an issue raised earlier, a litigant will be able to *isolate* analytically any given issue in the case. Where, however, a litigant's argument relating to any single issue would change in substance depending on how the court might react to any other issue, the analytical permutations to which the parties would be required to address themselves would be innumerable. The "polycentricity" of the problem would render the case incapable of adjudication, since the parties would be denied meaningful participation in the decision through formal proofs and arguments. The parties would never be able to work their way logically through an unbroken chain of reasoning, nor would they be able to claim that the court was bound to accept any one of the myriad approaches to the exclusion of all others.

Utilizing the Fuller analysis, Professor Henderson argues that the problems confronting the design engineer when deciding the parameters of safety for any given product are polycentric in nature.¹⁰ Because absolute safety is not attainable and is not the sole

⁸ Fuller, *Adjudication and the Rule of Law*, 1960 PROCEEDINGS AM. SOC'Y INT'L L. 1; Fuller, *Collective Bargaining and the Arbitrator*, 1963 WIS. L. REV. 3. For a full discussion of Professor Fuller's thesis, see text accompanying notes 69-72 *infra*.

⁹ Fuller, *Adjudication and the Rule of Law*, *supra* note 8, at 5.

¹⁰ Henderson 1539-42.

objective of the product's design, the engineer must place relative values on such factors as market price, functional utility, and aesthetics, as well as safety. The interdependence of these factors is such that a court in attempting to establish a product safety standard within the context of a design defect case would be relegated to the polycentric balancing that an engineer does¹¹—the court would *not* be deciding on the basis of “proofs and arguments” that focus on a particular issue.

Courts are, according to Professor Henderson, acutely conscious of their inability to resolve polycentric cases successfully and have studiously avoided doing so. Faced with thousands of cases in which courts purportedly have held that the defendant's product safety standards were inadequate, Henderson recognizes that he has some explaining to do. He begins by drawing a distinction between inadvertent design errors and conscious design choices.¹² Inadvertent design cases originate in the failure of the design engineer to perceive adequately the implications of the various elements of his design or to employ universally accepted engineering techniques to achieve the ends intended with regard to the product. These cases, which account for a large percentage of the reported design defect decisions, are not polycentric in nature. This is because a court can look to industry practice to strike down the particular design and thereby avoid embroiling itself in judging the design process.¹³ Conscious design cases, however, present the courts with the polycentricity problem because here the plaintiff will argue that the

¹¹ Henderson acknowledges that a court might weigh the factors involved in risk-utility balancing in a different fashion than the engineer. *Id.* at 1540. For a discussion of the importance of the legal perspectives, see text accompanying notes 70-71 *infra*.

¹² Henderson 1547. See also note 82 *infra*.

¹³ Professor Henderson, throughout, draws an analogy between the medical malpractice field, in which he contends that courts have relied on the collective managerial authority of the medical profession to establish standards, and the custom of industry to establish similar standards for the manufacturing community. Henderson 1542, 1544. The authors are puzzled as to when the collective managerial authority of the medical profession operates to set standards. In those instances where a doctor's medical judgment comes into question and expert testimony on both sides is introduced, there is no collective judgment of the medical profession. To be sure, the expert opinion on either side of the case is drawn from the medical community but that is no different from what exists when legitimate differences arise between engineering experts. See W. PROSSER, LAW OF TORTS § 32, at 165 (4th ed. 1971). The acknowledgment that without the aid of experts, laymen can make no judgment as to the substantive issues in the case does not mean that the “collective judgment” of the medical profession is operating. The medical profession, has, of course, sought to remove malpractice standards from the battle of the experts through the use of arbitration panels and impartial experts. Such changes may be in the offing but they have not been the norm for malpractice litigation to date. See U.S. DEP'T OF HEALTH, EDUCATION, AND WELFARE, PUB. NO. (OS) 73-89, REPORT OF THE SECRETARY'S COMM'N ON MEDICAL MALPRACTICE 91 (1973).

risk of harm from the product resulted from the conscious decision of the design engineer to trade off safety in favor of increased product utility or reduced costs.¹⁴ It is this kind of decision that Henderson claims involves so many interdependent factors that a rational decision cannot legitimately emerge from the adjudicative process.

To avoid facing polycentric decisions in conscious design cases, Henderson claims, courts have opted for a variation of a no-duty rule.¹⁵ They have categorically refused to impose liability for manufacturers' conscious design choices when the danger was either obvious or adequately warned against. Professor Henderson explains away many cases in which courts have purportedly established product safety standards by stating that in such cases the court found a failure to warn on the manufacturer's part in addition to a design defect. Professor Henderson concludes that whenever the theories of unreasonable design and failure to warn are combined as alternative grounds for recovery, the latter theory undercuts the former because the failure-to-warn theory is monocentric and relatively easy to decide whereas the design defect question is polycentric and essentially nonjusticiable. Thus, according to Henderson, plaintiffs must rely on the monocentric failure-to-warn rationale or are doomed to no recovery.¹⁶

Finally, Professor Henderson addresses himself to a small group of cases in which he admits that courts have indulged in setting product safety standards.¹⁷ The majority of these cases fall into three product categories: automobiles, heavy industrial machinery, and lawn mowers. He contends that marketplace negotiations (*i.e.*, warnings, instructions) regarding these product categories are inadequate to protect the consumer.¹⁸ In some of these

¹⁴ Unlike inadvertent design errors, which tend to be hidden and thus not noticeable to the user or consumer, conscious design choices tend to be open and obvious, thus warning the user or consumer of their dangerous features. In fact, the very aspect of the product which may make it dangerous may increase its functional utility. *See* Henderson 1549, 1559. Henderson contends that dangers which are open and which may indeed enhance the utility of the product should not be declared unreasonably dangerous since marketplace negotiations are an acceptable ersatz for product design.

¹⁵ A no-duty rule is one in which the court decides that it will not examine the substantive merit of the negligence or reasonable design issue. W. PROSSER, *supra* note 13, § 53, at 325; Green, *The Duty Problem in Negligence Cases*, 28 COLUM. L. REV. 1014 (1928), 29 COLUM. L. REV. 255 (1929). It grants the manufacturer absolute immunity when he is involved in consciously choosing among competing design alternatives. Thus, the manufacturer has no duty to design safety into the product as long as the consumer is put on notice as to its dangers.

¹⁶ Henderson 1561-62.

¹⁷ *Id.* at 1565.

¹⁸ *Id.* at 1572.

polycentric cases Henderson notes that plaintiffs present to the court alternative designs that are untested and highly theoretical.¹⁹ Evidence of this nature should be rejected, since if courts were to rely on this kind of testimony, they would be deciding cases by whim rather than by reason.

Although much of what follows will be in the nature of a rebuttal to Professor Henderson, it is the authors' purpose to focus on some generic problems and misconceptions which pervade much of products liability literature. Foremost among these problems is the top-heavy emphasis placed on the failure-to-warn issue. The popular solution to every alleged design defect problem seems to be: "Warn against it." Like mother's chicken soup it is the panacea for all ills. This uncritical approach to the warning question has caught the best courts and scholars nodding and among the unwary is now to be numbered Professor Henderson.

II

WARNINGS—THE NOT SO EASY WAY TO DECIDE A DESIGN DEFECT CASE

It has been an article of faith for more than a decade that when a court is faced with the alternative of deciding a case on either design defect grounds or failure-to-warn grounds, the latter is the easier and preferable approach.²⁰ Professor Henderson has now taken the argument one step further. He tells us that even when courts purport to decide cases using both design defect and failure-to-warn theories, their utterings with regard to the design aspect of the case are meaningless.²¹

In the ensuing discussion we shall demonstrate that: (1) in a large percentage of cases a decision on failure-to-warn grounds is tantamount to a decision that in order to avoid liability the product design must be altered; (2) warnings are often an ineffective method of reducing risk to an acceptable level; (3) the warning issue is often highly polycentric, requiring defendants to balance risks and make choices every bit as difficult as those involved in redesigning the product; (4) in some cases warnings do not reduce risks at all but have informational value only; and (5) failure to appreciate the

¹⁹ *Id.* at 1569-70.

²⁰ Henderson 1562; Keeton, *Products Liability—Inadequacy of Information*, 48 TEXAS L. REV. 398 (1970); Noel, *Recent Trends in Manufacturers' Negligence as to Design, Instructions or Warnings*, 19 Sw. L.J. 43, 48-49 (1965); Noel, *supra* note 2, at 816-17.

²¹ Henderson 1562.

complexity of the duty aspects of the warning issue may lead a court to impose unnecessary and imprudent warnings on certain classes of products.

A. *When Is a Failure-to-Warn Case a Design Defect Case?*

The recent tendency of courts to submit cases to juries on the dual grounds of failure to warn and defective design is not a result of inaccurate analysis or superficial reasoning. The opposite is true. It results from the realization that *if a proper warning would result in the nonmarketability of the product, then the true issue before the court is the acceptability of the basic design.*²²

Support for this thesis can be found by a careful reading of some of the leading design/failure-to-warn cases. *McCormack v. Hanksraft Co.*²³ is illustrative. In October 1957, Andrea McCormack's father purchased an electric Hanksraft steam vaporizer for his eight-month-old daughter who had just returned from being hospitalized for croup and pneumonia. After unpacking the vaporizer, Andrea's parents read the instruction booklet thoroughly. Thereafter the vaporizer was used for the young children of the family; this use included unattended operation throughout the night in the children's bedroom. In the spring of 1960, Mrs. McCormack found that the vaporizer was not working and went to the same store from which she had purchased the original vaporizer and purchased a new one identical to the original she had purchased three years earlier.

The new vaporizer was used several times without incident—until late November when Mrs. McCormack set up the vaporizer on a kitchen stool in the children's bedroom. The stool was about four

²² Note, *Foreseeability In Product Design and Duty To Warn Cases—Distinctions and Misconceptions*, 1968 WIS. L. REV. 228, 234. The first to recognize this phenomenon was Judge Frank in his classic dissent in *Hentschel v. Baby Bathinette Corp.*, 215 F.2d 102, 105 (2d Cir. 1954). The defendant was a manufacturer of a bathinette with legs made of a magnesium alloy which ignited at high temperatures, causing intense burning and shooting particles of flame. The majority held for the defendant on the ground that the fire was an intervening cause. In his dissent, Judge Frank, after rejecting the majority premise, questioned the marketability of a baby bathinette with an attached warning reading: "If a fire happens in your home, this bathinette will probably increase the dangers greatly, because the magnesium may ignite causing unusual spurts of flame which will be peculiarly difficult to extinguish." *Id.* at 111.

The thesis set forth in this section is meant to explain the rationale of courts in passing on both design and warning issues when the latter would suffice to impose liability. Professor Henderson apparently recognized that if courts were to take into account the negative effects of warnings on marketability, the warning issue would become exceedingly polycentric. *See Henderson* 1559-60 n.121. It is the authors' contention that the explanation for the dual theory approach to design defect cases is best explained by the determination of courts to explore the design defect issue fully.

²³ 278 Minn. 322, 154 N.W.2d 488 (1967).

feet from the foot of Andrea's bed. When steam started to come from the unit Mrs. McCormack left the room. After visiting a neighbor, she returned to the room at about 1:30 a.m. to replenish the water supply in the vaporizer. Using a mitt to protect her hand from the heat, Mrs. McCormack lifted the cap and poured water from a bottle into the vaporizer jar. She then went to bed. At about 2:30 a.m. Mrs. McCormack heard a terrible cry. She ran to the bedroom and found Andrea lying on the floor screaming. The metal stool was upright, but the vaporizer was on the floor. Scalding hot water had come out of the jar. The vaporizer had separated into three parts—a glass jar, a metal pan, and the plastic top containing the heating unit. The electric cord was still plugged into the outlet. In some manner, Andrea, while intending to go to the bathroom, had tipped over the vaporizer and had caused the scalding water in the jar to spill upon her. As a result, Andrea suffered third degree burns over a large portion of her body. She was hospitalized for six months. The disfigurement of Andrea's face and other portions of her body was both severe and permanent.

The *McCormack* case is of particular importance because the appellate court affirmed jury findings of both negligent design and failure to warn. The court found that the jury had properly determined that the manufacturer had unreasonably designed the vaporizer in that it should have adopted some form of screw-on cap which would have prevented the scalding hot water from gushing out if the vaporizer tipped. Such an alternative design was both feasible and inexpensive to implement. The court also found that the defendant had failed to warn consumers (here Mrs. McCormack) that the water in the jar which served as a reservoir for the heating element was scalding hot. The court noted that there was no way that an observer could discern by sight or touch that the water reached such a high temperature—the danger was not obvious.

So much for the court's decision. The critics would, we believe, take the position that the court took on an unnecessary issue by affirming on design defect grounds.²⁴ One can only find a design defect, they would argue, if the product cannot be marketed *under any conceivable conditions*.²⁵ Merely because a defendant has been

²⁴ See authorities cited in note 20 *supra*.

²⁵ A product should not be regarded as an inherently bad product—an unreasonably dangerous product *per se*—unless there is safety legislation prohibiting the sale of the product, or a reasonable person with full knowledge of all of the risks and dangers involved in its use would not market the product under any circumstances or conditions.

guilty of a failure to warn is no reason to believe that with adequate warnings the product would be unreasonably dangerous. Thus, they would conclude, the design defect rationale does not belong in the case. Why then do the courts bother to confront the more difficult and what has been argued to be the more polycentric issue?

To respond to this most perceptive question requires an analysis as to how a defendant could fulfill his duty to warn. In the *McCormack* case, for a warning to convey adequately the danger involved to the consumer, we suggest that a sharply worded warning would be required—something along the line of the following:

THIS VAPORIZER WHEN OPERATING
IS FILLED WITH SCALDING HOT WATER—
IF THIS VAPORIZER IS TIPPED, THE WATER WILL
POUR OUT AND ONE COULD BE SERIOUSLY INJURED
OR KILLED—DO NOT USE IN THE VICINITY
OF CHILDREN

If one contemplates the impact of this kind of warning, there is little question that it would sharply curtail if not entirely eliminate the marketability of the product as well as its utility for use with children.²⁶ When faced with risks of this magnitude it is not difficult to understand why the court decided the case on alternative design grounds. Once the court perceived the magnitude of the risk of injury and the impact that its revelation would have on marketability, it was naturally led to a consideration of what alternatives were available to reduce the risk. The reasons for this are several. First, if to impose the kind of warning that will truly reduce the risk will lead to nonmarketability, then the court must consider what alternatives consumers will seek in order to replace the dangerous product. If, as a result of an adequate warning, consumers will be faced with alternatives that are even more dangerous than the questioned product without a warning, then perhaps the warning should not be imposed or if imposed should be couched in less frightening language. Thus, if the only alternative to the lift-off-cap vaporizer were a return to the tea kettle on the electric hot plate, perhaps we ought not to be so ready to abandon the present model. When the court has before it, however, an alternative that costs only slightly more, reduces risk, and enhances utility, it can safely force the manufacturer either to issue a warning which is harsh or to redesign the product and not warn at all. Second, as we shall demonstrate in the ensuing section, warnings may not be the most effective method of reducing the risk level attendant to use of a product. Where the risk

²⁶ See authorities cited in note 22 *supra*.

level can be cut drastically by redesign, the court may wish to signal that even if the manufacturer should decide to cut the risk by warning, it has no absolute guarantee from the courts that it will enjoy immunity from liability. To the extent that the design language is dicta, it is dicta of a most informative nature.

The most important reason, however, for the court's discussion of the design issue is pragmatic. It reflects the court's sensitivity to the harshness of an edict that would require a manufacturer to place a warning on a product which would destroy its marketability. The court is telling the manufacturer that the court appreciates the commercial implications of its decision and that it is examining design alternatives which will permit long-range marketing of the product. The court's discussion of feasible design alternatives is in the best tradition of a governmental regulator's offering constructive advice to a regulated industry when it seeks to impose regulations that will affect the business future of the regulated party. To the extent that the court presents to the manufacturing community a reasoned, sensitive decision, it enhances its credibility and assures its continued presence as a viable force in setting product safety standards through the adjudication of design alternatives.

*Dudley Sports Co. v. Schmitt*²⁷ provides a graphic example of the devastating effect that an adequate warning would have on product marketability. The case concerned an automatic baseball pitching machine which consisted of a frame and an open extended metal throwing arm. No protective shield guarded the throwing arm. When the throwing arm was released, a large spring in the base of the machine swung the arm rapidly and forcefully, throwing the baseball with a high velocity. There was an electric motor on the machine, but its function was only to rewind the spring automatically, thus eliminating the necessity of manually returning the throwing arm to the energized position after each ball was thrown. The throwing arm was thus capable of delivering a powerful blow when the spring was rewound, even though the motor was unplugged. When the machine was in this energized position with the spring rewound, it could be set off by any slight vibration or even by a change in atmospheric conditions.

The plaintiff was a student at a high school that had recently purchased the pitching machine. He was sweeping in the locker room and apparently his broom touched the machine. The next thing he knew, he had been hit in the face by the throwing arm and suffered extensive and serious facial injuries. In affirming a jury

²⁷ 151 Ind. 217, 279 N.E.2d 266 (1972).

verdict in favor of the plaintiff, the appellate court found the defendant had failed to design the machine in a safe manner and that the defendant had failed to warn consumers of the danger inherent in the machine. The design defect identified was the failure to provide a shield around the pitching arm. As for the failure-to-warn issue, the court found that the warning given about the machine's danger was too general and did not specifically inform the user that the machine could trigger itself even when unplugged. Again, if we were to conjure up an adequate warning, it would read as follows:

THE THROWING ARM OF THIS MACHINE
CAN BE SET OFF BY ANY SLIGHT VIBRATION OR BY
CHANGES IN ATMOSPHERIC CONDITIONS—IT CAN
MAIM OR KILL ANYONE WHO GETS TOO
CLOSE TO IT IF THE ARM IS NEARLY FULLY ENERGIZED

It takes no great stretch of the imagination to gauge the reaction of the athletic director in charge of purchasing to a product advertised with that kind of warning. It would be a foolhardy act to purchase a product whose danger level was so enormously high. Given the nonessential nature of the product, the irresponsibility of its normal users (teenage youths), and the high probability that the machine would be left unattended so that persons unfamiliar with the machine might come in contact with it, it would be sheer folly to purchase the pitching machine. Thus, the dual grounds of decision (*i.e.*, failure to warn and design defect) reflect the court's value judgment; to wit, to impose the kind of warning that might make the product reasonably safe constitutes *ipso facto* an instruction to the manufacturer to redesign it in a manner that will sharply reduce its danger level.²⁸

²⁸ A large number of design/failure-to-warn cases reflect the pattern set forth in the text. One need only consider the nature of the warning that would have been required to properly sensitize the user to conclude that an adequate warning would destroy marketability. The following cases are illustrative: *Ussery v. Federal Laboratories, Inc.*, [1973-75 Transfer Binder] CCH PROD. LIAB. REP. ¶ 7084 (4th Cir. 1973); *Caruloff v. Emerson Radio & Phonograph Co.*, 445 F.2d 873 (2d Cir. 1971); *Rhoads v. Service Mach. Co.*, 329 F. Supp. 367 (E.D. Ark. 1971); *Putensen v. Clay Adams, Inc.*, 12 Cal. App. 3d 1062, 91 Cal. Rptr. 319 (1970); *Byrnes v. Economic Mach. Co.*, 41 Mich. App. 192, 200 N.W.2d 104 (1972); *Ford Motor Co. v. Matthews*, 291 So. 2d 169 (Miss. 1974); *Bexiga v. Havir Mfg. Corp.*, 60 N.J. 402, 290 A.2d 281 (1972); *Singer v. Walker*, 39 App. Div. 2d 90, 331 N.Y.S.2d 823 (1st Dep't 1972), *aff'd*, 32 N.Y.2d 786, 298 N.E.2d 681, 345 N.Y.S.2d 542 (1973); *Berkebile v. Brandy Helicopter Corp.*, — Pa. —, 337 A.2d 893 (1975); *Helicoid Gage Div. of Am. Chain & Cable Co. v. Howell*, 511 S.W.2d 573 (Tex. Civ. App. 1974).

In addition, courts that have abandoned the patent-danger rule have made clear their position that even with a product that implicitly states its warning through the very openness of its danger, the true issue for the court is the safety of the overall design. These courts have thus rejected warnings as an acceptable ersatz, *See, e.g.*, *Pike v. Frank G. Hough Co.*, 2 Cal. 3d

B. Warnings—Do They Reduce the Danger Level?

Where warning is given, the seller may reasonably assume that it will be read and heeded; and a product bearing such a warning, which is safe for use if it is followed, is not in defective condition, nor is it unreasonably dangerous.²⁹

As with various other comments to the *Restatement (Second) of Torts* section 402A, the above-quoted comment is a gross simplification of a very complex problem. The first question that one must ask when faced with a potential failure-to-warn case is—what function will the warning serve? In most instances the answer is fairly clear. By bringing the dangers that inhere in the product to the consumer's attention there is every reason to believe that the consumer will treat the product with proper respect and avoid the dangerous condition. This technique may work some but not all of the time.

Commentators have long recognized that in some circumstances a warning will not have any effect on a class of foreseeable users and that even with a warning the product may be unreasonably dangerous.³⁰ Thus, for example, where foreseeable users are children too young to appreciate a warning, or casual bystanders who may not be alerted to a warning, liability will follow. It is no surprise, therefore, that in the two cases discussed above, *McCormack v. Hanksraft*³¹ and *Dudley Sports Co. v. Schmitt*,³² the courts based their decisions on design as well as failure-to-warn grounds. In *McCormack*, the plaintiff Andrea was a three-year-old child. A warning that the vaporizer contained scalding water would not be of direct value to her. The warning would only be of direct value to her mother by alerting her to take proper precautions in setting up the

465, 467 P.2d 229, 85 Cal. Rptr. 629 (1970); *Parsonson v. Construction Equip. Co.*, 386 Mich. 61, 191 N.W.2d 465 (1971); *Palmer v. Massey-Ferguson, Inc.*, 3 Wash. App. 508, 476 P.2d 713 (1970); *Meyer v. Gehl Co.*, 36 N.Y.2d 760, 761, 329 N.E.2d 666, 667, 368 N.Y.S.2d 834, 835 (1975) (dissenting opinion, Fuchsberg, J.).

²⁹ RESTATEMENT (SECOND) OF TORTS, Explanatory Notes § 402A, comment *j* at 353 (1965). The comments to *Restatement (Second) of Torts*, § 402A tend to mask some very real problems. Comment *g* describes a product as defective when it is "in a condition not contemplated by the ultimate consumer" and comment *i* describes a product as unreasonably dangerous when it is "dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases [the product], with the ordinary knowledge common to the community as to its characteristics." This language has been interpreted as a mere paraphrasing of the patent-danger rule. See *Donaher*, *supra* note 2; *Wade*, *supra* note 2. Comment *k*, dealing with the unavoidably unsafe product, has also caused considerable confusion. See *Keeton, Manufacturer's Liability: The Meaning of "Defect" in the Manufacture and Design of Products*, *supra* note 2, and *Keeton*, *supra* note 20.

³⁰ See sources cited in note 29 *supra*; *Noel*, *supra* note 2.

³¹ 278 Minn. 322, 154 N.W.2d 488 (1967).

³² 151 Ind. 217, 279 N.E.2d 266 (1972).

vaporizer. But if it was foreseeable that a "safe" location might mitigate the effectiveness of the steam and thus that a mother might place the vaporizer on a stepstool to get maximum effect from the steam, or that preoccupied with other matters, she would forget the awesome dangers of the vaporizer, then the probability of risk may remain so high that designing safety into the vaporizer may be the only reasonable method of reducing the risk of injury to children such as Andrea McCormack. Similarly in the *Dudley* case, the question that a court must ask itself is whether the presence of bystanders not privy to knowledge of the dangers of the baseball pitching machine is of such frequency that it becomes necessary to find an alternative method of reducing the danger level. Again, it is understandable why the court proceeded on both failure-to-warn and design grounds. The product before the court called for a finding that a warning, even a harsh warning, would not sufficiently reduce risks to bring the product into the "reasonably safe" category.

When, however, the injured plaintiff is a direct user (who either purchased the product or has familiarity with it), less attention has been paid to the adequacy of the warning as a method of reducing risk. To the extent that the problem has arisen, it has been hopelessly confused with the affirmative defenses of contributory negligence and assumption of the risk.³³ We shall demonstrate that the failure to analyze the risk level of products has caused the courts inordinate difficulty in the failure-to-warn and obvious danger cases. If courts are willing to protect foreseeable third parties from products that contain a warning, but do not reduce the risk of harm to them, they should also be prepared to recognize that a direct user deserves the same protection.

The patent-danger rule is perhaps the most striking example of misplaced judicial respect for the efficacy of warnings. This rule provides that a manufacturer of a product is under no duty to guard against injury from a patent peril or from a source manifestly dangerous.³⁴ A product with a patent peril has, so to speak, a built-in warning—the danger speaks for itself. This rule has rightfully come

³³ The tendency of courts to decide cases on grounds of affirmative defenses before focusing on the prima facie case has been noted. See Mansfield, *Informed Choice in the Law of Torts*, 22 LA. L. REV. 17 (1961); Twerski, *Old Wine in a New Flask—Restructuring Assumption of Risk in the Products Liability Era*, 60 IOWA L. REV. 1 (1974).

³⁴ See, e.g., *Downey v. Moore's Time-Saving Equip., Inc.*, 432 F.2d 1088 (7th Cir. 1970); *Ilnicki v. Montgomery Ward Co.*, 371 F.2d 195 (7th Cir. 1966); *Maas v. Dreher*, 10 Ariz. App. 520, 460 P.2d 191 (1969); *Patten v. Logemann Bros.*, 263 Md. 364, 283 A.2d 567 (1971); *Bolm v. Triumph Corp.*, 33 N.Y.2d 151, 305 N.E.2d 769, 350 N.Y.S.2d 644 (1973); *Canipo v. Scofield*, 301 N.Y. 468, 95 N.E.2d 802 (1950).

under heavy academic attack³⁵ but still maintains surprising vitality.³⁶ The recent Maryland case, *Patten v. Logemann Brothers*,³⁷ illustrates the injustice fostered by its rigid application.

Plaintiff Joshua Patten worked as a paper baler for approximately five years prior to his injury. The paper baling machine on which he worked had a lubrication and maintenance opening about seven or eight inches wide located twenty-five inches above the floor. The sliding piston that compressed the paper into bales passed by the opening within one inch of the inside wall of the machine. This piston did not move constantly, but was automatically activated when the paper in the compaction chamber had reached a predetermined level. In a deposition, Patten indicated that prior to the accident he had seen the piston passing by the hole. On the day of the accident, the plaintiff tripped on a bundle of baling wire lying loose on the floor next to the baling machine. As he fell his left hand went into the lubricating hole and the piston closed over several fingers of his hand.

The Maryland court affirmed a previous decision,³⁸ and insisted on retaining the rule that there could be no recovery for a patent danger. The decision is an unconscionable one. The lubricating hole was clearly unreasonably dangerous. The cost of a simple

³⁵ E.g., 2 F. HARPER & F. JAMES, *THE LAW OF TORTS* § 28.5 (1956); Noel, *supra* note 2, at 837; Twerski, *From Codling, to Bolm, to Velez: Triptych of Confusion*, 2 *HOFSTRA L. REV.* 489 (1974).

³⁶ See cases cited in note 34 *supra*. It should be noted that the advent of comparative negligence may lead to the abandonment of the patent-danger rule. One of the principal reasons that the patent-danger rule became an absolute bar to a plaintiff's recovery was that it gave courts control over an issue that was generally in the jury's domain. Instead of permitting the jury to decide whether a plaintiff has voluntarily assumed a known risk (a matter that requires proof that the plaintiff was subjectively aware of the risk (see *RESTATEMENT (SECOND) OF TORTS* § 496D (1966))), the courts, in the case of an obvious danger, were able to remove the case from the jury on the ground that the defendant had no duty to the plaintiff. Thus, the patent-danger rule, like the "open-and-obvious" rule of limited liability for landowners to licensees and trespassers, was a manifestation of jury mistrust. See generally Keeton, *Personal Injuries Resulting From Open and Obvious Conditions*, 100 *U. PA. L. REV.* 629 (1952).

Part of the fear involved in permitting juries to pass on the issue of assumption of risk was that defendants only slightly at fault might be required to pay the total damages even when the plaintiff either was aware or should have been aware of an openly dangerous condition. Under comparative negligence, the fear of jury lawlessness is curbed somewhat, since juries have a tool for comparing fault. It is interesting to note that the *Judicial Conference Report*, which recommended the adoption of comparative negligence in New York, has taken the position that under comparative negligence the patent-danger rule, which is followed in New York, should become merely one factor in the overall calculation. See *JUDICIAL CONFERENCE REPORT ON CPLR*, in 1 *N.Y. LAWS* 1477, 1485-86 (McKinney 1975). It remains a matter of speculation whether the New York Court of Appeals will take the advice of the Judicial Conference and so read the comparative negligence statute.

³⁷ 263 Md. 364, 283 A.2d 567 (1971).

³⁸ *Blankenship v. Morrison Mach. Co.*, 255 Md. 241, 257 A.2d 430 (1969).

protective screen would have had no adverse effect on the operation or usefulness of the machine. In standard negligence parlance, the probability of harm to someone from the unscreened hole was substantial, the utility of maintaining the risk was negligible, and the burden of precaution was minimal.³⁹ The finding of negligence was probably so clear that in the absence of the limited-duty rule a court should have directed a verdict on the standard-of-care issue.

It is absurd to hold in this case that the "obviousness of the danger" is sufficient as a matter of law to serve as a warning to the user. Even with the warning arising from the obvious danger the level of risk was of such magnitude that it should have been protected against. Given the context of the actual use of the machine (around baling wire where workmen can easily trip), screening the lubricating hole was the only way to reduce the risk of injury. It is simply impossible for any warning to stop a falling worker from instinctively reaching for the nearest handhold to steady himself, even if he had earlier recognized the danger.

The problem is fundamental. Warnings and obvious dangers are of value only to users who are and can be attentive to them. But what of the foreseeable risks that arise precisely because of the inadvertent or impulsive acts of users who trip or fall or momentarily lapse into forgetfulness?⁴⁰ Is not one of the principal functions of safety features to guard against precisely these foreseeable situations? This is not to say that warnings are irrelevant to the reduction of risk.⁴¹ They often can and do bring the risk level down to an acceptable level. But warnings should not become the only focus of a products liability case. Where design can sharply curtail the danger level at an insignificant cost, the design modification is the preferred alternative. It will not suffice to argue that the patent-danger rule will not alter the ultimate result because the plaintiff would, in any event, be barred by the affirmative defenses of contributory negli-

³⁹ Under strict liability, courts employ risk-utility theory to determine the issue of unreasonable danger. See Donaher, *supra* note 2, at 1307; Wade, *Strict Tort Liability of Manufacturers*, 19 Sw. L.J. 5, 17 (1965); Wade, *supra* note 2, at 837-38; Weinstein, *supra* note 2, at 428-31. Judicial decisions approving this approach are numerous. See, e.g., Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076 (5th Cir. 1973); Rivera v. Rockford Mach. & Tool Co., 1 Ill. App. 3d 641, 274 N.E.2d 828 (1971); Metal Window Prods. Co. v. Magnusen, 485 S.W.2d 355 (Tex. Civ. App. 1972). But see Calabresi & Hirschhoff, *Toward a Test for Strict Liability in Torts*, 81 YALE L.J. 1055, 1060 (1972); Fletcher, *Fairness and Utility in Tort Theory*, 85 HARV. L. REV. 537, 543 (1972); Marschall, *An Obvious Wrong Does Not Make a Right: Manufacturers' Liability for Patently Dangerous Products*, 48 N.Y.U.L. REV. 1065, 1071 (1973).

⁴⁰ Meyer v. Gehl Co., 36 N.Y.2d 760, 761, 329 N.E.2d 666, 667, 368 N.Y.S.2d 834, 835 (1974) (dissenting opinion, Fuchsberg, J.).

⁴¹ See Dorsey v. Yoder Co., 331 F. Supp. 753, 759-60 (E.D. Pa. 1971), *aff'd*, 474 F.2d 1339 (3d Cir. 1973).

gence or assumption of the risk. The vagaries of the plaintiff's conduct are so diverse that one cannot always conclude that either of the affirmative defenses could be established. Indeed, there is a serious question of whether these affirmative defenses should be available when the defendant's duty is to do more than warn of the dangers that inhere in the product.⁴²

In short, even the most honest and forthright warnings may be of marginal value in reducing the risk. Furthermore, as this Article shall demonstrate,⁴³ it is not possible to warn against all risks attendant to the use of products, and therefore trade-offs must inevitably be undertaken in determining which risks are to be warned against and which are to be designed out. This process demands risk-utility balancing of the highest order. The courtroom cannot avoid becoming the theater for this dispute. It must necessarily concern itself with both the safety and honesty of a product in the environment of its use.

A recent Oregon case, *Phillips v. Kimwood Machine Co.*,⁴⁴ illustrates the problems that can arise when courts overemphasize the warning doctrine. The plaintiff in this case was injured while feeding fibreboard sheets into a sanding machine. The machine in question was a six-headed sander. Three of the heads sanded the top of the fibreboard sheet and three sanded the bottom. The top half of the machine could be adjusted manually to accommodate fibreboard sheets of varying thicknesses. The adjustment was made only if a production run called for sheets of a different thickness. The bottom half of the machine had powered rollers that moved the fibre-

⁴² James, *Assumption of Risk: Unhappy Reincarnation*, 78 YALE L.J. 185 (1968). For an even more extreme position, see Twerski, *supra* note 33, and Marshall, *supra* note 39.

The recognition of the limitations of warnings becomes all the more important as the role of assumption of risk as an affirmative defense diminishes under the onslaught of comparative negligence legislation. See Schwartz, *Strict Liability and Comparative Negligence*, 42 TENN. L. REV. 171 (1974); note 36 *supra*. Courts will have to be vigilant not to declare products reasonably safe on the strength of warnings alone. In an earlier era, the warnings may have become the equivalent of a patent danger, thus leading to either a no-duty rule or some form of assumption of risk as a matter of law. See text accompanying note 34 *supra*. Although in the authors' opinion this is erroneous for the reasons set forth in the text (see text accompanying notes 43-46 *infra*), it is true that overreliance on warnings did not create inordinate mischief; when adequate warnings were present the issue easily became transformed into an assumption-of-risk case. With assumption of risk as a complete bar, the theory on which the plaintiff was barred made little difference.

Under comparative negligence, however, the plaintiff's appreciation of the danger will not automatically bar him from recovery. It now becomes crucial not to short circuit the plaintiff's cause of action by focusing on the warning as the *sine qua non* of the defendant's duty.

⁴³ See notes 46-51 and accompanying text *infra*.

⁴⁴ 525 P.2d 1033 (Ore. 1974).

board through the machine as the fibreboard was being sanded. The top half of the machine had pinch rolls that, when pressed down on the fibreboard by springs, kept the sanding heads from forcefully ejecting the fibreboard from the machine.

On the day of the accident, the plaintiff was feeding sheets of fibreboard into the sander. Because of the faulty operation of a press (unrelated to the sander) a large group of sheets of increased thickness was received for sanding. To accommodate these new sheets, the sanding machine was reset. During the sanding of the thicker sheets, a thin sheet of fibreboard that had become mixed with the lot was inserted into the machine. The pressure exerted by the pinch rolls in the top half of the machine was insufficient to counteract the force that the sanding belts exerted upon the thin sheet of fibreboard. As a result, the machine regurgitated the piece of fibreboard, hitting the plaintiff in the abdomen and causing serious injuries.

The case proceeded on both design defect and failure-to-warn grounds, following a familiar pattern. The court first discussed the inadequacies of the design and found that a jury could conclude that for a relatively small cost, a line of metal teeth that would press lightly against the sheet could have been installed into the machine. In case of attempted ejection the teeth would bite into the sheet, thus stopping its backward motion. The court then found that, in any event, the manufacturer had failed to warn properly of the danger of the machine's spewing forth a sheet of fibreboard that was not of uniform thickness with the rest of the stack.

What follows is not intended as a criticism of the opinion in the *Phillips* case. Indeed, the opinion is a model of clarity in its setting forth of the parameters of strict liability in products liability litigation.⁴⁵ Since the court was faced with a manufacturer who had failed

⁴⁵ Judge Holman used the occasion of the *Phillips* case to indicate that in litigation of design defect or failure-to-warn cases the issue of whether the product is defective is synonymous with the issue of unreasonable danger (*i.e.*, there is always a weighing of the utility of a product against the risk of its use). *Id.* at 1037. He makes it clear that in both design defect and failure-to-warn cases the issue is the unreasonable character of the product rather than the manufacturer's negligence. The former focuses on the product and the latter on the conduct of the defendant. The *Phillips* opinion thus is in accord with the position espoused by Dean Keeton, *supra* note 20, and with the result in *Jackson v. Coast Paint & Lacquer Co.*, 499 F.2d 809 (9th Cir. 1974). It is contrary to that set forth by Dean Prosser (*supra* note 13, § 96, at 644-47), and to the result in *Borel v. Fibreboard Paper Prods.*, 493 F.2d 1076 (5th Cir. 1973).

Judge Holman's argument proceeds in the following manner. In a strict liability case, the issue is the condition (dangerousness) of an article that is sold without any warning, while in a negligence case, we are talking about the reasonableness of the manufacturer's actions in selling the article without a warning. Because of a lack of warning, the article can have a degree of dangerousness that the law of strict liability will not tolerate, even though the actions

to warn of the dangers, it had no reason to decide what would happen if the manufacturer had fulfilled his duty to warn.

The *Phillips* case, however, is an excellent vehicle for investigating the efficacy of a warning, had it been given. It seems clear that in evaluating the adequacy of a warning regarding this sanding machine the following questions must be asked:

- (1) How frequently does a thinner sheet of the material become intermixed with those of usual thickness?
- (2) Was the operator's location at the time of the injury the usual one for feeding sheets into the sanding machine?
- (3) How much thinner than normal must a sheet be in order to be forcefully expelled by the machine?
- (4) Would a sheet thin enough to be expelled be readily detectable, visually, by the operator in the course of his normal job of feeding sheets into the sanding machine?

If, for example, the normal operator position coincides with the ejection point of a thin sheet and if such a thin sheet cannot be easily detected by the operator during the feeding operation, then a warning, even prominently positioned on the face of the machine, may not serve to minimize the risk. Alternatively, if the operator is paid by piecework and if the only way to detect a thin sheet is to measure each one before feeding it into the machine, the employee is faced with what may be regarded as an unreasonable choice: either ignore the warning and not measure each sheet (in order to preserve a high production rate and hence a reasonable income), or obey the warning and accept a reduced income. In fact, the plant environment created by its management may not make a choice possible if high

of the seller in selling the article without a warning are entirely reasonable in light of what he knew or should have known at the time he sold it. A way to determine the dangerousness of the article, as distinguished from the seller's culpability, is to assume that the seller knew of the product's propensity to injure as it did, and then to ask whether, with such knowledge, he would have been negligent in selling it without a warning. 525 P.2d at 1036-38.

The notion that a product is unreasonably dangerous if a reasonable seller with full knowledge of its harmful characteristics would not market the product in the same condition is somewhat unfortunate. Although this formulation of the unreasonable danger standard has received approval in *Welch v. Outboard Marine Corp.*, 481 F.2d 252 (5th Cir. 1973), it has been criticized by the authors (*see Donaher, supra* note 2, at 1306) because it establishes the strict-liability standard from the viewpoint of the seller.

The following jury instruction would better reflect the notion that the product is the focal point of the litigation:

A product is defective if it is not reasonably safe—that is, if the product is so likely to be harmful to persons [or property] that a reasonably prudent person who had actual knowledge of its harmful character would conclude that it should not have been marketed in that condition. It is not necessary to find that the defendant had or should have had knowledge of the harmful character of the product in order to determine that it is not reasonably safe. It is sufficient that a reasonably prudent person with knowledge of its harmful character would have concluded that the product should not have been marketed in that condition.

rates of production are expected, even with an effective warning or instructions on the machine.

We believe that the reason appellate courts have gone through the trouble of deciding cases on both design and warning grounds is that they have intuitively reached the conclusion that the warning issue cannot be decided in a vacuum. A warning may or may not be sufficient depending on the probability of reducing the risk and the feasibility of the design alternatives that would eliminate the risk or substantially diminish it. Courts sensitive to the very real limitations that affect warnings have indicated their concern that in some instances even the best of warnings may not shield the manufacturer from liability. The vehicle for this instruction to manufacturers has been the design issue. To accomplish this objective courts have knowingly violated the judicial axiom that cases ought to be decided on the narrowest possible ground.⁴⁶

C. *Warnings—Selectiveness and Effectiveness*

A disturbing phenomenon has begun to manifest itself in products liability cases. It can be simply stated—when in doubt, warn. The reason for the trend toward overwarning is clear. Warnings are an *apparently inexpensive* mode of dealing with risks that cannot be designed out of a product without adding substantially to its cost or otherwise affecting its utility. Nowhere in the literature, neither academic nor judicial, is open consideration given to the very real problem of the impact that overwarning will have on consumers. Furthermore, there is no explicit recognition that warnings do not always reduce the risk level of the product. Some warnings are

⁴⁶ The problem raised by the warning issue in the two cases in this section, *Patten v. Logemann Bros.*, 263 Md. 364, 283 A.2d 567 (1971), and *Phillips v. Kimwood Mach. Co.*, 525 P.2d 1033 (Ore. 1974), would presumably not trouble Professor Henderson. He would argue that the warnings would not be sufficient in these cases because the plaintiffs would be unable to participate in free marketplace negotiation. See Henderson 1566-67. Our argument is directed primarily at the high risk level of the product which persists even after an adequate warning as to risks is given. Admittedly it could be argued that if an adequate warning is given that honestly informs the consumer of the high risk level to which he is exposing himself, and if the consumer has freely chosen to encounter that risk, then the law should step aside and permit the parties their free encounter. This approach presumes a freedom of action on the part of the consumer that is highly unrealistic. The kind of choice-making that is sufficient to make out a case for voluntary assumption of risk is not one of total unfettered freedom. There are almost always elements of duress operating in assumption-of-risk cases. See Keeton, *Assumption of Risk in Products Liability Cases*, 22 LA. L. REV. 122, 157-58 (1961); Twerski, *supra* note 33. Consumer decisions to purchase products are made in the context of such considerations as style, financial limitations, availability on the open market of suitable alternatives, etc. It is in this context that decisions must be made as to whether to design safety into a product or warn as to its dangers. Thus, even if in some rarified atmosphere of total consumer freedom of choice there is merit in Professor Henderson's thesis, it is of questionable validity in the limited choice world in which we all must live.

merely informative in nature. They do not permit the consumer to reduce his exposure to risk if he uses the product; they merely tell him that a risk inheres in the product and that he has the option to take it or leave it. There has been an unfortunate overlapping between these generic kinds of cases. The issues raised by these very different situations may call for different levels of communication with consumers.

D. *Warnings—At What Cost?*

In deciding whether to declare a product unreasonably dangerous because a warning against a hazard was not given, courts are faced with a unique problem. The test for unreasonable danger requires balancing the probability and gravity of harm if care is not exercised against the cost of taking appropriate precautions. Where the issue is failure to warn and the probability of harm is quite remote, the question arises of whether or not to warn against it. The attitude of the court on this point in *Moran v. Fabergé, Inc.*⁴⁷ is not atypical:

[W]e observe that in cases such as this the cost of giving an adequate warning is usually so minimal, amounting only to the expense of adding some more printing to a label, that this balancing process *will almost always weigh in favor of an obligation to warn of latent dangers*, if the manufacturer is otherwise required to do so.⁴⁸

The unexamined premise that warnings are not costly in risk-utility balancing is, in our considered opinion, highly questionable. Warnings, in order to be effective, must be selective. They must call the consumer's attention to a danger that has a real probability of occurring and whose impact will be significant. One must warn with discrimination since the consumer is being asked to discriminate and to react accordingly. The story of the boy who cried wolf is an analogy worth contemplating when considering the imposition of a warning in a case of rather marginal risk. These considerations are of particular significance when considering whether a warning should be imposed or a design change mandated in a products liability case. Those who argue for warning as *the* judicial solution to latent defect cases labor under a naive belief that one can warn against all significant risks.⁴⁹ The truth is that such a marketing

⁴⁷ 273 Md. 538, 332 A.2d 11 (1975).

⁴⁸ *Id.* at 543-44, 332 A.2d at 15 (emphasis supplied).

⁴⁹ In a telling footnote, Professor Henderson comments that his analysis, which emphasizes marketplace negotiation (duty to warn) as a means of assuring nonpolycentric litigation, depends on the assumption "that the courts will commit themselves to a rule of full disclosure regardless of what might be described as indirect or secondary costs or conse-

scheme is not feasible. The warning process, in order to have impact, will have to select carefully the items which are to become part of the consumer's mental apparatus while using the product. Making the consumer account mentally for trivia or guard against risks that are not likely to occur imposes a very real societal cost. Even when the risks are significant, one must consider whether the consumer will perceive them as significant. If the only way to ensure that the consumer will consider them significant is to oversell the warning by increasing its intensity, one may again face the problem that all warnings will come into disrepute as overly alarming. This does not mean that warnings do not have a major role to play in the area of product safety.⁵⁰ It does mean, however, that there is a real

quences of such disclosure." Henderson 1559-60 n.121. See also Marschall, *supra* note 39, at 1079.

⁵⁰ Tucson Industries, Inc. v. Schwartz, 15 Ariz. App. 166, 487 P.2d 12 (1971), demonstrates the feasibility of creating a reasonably safe product through the adequacy of a warning.

The plaintiff suffered severe eye injuries when fumes from an adhesive, a generally recognized toxin, were circulated to the plaintiff's vicinity by an air conditioning system. The label on the adhesive container bore, among other warnings, the following statements:

DANGER, Extremely flammable, read the instructions, be sure to provide adequate ventilation and safety first.

The air conditioning system for the building was turned on in an attempt to remove the fumes from the room in which the adhesive was being used. Whatever device there may have been for introducing fresh air into the air conditioning system was not being utilized. As a result, there was no significant dilution of the fumes, and they were continually recirculated throughout the building. *Id.* at 168-69, 487 P.2d at 14-15.

The pivotal question here is whether it is possible to formulate a warning that would be adequate to reduce the danger to an acceptable level within the environment of its actual use. The issue revolves around the phrase "be sure to provide adequate ventilation." Because of the wide distribution of adhesives of this nature, the spectrum of users will range from the relatively untutored to those with highly specialized knowledge of ventilating system designs. The warnings must communicate to the user an appreciation of the nature of the risk to be guarded against and, equally as important, it must afford adequate instruction concerning the actions to be taken to minimize or eliminate the risk.

In this situation, the first requirement was probably adequately met by the following message:

VAPORS HARMFUL. TOXIC. Keep out of reach of children. Avoid prolonged or repeated breathing or contact with skin.

Nonetheless, we would submit that the instruction concerning the actions to be taken—"Provide adequate ventilation"—falls short of communicating information essential to the consumer's appreciation of the meaning of the term "adequate ventilation." The warning, which was of no value in protecting the bystander-plaintiff, contained language that would not be adequate even for the ordinary user's protection, simply because the phrase "adequate ventilation" has no absolute meaning, and indeed is highly ambiguous.

An adequate warning, the only feasible alternative to withdrawing the product from the market, must describe the type of action to be taken by the user to either obviate the hazard or reduce it to an acceptable level for himself and those in the vicinity. An adequate warning might read as follows:

Fumes are dangerous. They must be exhausted directly to the outside air. Use as near as possible to open window or outside door. Fans or blowers can be used only if they exhaust to outside air. Exposure to fumes can cause blindness or other serious injury.

question as to which dangers must be warned against and which dangers should be designed out of products. Furthermore, for every danger that is designed out it may become possible to warn against others that still remain as potentially dangerous.

*Moran v. Fabergé, Inc.*⁵¹ illustrates the problem in a striking fashion. The plaintiff, Nancy Moran, a seventeen-year-old, went to visit her girlfriend, Randy, on a warm summer night. The two girls, apparently bored that evening, focused their attention on a lit candle that was positioned on a shelf behind the couch in the gameroom. The girls began to discuss whether or not the candle was scented. After agreeing that it was not scented, Randy exclaimed: "Well, let's make it scented!" Randy impulsively grabbed a "drip bottle" of Fabergé's Tigress Cologne that Randy's mother kept in the basement for use as a laundry deodorant, and began to pour its contents onto the lower portion of the candle, somewhat below the flame. Instantaneously, a burst of fire sprang out and burned Nancy's neck and breasts as she stood nearby watching, not fully aware of what her friend was doing. Evidence was introduced that cologne has a high percentage of alcohol, is dangerously combustible, and has a flash point of seventy-three degrees Fahrenheit. On the other hand, Tigress Cologne had a twenty-seven-year accident-free history.

The major question that divided the court was whether the general foreseeability of misuse of the product was sufficiently high to require a warning of flammability. The majority found that the general fire hazard was sufficiently foreseeable that a jury question was made out as to whether a warning should be required. The dissent stated that given the safety history of the product in the context of its normal use, the hazard was too remote as a matter of law.

It will be recalled that in the *Moran* case the majority prefaced its discussion of the warning problem with the statement that it approached a failure-to-warn case with the bias that warnings are inexpensive—costing only a few extra words on a label. Nowhere in either the majority or dissent is the question raised of whether a manufacturer will also be required to warn of other equally remote risks (*e.g.*, not to ingest, keep away from children, etc.). If so, one could expect that a cologne bottle might be required to have a laundry list of warnings on the label—all to be equally disregarded by consumers. Thus, the warning question was approached by the court in isolation and not within the context of the general problem

⁵¹ 273 Md. 538, 332 A.2d 11 (1975).

of warnings to which a manufacturer may have to respond. More important, however, is the failure of the court to take into account the societal cost of warning of a risk as remote as the one before it. The words "Danger—Flammable" are an alert to a consumer that a real risk is imminent. If the "Danger—Flammable" label is over-used, one can only expect that consumers will become jaded to its message. If even remote risks are to be forced to the consumer's attention, the danger signal is diluted. Had the bottle not been equipped with a "drip-cap" that ensured that cologne would not come out of the bottle in large quantities, then perhaps the risk would have been more substantial. But the consumer knows that cologne does not emerge from this bottle, except in drops. To tell him that flammability is a problem will bring into disrepute the danger signal that must service more serious situations.

In short, when calculating the burden of precaution which is part of the risk-utility calculus, it will be necessary to focus on costs other than the cost of label printing. The efficacy of warning is a societal cost of substantial importance. Thus, it will not be possible for the courts to rely on warnings alone to ensure product safety. The range of risks are so broad, and the type of consumer response so varied, that the courts cannot avoid asking "what is a reasonably safe product" or "how much product safety is enough." The answers will sometimes lie with an adequate warning, sometimes with redesign of the product, but most often with warning and design blended together to give an adequate level of safety.

E. *Warnings That Do Not Reduce the Inherent Risk*

In the past several years, a new breed of failure-to-warn cases has emerged. In these cases, the warning, even if given, could not reduce the incidence of injury by making the consumer more careful in his use of the product. Courts have proceeded on a failure-to-warn rationale and have concluded that without a warning the product is unreasonably dangerous.

*Davis v. Wyeth Laboratories, Inc.*⁵² is illustrative. The plaintiff, a thirty-nine-year-old male, responded in March 1963, to a mass polio immunization campaign in which residents of eastern Idaho and western Montana were being inoculated with Sabin Type III vaccine. Within thirty days after taking the vaccine the plaintiff contracted polio, ultimately resulting in paralysis from the waist down. Davis sued Wyeth Laboratories, the manufacturer of the vaccine, on

⁵² 399 F.2d 121 (9th Cir. 1968). See also *Reyes v. Wyeth Laboratories, Inc.*, 498 F.2d 1264 (5th Cir. 1974); *Cunningham v. Charles Pfizer & Co.*, 532 P.2d 1377 (Okla. 1974).

theories of negligence, breach of warranty, and strict liability. The plaintiff relied on the fact that in September 1962, almost simultaneous reports were issued by the Surgeon General and a national association of health officers suggesting that there was a small but definite risk of contracting polio from the use of the vaccine. The risk was remote—in the range of less than one case for every one million doses. On the other hand, the risk of contracting polio without taking the vaccine, for persons over the age of twenty, was calculated by the Surgeon General to be somewhat less than one in a million as well. It was therefore the recommendation of the Surgeon General that Type III oral vaccine be administered primarily to preschool and school age children, and that it be used for adults “only with the full recognition of its very small risk.”⁵³

The Ninth Circuit analyzed the case as one falling under the failure-to-warn rubric. Judge Merrill recognized that in this case he was faced with a rather special type of warning problem:

There are many cases, however, particularly in the area of new drugs, where the risk, although known to exist, cannot be . . . narrowly limited and where knowledge does not yet explain the reason for the risk or specify those to whom it applies. It thus applies in some degree to all, or at least a significant portion, of those who take the drug. This is our case; there seems to be no certain method of isolating those adults who may be affected adversely by taking Type III Sabin vaccine.

In such cases, then, the drug is fit and its danger is reasonable only if the balance is struck in favor of its use. Where the risk is otherwise known to the consumer, no problem is presented, since choice is available. Where not known, however, the drug can properly be marketed only in such fashion as to permit the striking of the balance; that is, by full disclosure of the existence and extent of the risk involved.⁵⁴

Then, in a comment pregnant with meaning, the court concluded:

As comment k [to section 402A] recognizes, human experimentation is essential with new drugs if essential knowledge ever is to be gained. No person, however, should be obliged to submit himself to such experimentation. *If he is to submit it must be by his voluntary and informed choice or a choice made on his behalf by his physician.*⁵⁵

As a result of this analysis, the court found that the failure to warn in this case “rendered the drug unfit in the sense that it was thereby rendered unreasonably dangerous.”⁵⁶

⁵³ Davis v. Wyeth Laboratories, Inc., 399 F.2d 121, 124 (9th Cir. 1968).

⁵⁴ *Id.* at 129 (footnote omitted).

⁵⁵ *Id.* (emphasis supplied).

⁵⁶ *Id.* at 130.

In our opinion, the court's analysis misses the mark. The court may be correct in concluding that the consumer is entitled to the information about the dangers that inhere in the drug; nevertheless, the court is decidedly incorrect in reasoning that the failure to warn makes the drug unreasonably dangerous. The desired information, even if given to the consumer, would not make the drug more safe. The warning does not alter the inherent probability of harm. There are no precautions that the doctor or consumer can undertake either in the administration or the monitoring of the drug that would reduce the incidence of risk. There is no method by which a user can determine a priori whether or not he is one of the select group of persons who would be susceptible to the polio threat that inheres in the drug. The warning in this case does not reduce the theoretical risk level but does serve the legitimate purpose of communicating sufficient information so that the consumer can intelligently choose whether or not to ingest the drug.

The determination of whether or not there has been sufficient communication of information to the plaintiff so that he can intelligently judge whether or not he wishes to expose himself to the drug has little to do with the inherent safety of the vaccine. The issue rests on the choice-making mechanism of the consumer. The legal parameters for this problem belong more to the law of "informed consent" than to the law of products liability.⁵⁷ It is clear that the defendant need not inform the plaintiff of all risks. The most liberal test of informed consent adopted by the courts requires only that the plaintiff be given the information that a reasonable man in the plaintiff's position would like to have before making a decision of such moment.⁵⁸ The advantage, however, of focusing on the issue of

⁵⁷ Twerski, *supra* note 33, at 46. In analyzing the *Davis* case, Professor Twerski argues that it is clear that the court believed that the plaintiff was entitled to the information about the remote dangers of the Sabin vaccine. To accomplish this goal the court believed that it somehow had to fit the defendant's product into the procrustean bed of "unreasonable danger." Yet, if one analyzes the facts of the *Davis* case, it becomes evident where the court's error lay. It is perfectly reasonable to say that a defendant owes a duty to a plaintiff to inform him of the possible harmful nature of a drug so that he can intelligently choose whether to ingest that drug. Logic suggests that in defining the relationship between defendant and plaintiff vis-à-vis the drug, the defendant owes a duty to tell the plaintiff something. The duty is then a duty to communicate information. Must one say that without that information the drug is unreasonably dangerous? It would seem not. If we focus on the duty of the defendant to inform the plaintiff about his ensuing encounter with a potentially harmful, yet not unreasonably dangerous substance, it becomes apparent that we are into an entirely different area of the law. The issue is not one of unreasonable product danger, but rather one of informed consent. The defendant manufacturer of the product had a duty to inform potential plaintiffs that certain risks are inherent in the drug. If the plaintiff's consent to take the drug was based on inadequate knowledge, then his consent to a battery was fraudulently obtained.

⁵⁸ See *Canterbury v. Spence*, 464 F.2d 772, 783-88 (D.C. Cir.), *cert. denied*, 409 U.S. 1064 (1972); *Cobbs v. Grant*, 8 Cal. 3d 229, 241-45, 502 P.2d 1, 8-11, 104 Cal. Rptr. 505, 512-15

choice rather than on the unreasonably dangerous nature of the product is substantial.⁵⁹ By determining whether the plaintiff's consent must be obtained before exposing him to the risk, it becomes possible to distinguish rationally those cases in which courts believe that the information would have no impact on the plaintiff's decision. Two products may have the same risk potential, but because of the diverse nature of product benefits, consumers may desire to have the risk potential information in one case and yet may not be particularly concerned with the matter in the other. This is generally a jury issue. It is important to note here that the product's danger itself is but one element of the overall question of consent. Whether the plaintiff has the information that a reasonable man would want before submitting himself to potential harm (reasonable or unreasonable) depends on factors far more complex than the risk of harm that may be incurred in using the product.

It becomes important at this point to differentiate *Davis* from the standard failure-to-warn case where the purpose of the warning is to reduce the risk potential of the product. When dealing with risks of varying seriousness and frequency in failure-to-warn cases, it has become fashionable to cite *Davis* as authority that even more remote risks should be warned against.⁶⁰ But *Davis*, if our analysis is

(1972); *Holland v. Sisters of Saint Joseph of Peace*, 522 P.2d 208, 211-12, *opinion withdrawn on other grounds*, 526 P.2d 577 (Ore. 1974); *Cooper v. Roberts*, 220 Pa. Super. 260, 265-69, 286 A.2d 647, 649-51 (1971).

⁵⁹ One advantage in analyzing these cases as arising out of the doctrine of informed consent is that the difficult problem of causation is eliminated. Defendants have argued, with some justification, that the plaintiff should be required to prove that had he known of the risk he would not have exposed himself to it. In *Cunningham v. Charles Pfizer & Co.*, 532 P.2d 1377 (Okla. 1974), the court resolved this problem by giving the plaintiff the benefit of a rebuttable presumption that the consumer would have read a required warning had it been given. *Id.* at 1382. See also *Technical Chem. Co. v. Jacobs*, 480 S.W.2d 602 (Tex. 1972). It has been suggested that under *Cobbs v. Grant*, 8 Cal. 3d 229, 502 P.2d 1, 104 Cal. Rptr. 505 (1972), and *Canterbury v. Spence*, 464 F.2d 772 (D.C. Cir.), *cert. denied*, 409 U.S. 1064 (1972) (both informed consent cases arising from medical malpractice situations), the courts found it necessary to decide whether a reasonably prudent person would have refused the vaccine if adequate warning of risks had been given. We submit that in informed consent cases that are properly analyzed on a battery theory the issue should not be what a reasonable person would have done if he had had the necessary knowledge, but rather whether the touching was an unauthorized one. Twerski, *supra* note 33, at 46. In *Cunningham*, the court recognized the problem as one of informed consent, but was still troubled by the causation issue. If the plaintiff should have been supplied with the additional information prior to the touching (*i.e.*, the administration of the drug), the cause of action is made out without proving causation-in-fact either as part of a prima facie case or in response to a rebuttable presumption.

⁶⁰ See, *e.g.*, *Jackson v. Coast Paint & Lacquer Co.*, 499 F.2d 809, 811 (9th Cir. 1974); *Alman Bros. Farms & Feed Mill, Inc. v. Diamond Laboratories, Inc.*, 437 F.2d 1295, 1303 (5th Cir. 1971); *Schenebeck v. Sterling Drugs, Inc.*, 423 F.2d 919, 922 (8th Cir. 1970); *Boains v. Lasar Mfg. Co.*, 330 F. Supp. 1134, 1137 (D. Conn. 1971); *Ward v. Hobart Mfg. Co.*, 317 F. Supp. 841, 849 (S.D. Miss. 1970), *rev'd on other grounds*, 450 F.2d 1176 (5th Cir. 1971); *McEwen v. Ortho Pharmaceutical Corp.*, 528 P.2d 522, 530 (Ore. 1974).

correct, does not stand for the proposition that one must warn against remote risks where the purpose of the warning is to alert the consumer to risks that will reduce the incidence of harm. In the failure-to-warn case, where the warning tells the consumer how to act in relation to the product so as to minimize the chance of harm, the consumer is asked to make the warning part of his mental apparatus when using the product. It is something about which he must remain ever vigilant. As pointed out earlier, there are limits to the number of risks for which we can hope to hold the consumer accountable. If we overuse warnings, we invite mass consumer disregard and ultimate contempt for the warning process. This is not true of the warning that merely informs the consumer that he has a "take-it-or-leave-it" option because of a remote risk in the product. In this latter kind of warning situation, as in *Davis*, the consumer need not carry the baggage of the warning with him. He need only make the choice at the outset as to whether he wishes to use the product. It is thus not unreasonable to ask the manufacturer to list even remote risks for a product that is reasonably safe.

If this leads to a somewhat paradoxical situation wherein the manufacturer of a product that embodies a remote risk that cannot be avoided no matter how much caution is exercised is required to warn of its presence, whereas the manufacturer of a product that embodies a remote risk that can be avoided by caution need not warn of it, so be it. The paradox arises out of the different goals to be accomplished by sharing information with consumers.

It may well be that even with regard to the kind of warning that must be annexed to the product, significant differences can result, depending on the function of the warning. Cautionary labels designed to impress on the consumer the dangers attendant to the use of a product may require attention-getting words designed to place the consumer on guard and keep him on guard. The information-type warning whose purpose is merely to present the consumer with a one time "take-it-or-leave-it" choice might not have to be quite as alarming and attention-riveting. We conclude that analysis cannot proceed in failure-to-warn cases unless a careful evaluation is undertaken of the nature and function of the proposed warning and its relationship to possible design modifications.

F. *Warning—The Duty Dimension*

The rather minimal financial cost of including a warning with the product has implications for a rather special type of failure-to-warn case. *West v. Broderick and Bascom Rope Co.*⁶¹ exemplifies the

⁶¹ 197 N.W.2d 202 (Iowa 1972).

problem. In this case, a manufacturer of steel cable was sued when a cable broke while lifting a weight well beyond its tensile strength (breaking point). From long experience Broderick and Bascom knew with exactitude the ultimate breaking point of the cable it manufactured. To avoid the possibility of injury to personnel or damage to the cable itself, the manufacturer rated cable for use at one-fifth its tensile strength. It is accepted practice in the industry that steel cable should not be used beyond its rated capacity. Thus, when the cable failed, it was presumably being used at over five times its rated capacity. The evidence indicated that the cable was rated for 2.7 tons but was actually being used to haul a weight of 15-20 tons. As a result of this overload, the cable literally exploded, causing serious permanent injuries to the plaintiff, an ironworker who was standing in the vicinity.

The negligence alleged was that the defendant failed to attach a permanent tag to the cable to indicate that its rated capacity was 2.7 tons. The defendant did distribute literature about the rated capacity of various size cables and apparently also tagged them. Although the opinion is somewhat unclear on this point, it appears that the tag was somehow knocked off in service.

The warning problem in a case such as this raises serious duty questions. The court assumed that ironworkers who work with cables are well aware that using a cable beyond its rated capacity is extremely dangerous. One witness testified that only a fool would use a cable beyond its rated capacity, let alone use one at five times its rated capacity. One must then question how the cable *without* a tag indicating its rated capacity is an unreasonably dangerous product. Given the great danger that is clear to ironworkers, how could the worker have assumed anything at all about the strength of the rope? At worst, this cable said nothing at all to its user about the load it could withstand.

The Iowa court, although reversing the decision on other grounds, affirmed a jury finding that the defendant had a duty to warn by placing a nonremovable or permanent tag on the cable. The court reasoned that the cost of such a warning was minimal compared to the possible danger in using the wrong cable. We tend to agree with the court that the cost of a tag in such a case is minimal. Unlike the other kinds of warnings described earlier that bear a substantial societal cost, the tag in this case would be convenient and would have no adverse effect on the believability of warnings in general. But how does mere convenience turn into unreasonable danger? If the steel cable did not represent itself as capable of

carrying any particular load and was to be used by a sophisticated user, what grounds are there for imposing liability?

The answer the court gives is both simple and simplistic: it would be nice to have the tag and cheap to put it on. Even admitting that this conclusion is valid, it has little to recommend it as a standard for determining when to impose a duty to warn. It is the court that must make a threshold decision as to whether in any case the danger level and the nature of product use is such that society ought to consider the imposition of safety features. It is especially important in warning cases that courts face the duty question first and not commence their analysis with the standard-of-care issue.⁶² The reason is simplicity itself. The inexpensive nature of convenience-type warnings can easily lure a court to conclude that a warning should be imposed.⁶³ Yet somewhere the judicial process must focus attention upon factors other than minimal cost and convenience and address the question of whether the law is prepared to impose legal liability when the danger level of a product is minimal. The duty question permits a court to take into account a broad range of policy factors that lie well beyond the pale of risk-utility balancing.⁶⁴ Thus, factors such as the normal use patterns of the workers, their relative sophistication, the demands of the work environment, the spectrum of use and users of the product, the ultimate impact of the warning, the safety record of the industry, and similar factors should be addressed at this initial stage of the legal analysis.

It is clear to us, then, that in framing the warning issue from the perspective of the duty question, a sophisticated court will have to

⁶² RESTATEMENT (SECOND) OF TORTS § 388(b) (1965) limits liability for negligence in cases of a supplier of chattels known to be dangerous for their intended use when the defendant "has no reason to believe that those for whose use the chattel is supplied will realize its dangerous condition." This section would seem to be based on a duty analysis. A plaintiff does not make out a cause of action unless each one of the requisites set forth in subsections (a), (b), and (c) are met. The reasonable care standard is set forth in subsection (c). Thus, even if a plaintiff establishes that the defendant acted unreasonably in failing to give a warning, liability will not attach if the defendant has no reason to believe that users will not perceive the danger. Focusing on factors outside standard risk-utility considerations as a prerequisite to the imposition of liability is, of course, the hallmark of duty analysis. See *Goldberg v. Housing Authority*, 38 N.J. 578, 186 A.2d 291 (1962); *Tobin v. Grossman*, 24 N.Y.2d 609, 249 N.E.2d 419, 301 N.Y.S.2d 554 (1969); W. PROSSER, *supra* note 13, § 53 at 324-25; Green, *Foreseeability in Negligence Law*, 61 COLUM. L. REV. 1401, 1417-18 (1961); Hoening & Goetz, *supra* note 1. The authors would not limit the duty considerations as narrowly as does the *Restatement*.

⁶³ There is evidence that the court in *West v. Broderick & Bascom Rope Co.*, 197 N.W.2d 202 (Iowa 1972), was so misled. In discussing why it believed that there was sufficient evidence to take this case to a jury, the court stated: "Moreover, expert witnesses, including one of Broderick & Bascom's own experts, testified that tagging slings with working capacities would certainly be useful information in field operations." *Id.* at 211.

⁶⁴ See authorities cited in note 62 *supra*.

examine the product within the environment of its use. Failure to recognize that courts have to make a policy judgment of the first order in warning cases can lead to untoward results. Courts could easily turn mere convenience-type warnings into a sword by which to hold manufacturers liable simply because after the fact they determine that a cheap warning could have avoided this particular accident.

G. *The Role of the Trial Judge in Warning Cases*

If the authors have been at all successful, it should be clear at this point that failure-to-warn cases are highly complex. In the first instance, they require a judgment on the part of the court that the use environment of the product justifies considering a warning. This is a duty question on which the court must bring to bear the whole panoply of considerations that traditionally have been invoked by the law of torts in deciding whether society is prepared to impose a certain kind of obligation on the manufacturing community.⁶⁵

Once the duty decision has been made and the court is overseeing the standard-of-care issue through risk-utility balancing, the court has the obligation to demand the kind of evidence (under the threat of a directed verdict) that will demonstrate the risk level of the product and the ability of consumers both to react to the warning and to retain the warning in their minds so that the danger level is truly reduced. Otherwise, consideration must be given to the design defect issue so that possible warnings can be balanced against design alternatives. The questions of warning and design are often inextricably woven together. The time has come for their interdependence to be given judicial cognizance. Only after these problems have been successfully resolved can the case proceed to the causation issue and to the inquiry as to the nature of the plaintiff's conduct.

III

DESIGN DEFECT LITIGATION—EXPLODING SOME MYTHS

The basic attack directed against the justiciability of design defect cases has been that they bring to a judicial forum complex technological issues that the courts are not equipped to handle.⁶⁶ Professor Henderson has now added an extra dimension to this theme by insisting that design defect cases are unfocused and

⁶⁵ *Id.*

⁶⁶ *See* authorities cited in note 1 *supra*.

polycentric in nature and that therein inheres the difficulty that makes them nonjusticiable.⁶⁷

The earlier portion of this Article has been devoted to establishing the thesis that there is no escape from sophisticated risk-utility balancing in both design defect and failure-to-warn cases. We believe that we have demonstrated that the suggested principal alternative to risk-utility balancing—deciding cases on the failure-to-warn ground alone—is no alternative at all. First, it is an inadequate substitute for the design defect approach.⁶⁸ Second, a failure-to-warn case properly understood can be every bit as complex and can involve the same elements of polycentricity as a classic design defect case.⁶⁹

We now turn our attention to the issue of polycentricity itself. Do design defect cases test the principle that courts are beyond their depth when they undertake litigation in which the parties cannot address themselves to the basic elements of the case by presenting “proofs and arguments” as separable issues? We believe, along with Professor Fuller, that truly polycentric problems may well be nonjusticiable. But design defect cases, properly understood, are not really all that polycentric. To support our thesis we turn to Professor Fuller:

What is a polycentric problem? Fortunately I am in a position to borrow a recent illustration from the newspapers. Some months ago a wealthy lady by the name of Timken died in New York leaving a valuable, but somewhat miscellaneous, collection of paintings to the Metropolitan Museum and the National Gallery “in equal shares,” her will indicating no particular apportionment. When the will was probated the judge remarked something to the effect that the parties seemed to be confronted with a real problem. The attorney for one of the museums spoke up and said, “We are good friends. We will work it out somehow or other.” What makes this problem of effecting an equal division of the paintings a polycentric task? It lies in the fact that the disposition of any single painting has implications for the proper disposition of every other painting. If it gets the Renoir, the Gallery may be less eager for the Cezanne, but all the more eager for the Bellows, *et cetera*. If the proper apportionment were set for argument, there would be no clear issue to which either side could direct its proofs and contentions. Any judge assigned to hear such an argument would be tempted to assume the rôle of mediator, or to adopt the classical solution: Let the older brother (here the Metropolitan) divide

⁶⁷ See text accompanying notes 3-19 *supra*.

⁶⁸ See text accompanying notes 29-45 *supra*.

⁶⁹ See text accompanying notes 47-51 *supra*.

the estate into what he regards as equal shares, let the younger brother (the National Gallery) take his pick.

Let me now give a series of illustrations of polycentric problems, some of which have been assigned, with poor success, to adjudicative treatment, some of which have been proposed for adjudicative treatment, and some of which are so obviously unsuited for adjudicative decision that no one has dreamed of subjecting them to it: setting prices and wages within a managed economy to produce a proper flow of goods; redrawing the boundaries of election districts to make them correspond to shifts in population; assigning the players of a football team to their respective positions; designing a system of throughways into a metropolitan area; allocating scarce funds for projects of scientific research; allocating air routes among our various cities; drawing an international boundary across terrain that is complicated in terms of geography, natural resources, and ethnology; allocating radio and television channels to make balanced programs as accessible to the population as possible.⁷⁰

Do design defect cases reflect the kinds of problems which Professor Fuller has identified as polycentric? At first blush one finds a surface appearance of similarity. It certainly appears that in balancing such factors as market price, functional utility, aesthetics, and safety, courts would be involved in a polycentric task. Indeed, the Henderson argument, that a court is really second-guessing the design engineer by using the very factors which the engineer utilizes in his decision-making process, is not unpersuasive. But the analogy is inapposite for several significant reasons.

In the cases discussed by Professor Fuller, courts are thrown a complex problem and asked to resolve it on no basis other than general notions of fairness and equity. Such litigation is unfocused and diffuse. There is no central focal point that becomes the axis about which all considerations must turn. In product design litigation the opposite is true. Admittedly, absolute safety is unattainable and is not the only consideration germane to a design defect case. But the focal point of the case is clearly defined. It revolves around the question of whether the product has met a minimal level of product safety acceptability, *i.e.*, the product is not unreasonably dangerous. To the extent that factors such as cost, aesthetics and functional utility are examined, they are examined not in isolation but in relation to safety.

An understanding of this concept is central not only to an appreciation of the litigation process, but also in distinguishing the design engineer's perspective from that which pervades a products

⁷⁰ Fuller, *Adjudication and the Rule of Law*, *supra* note 8, at 3-4.

liability trial. For it is not true that a court merely mimics the same process that has once been undertaken by the design engineer. In fact, the very difference in perspective is one of the major reasons for a judicial presence in this area of the law:

The industrial design engineer pays first allegiance to the trilogy of cost, marketability, and competitive position within the context of product function. Although safety is a factor in his design plan, it cannot and does not become the focal point of his endeavors. The engineer does not sit down to design a product with safety at the head of his list of features or concerns. The products liability case provides that shift in focus whereby society reexamines the design, taking into account all the factors that the design engineer must account for, with one difference: in this forum they are viewed in light of their ultimate impact on product safety.

There is another aspect to product safety litigation which sets it apart from the polycentric problems that are the focus of Professor Fuller's concerns. Although courts in design defect cases purportedly set product safety standards, they do so, at best, in a backhand fashion. It is not the function of a court in a design defect case to set the appropriate standard of safety. This is a function more suited for an administrative agency. Rather, what the court does is to set a negative standard. It declares that the design before the court is inadequate and that the product does not meet the minimum level of societal acceptability. To set this negative standard, alternative designs must be examined. But a court is not required to choose among alternatives to come up with the safest or optimum design. It need only be convinced that a feasible alternative exists which would provide for a level of safety superior to the one at bar and which, had it been instituted, would have prevented the injury.⁷¹ The court then must conclude that, in light of the alternatives available, the present design is unreasonably dangerous. It should be noted that the feasibility of alternative design in this context does not present the court with open-ended options; but rather, it is the raw material that the court uses in making its negative decision.

⁷¹ A cynic might suggest that a court will permit a case to go to the jury when it is convinced that the safety dimension of the product has not been adequately considered by the manufacturer, even though the plaintiff has not established the true feasibility of possible alternative designs. It is difficult to find authority to support this proposition. Nevertheless, we are convinced that the litigation process is often used as a tool to mete out cadre justice. This does not mean that the record is devoid of evidence of possible feasible alternatives. We only suggest that what must pass for minimal evidence on the issue of alternative design to withstand a directed verdict may vary with the degree of a defendant's culpability. For a comparable analogy on the causation issue, see Malone, *Ruminations on Cause-In-Fact*, 9 STAN. L. REV. 60 (1956).

The factors outlined above are of sufficient significance to distinguish the design process from the problems that have heretofore been labelled polycentric. When coupled with the reality that design litigation only rarely involves the entire product (most often it addresses itself to an isolated feature of the product) it is clear that the problem of polycentricity is not of major significance.

A. *Design Choices: How Sophisticated and How Conscious?*

Professor Henderson has astutely observed that courts and scholars have traditionally evidenced discomfort when evaluating the design process in the context of litigation.⁷² The reasons for this discomfort are many. Underlying them, in our opinion, is an instinctive aversion to tampering with conscious design choices, which are believed to have been achieved by a delicately balanced scientific assessment.

Unfortunately, the notion held by many outside the engineering profession, that the product design process always involves a sophisticated fine-tuning of carefully articulated and quantified parameters, is a myth. As we have indicated elsewhere,⁷³ every product is a compromise between quantifiable aspects of design and the uncertainties of actual performance of the product in the environment of its use. This gap is usually closed by the safety factor (really a factor of ignorance), which is a subjective judgmental response to the inherent uncertainties in any design. This response to the technological uncertainties endemic in the design process, when joined with the pressures from marketing efforts, production costs, and competing products, serves to dispel the notion that a sacrosanct product will necessarily emerge from these competing pressures. Safety is often a stepchild in the design process and is usually addressed as an afterthought.

A striking example of the structuring of these priorities is found in *Garst v. General Motors Corp.*⁷⁴ We single out this case for attention because Professor Henderson has pointed to *Garst* as a case that is so polycentric that courts dare not undertake adjudication of its like since each trade-off decision made with regard to one design parameter may cause a corresponding change in another.⁷⁵ Although *Garst* may be somewhat polycentric, the reasons for forcing the defendant into design defect litigation are very strong. *Garst* demonstrates that the decision-making process engaged in by the

⁷² Henderson 1531-33.

⁷³ Weinstein, *supra* note 2, at 452.

⁷⁴ 207 Kan. 2, 484 P.2d 47 (1971).

⁷⁵ Henderson 1569.

design engineers does not partake of the sophistication and sensitive balancing that Professor Henderson presumes is pervasive in those cases that he labels as conscious design choices. Though the decisions may have been conscious ones, the question must be asked: Precisely what factors weighed heavily in the defendant's consciousness? It will be seen that, polycentricity notwithstanding, the conscious process is indeed suspect and amenable to the "flesh and blood" reasonable man standard which serves so well in negligence litigation.⁷⁶

In *Garst* three workmen were struck at a dam construction site by a scraper (a heavy earth-moving machine), resulting in the death of one and injury to the others. At the trial, it was undisputed that the operator of the scraper first became aware of the presence of the workmen when the scraper was less than fifteen feet away from them and was moving at approximately ten to twelve miles per hour. The claim against the scraper manufacturer was based on two independent counts of design defect:⁷⁷ (1) the braking system on the scraper was not enclosed so as to exclude mud or other foreign materials which might impair braking, and (2) the hydraulic system failed to deliver adequate steering power at low-engine speed.

A careful reading of the record and the expert testimony provides numerous examples that shatter the myth of the sophisticated conscious design decision which delicately balances all elements of risk and utility in arriving at a societally acceptable product. We offer the following as illustrations:

(1) One of defendant's experts, a design engineer, stated: "If you have performance, reliability, and durability, you automatically have safety."⁷⁸

(2) One of the elements of the design which was questioned by the plaintiff was the inadequacy of the steering system of the scraper. When referring to the evolution of the steering system design, the defendant reported on performance tests conducted on a smaller, earlier model of the scraper:

⁷⁶ Professor Henderson attempts to distinguish products liability cases from standard negligence cases which, because they presumably make use of the reasonable-person test, require risk-utility balancing, thus bringing polycentric considerations into play. He maintains that the difficulties of polycentric litigation were submerged by two institutions: the reasonable-person test and the jury. *Id.* at 1541. The flesh-and-blood moralistic qualities of the reasonable person were ideally suited to helping lawyers and courts resolve polycentric problems presented by nontechnical litigation. For reasons set forth in the text, we believe that the flesh-and-blood reasonable person is still a valuable tool in the litigation process.

⁷⁷ 207 Kan. 2, 7, 484 P.2d 47, 52 (1971).

⁷⁸ Record at 113, *Garst v. General Motors Corp.*, 207 Kan. 2, 484 P.2d 47 (1971).

The purpose of this test was to evaluate our position in the industry with regard to *competitive machines* and thereby determine the ability of the machine to perform in that environment. . . .

. . . As a result of these tests, it was concluded that the system *compared very favorably with the competitive machines tested*. Based upon the torque curve, which is the absolute measurement of what steering effort is available, we determined that our steering system *power* was comparable to, and in some cases better, than our competition. . . .

. . . The [scraper] compares favorably with comparable machines tested insofar as turning torque and turning time are concerned; however, it is felt that some consideration could be given the refinement and improvement of the steering control system to provide better response characteristics.⁷⁹

On the basis of these tests, the engineer in charge concluded: "I believe that the turning speed of the scraper at high and low engine rpm's is *within the range customarily used within the industry*. I believe that the steering system on the scraper is reasonably designed for the intended use."⁸⁰

(3) The second design issue raised in this case was the inadequacy of the braking system. When questioned with regard to the design methodology used in establishing an appropriate stopping distance, one of the defendant's experts responded as follows, during cross-examination:

Q. "Now, you say you are interested in developing stopping in a reasonable distance?

A. Yes, sir.

Q. Somebody has got to make a decision as to what a reasonable distance is.

A. Yes, sir.

Q. And do you know where or how that distance is set insofar as these machines are concerned?

A. Yes, sir. It's done on a comparative evaluation basis, *comparing with competitive machines of this category*, both in kind and in size available in the marketplace.

Q. All right. So, *the biggest consideration, then, is what your competitors are doing?*

A. It's a guide; yes, sir."⁸¹

We submit that the design of neither the steering system nor the braking system involved a conscious⁸² decision-making process

⁷⁹ Record at 92-104 (emphasis supplied).

⁸⁰ Record at 115 (emphasis supplied).

⁸¹ Record at 99 (emphasis supplied).

⁸² If, in fact, "conscious" design choices are in large measure reflections of a competitor's

based on a delicate balancing of risk and utility in developing a societally acceptable product. This does not necessarily indicate that the product which evolved did not meet the criteria of societal acceptability; it merely suggests that product design is not an unimpeachable decision-making process.⁸³

It is no great revelation that the principal thrust of the design process is directed toward productive function and marketability within the existing competitive structure. The principal design considerations are typically directed toward establishing desired levels of productive capability such as how well a scraper moves dirt or a can opener opens cans. Although there is no question that productive capability is an essential element in product design, the isolated development of acceptable product capability does not necessarily result in a reasonably safe product. The manufacturer often attempts to make the product reasonably safe by providing instructions which he assumes will be slavishly followed by an idealized user who is immune from error of judgment or inadvertent acts.

It is the interplay of the level of product safety with that of product capability that is the focus in design defect litigation. Since this reevaluation process principally focuses on an ordering of priorities rather than esoteric design parameters, it does not appear to us that this process is per se beyond the capabilities of the litigation process. An integral part of the evaluation of the ordering of priorities will always be an assessment of the design alternatives open to the defendant that would obviate the danger without basically compromising the productive or economic viability of the product. As we pointed out earlier, it is the province of an appropriate and effective expert to identify and evaluate the viable alternatives by balancing risks and utility within the actual environment of

earlier choices, then are we not simply perpetrating a myth that the "inadvertent" design error is really a distinguishable "conscious" design choice? If the initial design judgment was the result of an inadvertent error and if this judgment later becomes adopted as an industry-wide feature, now termed a "conscious" design choice, is that initial error any less susceptible to adjudication because no subsequent designer ever reconsidered the issue?

⁸³ It is ironic to note that the specific consideration of the braking and steering design alternatives raised in this case may have been totally irrelevant. It can be shown to a reasonable degree of technical certainty that none of the design alternatives suggested by the plaintiff would likely have prevented the scraper's hitting the workmen, given the 10-12 mile-per-hour speed and the less than 15-foot distance available for stopping. It therefore appears unreasonable to state that the scraper malfunctioned in its performance. Had this threshold question (*i.e.*, whether the design alternatives would have sufficiently altered the performance to have reduced the likelihood of the injury-producing event) been addressed initially, its resolution would have been a determination of no liability. This is a question of "technical causation" which the authors have more fully treated in *Product Liability and the Technical Expert*, 186 *SCIENCE* 1089 (1974).

product use. But the ultimate decision is a societal one and is properly within the jury's domain. If "[w]ar is much too serious a matter to be entrusted to generals," then safety is much too important to be left to the designers.

B. *Presentation of Theoretical Evidence*

In his discussion of *Garst v. General Motors Corp.*,⁸⁴ Professor Henderson expresses concern about one aspect of product litigation which is indeed troubling. He notes that the nature of the plaintiff's expert testimony tends to be highly theoretical because the plaintiff is forced into presenting alternative designs that have yet to be tested, whereas the defendant has the distinct advantage of having a functional design to present to the court.⁸⁵ Henderson concludes that deciding cases on the basis of theoretical testimony is indigenuous to the design defect case and accounts for much of its polycentric nature.

We can easily agree that pervasive use of theoretical testimony can raise serious problems affecting the very integrity of the judicial process. We find fault with Professor Henderson's analysis in that he has failed to take cognizance of the one element of a products liability case in which untested theoretical evidence is most common. It is in the area of causation (perhaps the most unpolycentric issue imaginable) that courts indulge in fanciful theoretical proof on a regular basis.⁸⁶

The reason for this phenomenon is elementary. The plaintiff is always forced, after the fact, to establish that his harm resulted from the unreasonably dangerous characteristic of the product.⁸⁷ Since

⁸⁴ 207 Kan. 2, 484 P.2d 47 (1971).

⁸⁵ Henderson 1569-70.

⁸⁶ Causation is, in the lexicon of Professor Henderson, clearly a nonpolycentric issue. A linear form of analysis will lead to a yes-no answer on the causation issue. Even though the causation issue is complex, Professor Henderson maintains that its complexity does not necessarily lead to polycentricity. *Id.* at 1535-39. He does, however, intimate that the speculativeness (or theoretical state) of untested design alternatives is a major factor in the conclusion that design cases are polycentric. *Id.* at 1570. To the extent that highly theoretical and untested propositions are a matter of concern, the authors believe that the causation issue deserves careful scrutiny.

⁸⁷ There has been lively controversy in the negligence literature as to whether the cause-in-fact issue should focus on the portion of the defendant's conduct that makes it negligent or whether the conduct of the defendant should be examined in its totality in determining cause-in-fact. See A. BECHT & F. MILLER, *THE TEST OF FACTUAL CAUSATION IN NEGLIGENCE AND STRICT LIABILITY CASES* (1961); Green, *The Causal Relation Issue in Negligence Law*, 60 MICH. L. REV. 543 (1962); Henderson, *A Defense of the Use of the Hypothetical Case to Resolve the Causation Issue—The Need for an Expanded, Rather Than a Contracted, Analysis*, 47 TEXAS L. REV. 183 (1969); Malone, *supra* note 71; Thode, *The Indefensible Use of the Hypothetical Case To Determine Cause In Fact*, 46 TEXAS L. REV. 423 (1968).

instant replay of accidents is not available (they are not videotaped for posterity), the plaintiff must rely on expert testimony to establish causation. The standard test, which requires proof based on "reasonable scientific probability," is almost invariably tied to some form of the hypothetical question. This ploy requires the expert to hypothesize a set of events and conclude causation from them.⁸⁸ In preparing the defense on this issue, the defendant's expert goes through the identical process. The standard technique of cross-examination involves changing the facts of the hypothetical to demonstrate that at some point the plaintiff's expert's opinion is no longer valid.

It is a sad commentary on the litigation process that as of the last quarter of the twentieth century no one has yet raised the question of the integrity of this kind of evidence. To be sure, the hypothetical question has been challenged as a technique, but not because of the inherent unreliability of untested theoretical propositions.⁸⁹ If we

The same controversy is applicable to the products liability field. There the question will be whether the plaintiff must prove that the defective aspect of the product caused his harm or whether it is sufficient to make out that he was injured by a defective product. This issue was the basis of differing opinions issued by an intermediate appellate court and the subsequent reversal by the Texas Supreme Court in *Technical Chem. Co. v. Jacobs*, 480 S.W.2d 602 (Tex. Sup. Ct. 1972), *rev'g Jacobs v. Technical Chem. Co.*, 472 S.W.2d 191 (Tex. Civ. App. 1971). See Keeton, *supra* note 20, at 413. See also *Midwestern V.W. Corp. v. Ringley*, 503 S.W.2d 745, 747 (Ky. 1973); *Long v. Winchester Repeating Arms Co.*, 2 CCH PROD. LIAB. REP. ¶ 6958 (Tenn. App. 1973).

⁸⁸ This is accomplished by questioning the expert based on evidence either already established or promised to be established at a subsequent point in the trial. *Arkansas State Highway Comm. v. Shields*, 249 Ark. 710, 460 S.W.2d 746 (1970); 2 J. Wigmore, *Evidence* § 672, at 792-94 (3d ed. 1970). The facts that are the basis of the hypothetical question need only be proven to a point beyond the level of conjecture. See *Rabata v. Dohner*, 45 Wis. 2d 111, 172 N.W.2d 409 (1969); McCormick, *Some Observations Upon the Opinion Rule and Expert Testimony*, 23 TEXAS L. REV. 109 (1945). They are, however, adduced with varying degrees of believability. Nevertheless, the expert passes on the facts as if they were absolutes (100% plausible). Weinstein, *supra* note 2, at 425, 455. The technique of cross-examination merely challenges the factual base of the plaintiff's hypothetical question by assuming that some of the factors presented by plaintiff as absolutely true are absolutely false. The expert is then asked to decide *sua sponte* whether his opinion as to causation would change. If the answer is negative, the defense will attack another factual premise to test whether the expert's opinion has reached the breaking point.

All this is great fun for trial lawyers. Yet it must be clear that facts are rarely proven with 100% certainty. The factual base for the expert's opinion is in truth a hodgepodge of probabilities. Furthermore, only rarely can the conditions that existed at the time of the accident be reproduced in a laboratory, let alone in a courtroom. The entire process is based on hypothesizing a set of events and concluding causation from them. In comparing risk-utility balancing for hypothetical and untested design alternatives with hypothetical expert testimony for causation purposes, we venture to say that alternative design evidence is far less abstract and theoretical.

⁸⁹ Criticism of the hypothetical question has primarily centered around the following observations: (1) the hypothetical question usually is inordinately complex, convoluted, and

are to begin to concern ourselves with this serious question we suggest that it be done within the context of the causation question for it is there that the impact of reckless and untested evidence is most strongly felt. It is simply not logical to single out the design defect case for special ignominy since the problem of the use and abuse of theoretical evidence does not have its origin in and is not confined to design defect cases.

If there is no reasonable analogue from another industry or product upon which the plaintiff can rely in an attempt to justify the viability of design alternatives, then the plaintiff may be forced into more extensive investigations with other experts, or the court may have to seek independent evaluation of the proffered alternatives. In any event, the reasonable viability of design alternatives cannot be addressed in a cavalier fashion by either party. If technology has not, by the time of trial, progressed to the point where the design alternatives can be shown to have a reasonable probability of success, then the issue correctly should be whether there still remains sufficient utility in the product "as-is" to justify the risks.

C. *The Design Defect Case—A Litany of Litigation Problems*

We have heretofore taken the position that important policy reasons exist for bringing the design defect case to the judicial

highly confusing to the jury; (2) it provides an opportunity for highly partisan presentation of the facts, since counsel by careful selection of facts favorable to his client shapes a one-sided and often unrealistic hypothesis; (3) the question is often used by counsel as a summation or restatement of his case to the jury; and (4) the question is often used as an illegitimate tool to impeach the general credentials of the expert apart from his ability to speak to the issue at bar. See C. McCORMICK, EVIDENCE § 16, at 36-37 (2d ed. 1972). To respond to these criticisms several Model and Uniform Acts have been promulgated which provide that the hypothetical question should be eliminated as a necessary means of eliciting expert opinion evidence. See MODEL CODE OF EVIDENCE Rules 402-10 (1942); UNIFORM RULES OF EVIDENCE 56-61 (1953). Under these acts the expert is permitted to testify without stating the underlying facts of data upon which he bases his conclusion. See FED. R. EVID. 705; CAL. EVID. CODE § 802 (1966); N.Y. CIV. PRAC. LAW § 4515 (McKinney 1963). The cross-examiner must expose the weakness of the factual basis of the expert's opinion.

It may well be that abolishing the long factual dissertation, which was the hallmark of the hypothetical question, is an adequate response to the criticism that it is too complex and unwieldy a method for eliciting an expert opinion. However, it is no response at all to the underlying speculation indigenous to the causation question. Admittedly, Henderson's thesis is that justiciability depends on the logical relation of the various issues to each other. Henderson 1535. On any score the hypothetical question is grounded in logical inductive reasoning of the first order. "[I]t is a strange irony that the hypothetical question, which is one of the few truly scientific features of the rules of Evidence, should have become that feature which does most to disgust men of science with the law of Evidence." 2 J. WIGMORE, *supra* note 88, § 686, at 812. For an empirical and philosophical look at causation and hypothetical questions, see D. HUME, AN ENQUIRY CONCERNING HUMAN UNDERSTANDING § V, pt. 1 (1907).

Nevertheless, the basic problem remains. Counsel for either side is permitted to establish or destroy an opinion by presenting highly theoretical and untested propositions.

forum. The authors strongly disagree with Professor Henderson's thesis that the courts have not in fact been trying design defect cases. Strange as it may seem, we are, however, in substantial agreement with Professor Henderson's view as to what may happen in the trial of design defect cases. Henderson asserts:

Confronted with the hopeless difficulties of trying to redesign products via adjudication, and presumably unable to resist the social pressures generally favoring injured plaintiffs, courts would inevitably resort to some form of judicial coin-flipping, *i.e.*, they would begin to determine defendants' liability on some arbitrary basis rather than on the purported basis of the reasonableness of the product designs brought before them. . . . The shift in the basis of manufacturers' liability would be disguised, consciously or otherwise, by heavy reliance upon the unsupported opinions of experts relating to the ultimate issue of the reasonableness of defendants' conscious design choices.⁹⁰

Unlike Henderson, we do not believe that such a result flows from the inherently polycentric nature of design defect cases. We are, however, encouraged that another observer starting from an entirely different perspective has identified the same kinds of litigation problems that have troubled the authors in their investigation of the interaction of law and technology.

There is little question that the design defect case presents a fertile breeding ground for the kinds of problems described by Professor Henderson. We have in a different forum examined in great detail the reasons for this phenomenon.⁹¹ Underlying the problem is the unpreparedness of the litigation process to structure a forum wherein the technological expert will be permitted and encouraged to share his technological insights with court and jury. There exists a naive belief by the bar that we can proceed to the trial of complex technological issues under the same format that has governed the presentation of everyday "fender-bender" automobile accidents. Unreasonableness of design, cause-in-fact, proximate causation, and assumption of risk are complex issues. They are often interrelated; yet, they are separate and distinct. To present these problems to a jury in a confused jumble and to ask them to unscramble the problem places too great a strain on the adjudication process. A design defect case cannot, we believe, be tried without a comprehensive understanding of both the product and the total environment of its use. Experts cannot continue to be used solely for

⁹⁰ Henderson 1558.

⁹¹ See generally Weinstein, *supra* note 2.

the purpose of plugging a narrow evidentiary gap. The experts on either side cannot continue to present polar positions, rather than thoughtful intermediary positions which most often truly represent the real area of disagreement without badly compromising the integrity of the case. And, as mentioned earlier, the wholesale acceptance of theoretical evidence cannot be permitted to taint the believability of the litigation process. Yet, as we have demonstrated, some or all of the aforementioned problems compromise the work-product of the best litigated products liability trials.

We have elsewhere suggested methods to sharpen the focus of the products liability trial.⁹² We must admit that without a sharpened focus the output of such litigation may be of problematic value. But we are decidedly convinced that polycentricity is not the problem. We simply have a Model T litigation process which cannot keep up with 1976-type problems. The technological complexity of the '70's will require a judicial response of equal sophistication.

D. *The Private Lawsuit Versus the Administrative Remedy*

Recent developments in federal regulation of consumer product safety raise the question as to whether private litigation will continue to play a vital role in setting safety standards. The argument is that courts will now be able to borrow the standards set by such agencies as the Consumer Product Safety Commission⁹³ and thus be relieved from trying complex polycentric design defect lawsuits.⁹⁴ Agency regulations would serve as both the maximum and minimum standards for safe design of a product.

Professor Henderson makes this argument in full recognition that the Consumer Product Safety Act specifically provides that compliance with product safety requirements set forth by the Commission shall not relieve any person from liability at common law.⁹⁵ He believes that, despite this grant of authority to the courts to proceed in establishing standards higher than those mandated by the Act, as a practical matter courts will and should decline to set design standards once the agency has performed the task.

Whether Professor Henderson's prediction will come true is, of

⁹² Weinstein, *supra* note 2, at 442-64.

⁹³ Consumer Product Safety Act, 15 U.S.C. § 2056(a) (Supp. III, 1973).

⁹⁴ Henderson 1555-56.

⁹⁵ Consumer Product Safety Act, 15 U.S.C. § 2074(a) (Supp. III, 1973). The National Traffic and Motor Vehicle Safety Act of 1966, 15 U.S.C. §§ 1381-1431 (1970), contains a similar provision. *See id.* § 1397(c). For reasons unknown to the authors, Professor Henderson strangely concludes that the inclusion in these acts of such provisions supports the thesis that courts are ill-equipped to try design defect cases. *See* Henderson 1555-56 n.105.

course, a matter of conjecture. We believe that courts would do well to exercise the full panoply of power granted to them by the Consumer Product Safety Act and to continue to examine de novo the acceptability of federally established standards within the context of the private lawsuit. The reasons for our preference are many. The Consumer Product Safety Commission is a fledgling among administrative agencies. It brings to bear the very considerable zeal of a new agency commissioned to address itself to a problem of significant political and societal importance. However, the task before it is enormous. Furthermore, a primary statutory method for development of standards is the offeror process.⁹⁶ This process is not "in-house" but rather depends on standards to be developed by outside offerors. The Commission's ability to control the process of development of these standards in their formative stages is yet unclear. The process has no established or formalized method for assuring effective consumer input. To be sure, the act and regulations are replete with pious utterings as to the importance of consumer participation;⁹⁷ yet, to provide consumer advocates with the expertise and financial ability to assure effective participation is another matter. Another major source of Consumer Product Safety Commission standards are those developed by other federal agencies or voluntary standard-setting bodies.⁹⁸ It should thus be noted that heavy reliance is placed on standards that develop outside the internal structure of the Commission.⁹⁹ Given the context of this statutory framework, it is not at all clear that independent evaluation by the courts within the context of the private lawsuit is undesirable. When one adds the tendency of administrative agencies to develop an industry orientation with the passage of time, the argument for an independent forum to examine standards is a potent one.¹⁰⁰

It is important to note that the context of this discussion proceeds not from the perspective of seeking to institute a new untested forum for the trial of design defect cases. The forum is already with us and though it needs substantial revitalization to make it more effective, there is no need to create a new institution from scratch. It would seem that given the newness of the Consumer Product Safety Commission and the unorthodox format chosen for standard setting, there is much to be gained from encouraging a dual system of

⁹⁶ 15 U.S.C. § 2056 (Supp. III, 1973).

⁹⁷ *Id.* § 2056(d)(3)(B). See also 16 C.F.R. § 1105.1(a) (1975).

⁹⁸ Consumer Product Safety Act, 15 U.S.C. § 2056(b), (c) (Supp. III, 1973).

⁹⁹ *Id.* § 2056(e); 16 C.F.R. § 1105.4-8 (1975).

¹⁰⁰ L. JAFFE, JUDICIAL CONTROL OF ADMINISTRATIVE ACTION 14 (1965); Jaffe, *The Effective Limits of the Administrative Process: A Reevaluation*, 67 HARV. L. REV. 1105, 1109 (1954).

standard setting. The agency would set the floor but in those instances where the courts believe that the balance of risk and utility has not been struck adequately in favor of safety, the courts should permit recovery to the private litigant. Critics of the administrative process have long railed against the overreliance on administrative expertise; this has been especially true when the issue is not determined by the gathering of data but rather by choosing between alternative courses of action.¹⁰¹ "How much product safety is enough?" may yet best be answered by a jury of twelve. It must be admitted that a fairly seriously injured plaintiff's easy access to the courtroom, in part a result of the contingent-fee system, can be a real strain on corporate defendants. But this militates only in favor of design defect litigation that truly focuses on the risk-utility balancing process and is not diverted to tangential irrelevancies.¹⁰² The suggestions offered earlier with respect to restructuring the litigation process could go a long way toward accomplishing this goal.

Too much, however, has been learned from the positive experience¹⁰³ of private litigation existing side-by-side with administrative agency jurisdiction to consider seriously the abandonment of the private remedy in the consumer product area. Litigation in the private sector has served, over a long period of time and in diverse areas, to supplement significantly a public policing responsibility.¹⁰⁴

¹⁰¹ Schwartz, *Legal Restriction of Competition in the Regulated Industries: An Abdication of Judicial Responsibility*, 67 HARV. L. REV. 436, 471-75 (1954). See also *United States v. United Shoe Mach. Corp.*, 110 F. Supp. 295, 346 (D. Mass. 1953).

¹⁰² The serious impact that an adverse design defect decision could have on a manufacturer was recently demonstrated in *Vincent v. Thompson*, 79 Misc. 2d 1029, 361 N.Y.S.2d 282 (Sup. Ct. 1974); *rev'd on other grounds*, 50 App. Div. 2d 211, 377 N.Y.S.2d 118 (2d Dep't 1975). Judge Harnett held that a jury finding adverse to a defendant in a design defect case was subject to the doctrine of collateral estoppel, thus permitting a stranger-plaintiff to ride in on a prior finding of defect. This was, of course, predicated on the abolition of the mutuality doctrine in New York. See *Schwartz v. Public Admin.*, 24 N.Y.2d 65, 246 N.E.2d 725, 298 N.Y.S.2d 955 (1969); *B.R. DeWitt, Inc. v. Hall*, 19 N.Y.2d 141, 225 N.E.2d 195, 278 N.Y.S.2d 596 (1967). The implications of the *Vincent* decision are far-reaching and they emphasize the importance of a highly sophisticated trial process.

¹⁰³ Loevinger, *Private Action—The Strongest Pillar of Anti-Trust*, 3 ANTI-TRUST BULL. 167 (1958).

¹⁰⁴ From the earliest period of the formulation of corporate law concepts and of remedial vehicles designed to compel managers' adherence to a fiduciary standard of conduct, the derivative lawsuit instituted by the "outside" shareholder has been favored over any expansion of the supervisory role of the Attorney General. See, e.g., *Brendle v. Smith*, 46 F. Supp. 522 (S.D.N.Y. 1942). A more modern use of the private action in advancing a public interest is the private lawsuit maintained to recoup "short-swing" profits realized by the statutorily-defined corporate "insider." Securities Act of 1934, § 16b, 15 U.S.C. § 78p(b) (1970). A parallel development has evolved through judicial interpretation of § 10b of the same act (15 U.S.C. § 78j (1970)), whereby private litigation is sanctioned as the appropriate vehicle militating against corporate fraud. See, e.g., *Speed v. Transamerica Corp.*, 99 F. Supp. 808 (D. Del.

CONCLUSION

The structure suggested by Professor Henderson to limit judicial participation in the process by requiring courts to take a hands-off position regarding all decisions that are the result of conscious design choice, be they private or governmental, would deny the courts entry into the reexamination of standard setting. His position is a strange one. To the extent that conscious design choices are products of well-reasoned and sensitively balanced alternatives, courts should be prepared to direct verdicts in favor of defendants. To the extent that they represent inadequate risk-utility analyses or are the products of trade-offs whose safety focus is inadequate, plaintiffs should be entitled to take their cases to a jury. If, in fact, Henderson is arguing that in cases where the risk-utility balancing is highly sophisticated, judges should exert firm judicial control and refuse to permit the cases to go to a jury, and if he is making the observation that courts have been reluctant to do so, then his thesis is hardly controversial. But we believe that Professor Henderson's argument goes well beyond a call for tighter judicial control of design defect cases. It is a call to the courts to tread with trepidation when dealing with corporate or governmental decision-making in the context of a private design defect lawsuit. We believe that there exist at present no satisfactory alternatives to the traditional lawsuit.

1951). These provisions of the federal regulatory scheme in the area of corporate activity effectively enlist the energies and talents of the private sector to serve the public interest by monitoring the propriety of actions which even the most dedicated staff of a regulatory commission could not adequately oversee. The sheer volume of questionable acts invites supplementary policing activity in the context of the private lawsuit.

Under the Securities Act of 1933, 15 U.S.C. §§ 77a-77bb (1970), Congress provided for an active role to be played by the private litigant within a regulatory plan which pivoted about Commission review, through staff action, of a proposed offering of corporate securities. An important ancillary safeguard is found in §§ 11 and 12 of that Act (15 U.S.C. §§ 77k-77l (1970)), which allow for private recovery of losses resulting from failure of the commission staff to have uncovered the fraudulent representation in the registration statement required or failure of the commission staff to have prevented the sale of unregistered securities. These private-action sanctions have served to complement substantially the direct regulatory functions of the Commission, without intruding upon or impeding that functioning. *See, e.g., Escott v. Barchris Construction Corp.*, 283 F. Supp. 643 (S.D.N.Y. 1968).

A shared responsibility in achieving the public good of regulation has been the common experience; that experience has demonstrated that private action neither need be nor is achieved at the expense of regulatory agency power. Rather than producing end-defeating conflict, independent capacity to act has substantially augmented policing activity in attaining the identified goal. Furthermore, as pointed out earlier, the very unsettled and problematic nature of the standard-setting process demands an even more vigilant and vigorous private litigation format. Although in the usual areas suggested the courts are utilizing private litigation to supplement government regulation rather than to review it de novo (as would be the case in the product safety area), the sheer force of private litigation has a major impact on the administrative process.

Certainly the overreliance on failure-to-warn parameters will not carry the day. Instead, our efforts should be turned to a sharpening of the tools of the litigation process so that it can best accomplish the goal that has been thrust upon it ever since the day of *Brown v. Kendall*¹⁰⁵—working out the balance of acceptable societal goals within the context of the private lawsuit.

¹⁰⁵ 60 Mass. (6 Cush.) 292 (1850).