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RESOLUTION OF "CRASHWORTHINESS" DESIGN CLAIMS

MICHAEL HOENIG*

INTRODUCTION: DOCTRINES AND DILEMMAS

A New Liability

The so-called automobile "crashworthiness,"¹ "second colli-

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¹ "Crashworthiness" is defined in the Motor Vehicle Information and Cost Savings Act as "the protection that a passenger motor vehicle affords its passengers against personal injury or death as a result of a motor vehicle accident." 15 U.S.C. § 1901(14) (1976). For a number of judicial definitions of the term, see *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1069 n.3 (4th Cir. 1974). The term crashworthiness, often used interchangeably with the phrases second collision and enhanced injury, denotes the broad spectrum of cases in which the complaint alleges that the vehicle performed defectively during a crash, as distinguished from cases where defects are alleged to have caused the accident itself. This term includes complaints about a vehicle's frame or structural design, e.g., *Dawson v. Chrysler Corp.*, 630 F.2d 950, 954 (3d Cir. 1980), *cert. denied*, 101 S. Ct. 1418 (1981) (side frame); *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1068 (4th Cir. 1974) (front structure); *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1067 (E.D. Pa. 1969) (roof structure), its interior components, e.g., *Huddell v. Levin*, 537 F.2d 726, 733 (3d Cir. 1976) (head restraint); *Volkswagen of America, Inc. v. Young*, 272 Md. 201, 204, 321 A.2d 737, 739 (1974) (front seat); *Mickle v. Blackmon*, 252 S.C. 202, 236, 166 S.E.2d 173, 184 (1969) (gear shift lever knob); *Engberg v. Ford Motor Co.*, 87 S.D. 196, 199, 205 N.W.2d 104, 105 (1973) (seat belt), or its exterior design, e.g., *Knippen v. Ford Motor Co.*, 546 F.2d 993, 995 (D.C. Cir. 1976) (car's exterior lamp injuring motorcyclist); *Passwaters v. General Motors Corp.*, 454 F.2d 1270, 1272 (8th Cir. 1972) (car's ornamental wheel cover injuring motorcyclist); *Baker v. Chrysler Corp.*, 55 Cal. App. 3d 710, 714, 127 Cal. Rptr. 745, 747 (Ct. App. 1976) (car's exterior colliding with pedestrian). There is a semantic problem in using the term second collision to describe the broad spectrum of crashworthiness cases because some of these claims do not involve a collision between the occupant and the car's interior. Claims for fire injuries, for example, may impugn the car's crashworthiness qualities yet not place in issue any culpability for non-burn second collision injuries. E.g., *Buehler v. Whalen*, 70 Ill. 2d 51, 54, 374 N.E.2d 460, 462 (1978) (parties stipulated plaintiff's injuries caused entirely by burns). Similarly, a motorcyclist's leg impact with a passing car's wheel cover might be only the first collision. *Passwaters v. General Motors Corp.*, 454 F.2d 1270, 1273 (8th Cir. 1972). Conversely, a claimant's injury might result from a multiple collision accident where his injurious contact with the interior or exterior of the car is not a second collision but a fourth or fifth collision. Since this appears to be a question of semantics and because the terms crashworthiness, second collision, and enhanced injury often are used interchangeably, this article generally will treat the phrases as functional equivalents. The practitioner is advised, however, to exercise caution in using the terms crashworthiness and second collision synonymously when multiple impacts are involved and the liability of a

sion,"² or "enhanced injury"³ claim is a relatively recent and dramatic phenomenon in products liability law.⁴ Notably, the novel

defendant concerns only one phase of the occurrence.

² The term second collision usually refers to the impact between a passenger and an interior part of the vehicle following primary impact. Nevertheless, it also has been applied to ejection cases where the occupant exits the vehicle and strikes something exterior to the car. *Caiazza v. Volkswagenwerk A.G.*, 647 F.2d 241, 243 n.2 (2d Cir. 1981). Second collisions stem from crash dynamics. When a car collides with another object, kinetic energy is dissipated by vehicle deformation and motion. What happens to the car and its structure is popularly called the first collision. Depending upon the circumstances, unrestrained occupants continue to move until they are stopped by the interior of the car. This is known as the second collision. See generally Hoenig & Goetz, *A Rational Approach to "Crashworthy" Automobiles: The Need for Judicial Responsibility*, 6 Sw. U.L. Rev. 1, 44-51 (1974). When occupants are restrained, by seatbelts, for example, they experience a "ride-down" effect in that the motorist's deceleration conforms more closely with that of the vehicle. *Id.* at 46-47. This necessarily reduces the occupant's impact speed relative to the car, slowing him down for the second collision. *Id.* at 47.

³ The term "enhanced injury" refers to the degree collision injuries are aggravated by reason of an alleged defect over and above that which would otherwise have been sustained. The extent to which injuries are enhanced is the limit of a manufacturer's liability. *Higginbotham v. Ford Motor Co.*, 540 F.2d 762, 774 (5th Cir. 1976); *Larsen v. General Motors Corp.*, 391 F.2d 495, 503 (8th Cir. 1968). Accordingly, proof of what injuries would have resulted if an alternative design had been used is required. In other words, the claimant must establish the extent to which his injuries actually are attributable to the defective design. *Curtis v. General Motors Corp.*, 649 F.2d 808, 813 (10th Cir. 1981); *Caiazza v. Volkswagenwerk A.G.*, 647 F.2d 241, 250 (2d Cir. 1981); *Huddell v. Levin*, 537 F.2d 726, 737-38 (3d Cir. 1976). Implicit in the concept of enhancement limitation is the fact that crash injuries are an inevitable byproduct of car accidents. Some collisions "would obviously be so violent that the vehicle's crashworthiness would be irrelevant." *Higginbotham v. Ford Motor Co.*, 540 F.2d at 766 n.4. For example, "any 'head-on' collision at a speed of 40 miles an hour or more will result in severe injuries to the occupants of a vehicle." *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1076 (4th Cir. 1974). Thus, it must be shown how and to what degree the defective design actually increased the injuries normally expected from a similar impact in a vehicle without the defect. To a great extent, the laws of physics and practical injury tolerance levels dominate the scene. Indeed, the energy that will be absorbed or dissipated in a collision greatly depends upon the masses and speeds involved. The rigidity of objects struck, the angles of impact, the amount of energy absorbed by motion, and localized crush properties play an influential role. See generally Hoenig & Goetz, *supra* note 2, at 44-48. In addition, human bones, organs, muscle, and skin have only certain tolerances against impact. When these tolerances are surpassed, injuries are sustained. *Id.* at 48-50. A study by the Department of Transportation revealed, for example, that in frontal collisions, 50% of deaths occur at an equivalent barrier test of 33 miles per hour and 50% of injuries occur at a barrier test speed of 26 miles per hour. *Id.* at 29-30 (discussing findings in U.S. DEP'T OF TRANSPORTATION, *PASSIVE PROTECTION AT 50 MILES PER HOUR 1-2* (1972)); see *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d at 1076 (mean velocity for fatalities only 33 miles per hour).

⁴ The seminal case announcing the basic version of crashworthiness liability was decided in 1968. *Larsen v. General Motors Corp.*, 391 F.2d 495, 502-06 (8th Cir. 1968). For a discussion of *Larsen*, see notes 11-17 *infra*. This area of tort law has received much attention in recent years. See generally Digges, *The Impact of Liability For Enhanced Injury*, 5 U. BALT. L. REV. 1 (1975); Donnelly, *Aircraft Crashworthiness—Plaintiff's Viewpoint*, 42 J.

crashworthiness claim permits the imposition of multimillion dollar liability⁵ even though the car's design or construction was absolutely blameless regarding the cause of the accident.⁶ Whereas traditional automotive products liability had focused upon defects that caused accidents,⁷ the inquiry in crashworthiness claims fo-

AIR L. & COM. 57 (1976); Foland, *Enhanced Injury: Problems of Proof in "Second Collision" and "Crashworthy" Cases*, 16 WASHBURN L.J. 600 (1977); Galerstein, *A Review of Crashworthiness*, 45 J. AIR L. & COM. 187 (1979); Hoenig, *Understanding "Second Collision" Cases in New York*, 20 N.Y.L.F. 29 (1974); Hoenig & Goetz, *supra* note 2; Hoenig & Werber, *Automobile "Crashworthiness": an Untenable Doctrine*, 20 CLEV. ST. L. REV. 578 (1971); Nader & Page, *Automobile Design and the Judicial Process*, 55 CAL. L. REV. 645 (1967); National Transportation Safety Board, *The Status of General Aviation Aircraft Crashworthiness*, 3 LPBA J. 28 (1981); Pawlak, *Manufacturer's Design Liability: The Expanding Frontiers of the Law*, 19 DEF. L.J. 143 (1970); Roda, *Products Liability—The "Enhanced Injury Case" Revisited*, 8 FORUM 643 (1973); Sklaw, *"Second Collision" Liability: The Need for Uniformity*, 4 SETON HALL L. REV. 499 (1973); Whitehead, *Some Comments on Aircraft Crashworthiness*, 42 J. AIR L. & COM. 73 (1976); Note, *Manufacturer's Liability for an "Uncrashworthy" Automobile*, 52 CORNELL L.Q. 444 (1967); Note, *Application of Nebraska Law in Second Collision, Design-Defect Cases*, 10 CREIGHTON L. REV. 198 (1976); Recent Decision, *Products Liability—Second Collision—Enhanced Injuries—Apportionment of Damages*, 15 DUQ. L. REV. 733 (1977); Note, *The Crashworthiness Doctrine and the Allocation of Risks in Commercial Aviation*, 52 S. CAL. L. REV. 1581 (1979); Note, *Apportionment of Damages in the "Second Collision" Case*, 63 VA. L. REV. 475 (1977); Comment, *Automobile Design Liability: Larsen v. General Motors and its Aftermath*, 118 U. PA. L. REV. 299 (1969); Epstein, *Crashworthy Vehicles: Ax the Quiet, But Complete Revolution in Products Liability Law* (1977) (statement to the Joint Committee on Tort Liability of the California Legislature on Behalf of the American Insurance Association, San Diego, July 18, 1977).

⁵ *E.g.*, Dawson v. Chrysler Corp., 630 F.2d 950, 955 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981) (judgment exceeding \$2.5 million); Maxey v. Freightliner Corp., 623 F.2d 395, 396 (5th Cir. 1980) (jury award for compensatory damages of \$150,000 and punitive damages of \$10 million; punitive award reversed on appeal); Huddell v. Levin, 537 F.2d 726, 731 (3d Cir. 1976) (jury verdict exceeding \$2 million reversed on appeal).

⁶ Although the crashworthy claim is a separate, distinct cause of action having its own legal rules, including burdens of proof and statutes of limitation, *see generally* notes 1-3 *supra*, it occasionally is filed in conjunction with a claim that a defect caused the accident. *See, e.g.*, Seese v. Volkswagenwerk A.G., 648 F.2d 833, 835 (3d Cir. 1981); Dreisonstok v. Volkswagenwerk, A.G., 489 F.2d 1066, 1068 (4th Cir. 1974). If a claimant prevails on the accident-causation claim he is entitled to recover for all damages caused in the action and not just the enhanced injuries. *See, e.g.*, Seese v. Volkswagenwerk A.G., 648 F.2d at 850 (Adams, J., dissenting). The distinction between the two theories, however, must be maintained not only because different rules apply, but also because an accident-causation verdict may be set aside after post-trial motions or reversed on appeal. *See, e.g., id.* at 835. Thus, the crashworthy claim is a separate theory of liability which succeeds or fails on its own merits. *See id.* at 850 (Adams, J., dissenting). If the claimant prevails on a crashworthy theory alone he is entitled to recover only for those enhanced injuries which occurred due to the vehicle's defective performance. *See* note 1 *supra*.

⁷ *See, e.g.*, Ford Motor Co. v. Mathis, 322 F.2d 267, 269-71 (5th Cir. 1963) (defective headlights); Goullon v. Ford Motor Co., 44 F.2d 310, 310-12 (6th Cir. 1930) (defective steering mechanism); MacPherson v. Buick Motor Co., 217 N.Y. 382, 384-85, 111 N.E. 1050, 1051

cuses, instead, upon how well or how poorly the vehicle performed in minimizing the claimant's accident-related injury. Thus, the questions in crashworthiness claims are whether and to what extent the vehicle or its allegedly defective characteristic unreasonably "enhanced" or "aggravated" injuries.⁸ Invariably, the crashworthiness claimant⁹ contends that the automobile or its allegedly offending feature should have been made safer or stronger so as to mitigate the injuries sustained in the particular accident.¹⁰

The seminal case of *Larsen v. General Motors Corp.*,¹¹ illustrates the nature of crashworthiness claims and the rationale for imposing a common-law duty to "minimize" injuries in accidents. In *Larsen*, the plaintiff-driver sustained severe injuries in a frontal collision when the vehicle's steering mechanism allegedly thrust rearward striking him in the head. The plaintiff contended that the rearward displacement of the steering shaft on impact was greater than in cars which had been designed to protect against such occurrences. Thus, it was alleged that the steering assembly design proximately caused injuries which otherwise would not have been sustained or that the design unreasonably exacerbated the severity of the plaintiff's injuries. The defendant-manufacturer argued that liability did not lie because the law imposed no duty of care upon the manufacturer to design an automobile which would be safe to occupy in the event of a collision.

(1916) (defective wheel); *Standard Motor Co. v. Blood*, 380 S.W.2d 651, 653-55 (Tex. Civ. App. 1964) (defective brakes); *McKinney v. Frodsham*, 57 Wash. 2d 126, 131-33, 356 P.2d 100, 103-05 (1960) (defective door latch). See Philo, *Automobile Products Liability Litigation*, 4 DUQ. L. REV. 181, 181 (1965).

⁸ See, e.g., *Caiazzo v. Volkswagenwerk A.G.*, 647 F.2d 241, 250-51 (2d Cir. 1981); *Higinbotham v. Ford Motor Co.*, 540 F.2d 762, 774 (5th Cir. 1976); *Huddell v. Levin*, 537 F.2d 726, 737-38 (3d Cir. 1976); *Yetter v. Rajeski*, 364 F. Supp. 105, 109 (D.N.J. 1973); *Digges*, *supra* note 4, at 17; *Foland*, *supra* note 4, at 608; *Hoenig & Goetz*, *supra* note 2, at 21.

⁹ The crashworthiness claimant typically is an injured occupant of a vehicle which has been involved in an accident. Enhancement claims, however, also have been instituted on behalf of nonoccupants including pedestrians or motorcyclists. E.g., *Knippen v. Ford Motor Co.*, 546 F.2d 993, 995 (D.C. Cir. 1976) (motorcyclist); *Baker v. Chrysler Corp.*, 55 Cal. App. 3d 710, 714, 127 Cal. Rptr. 745, 747 (Ct. App. 1976) (pedestrian); see Note, *The Automobile Manufacturer's Liability to Pedestrians for Exterior Design: New Dimensions in "Crashworthiness"*, 71 MICH. L. REV. 1654, 1654 (1973).

¹⁰ E.g., *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1068-69 (4th Cir. 1974). In *Dreisonstok*, the plaintiff's experts testified that a snub-nosed, multipurpose van should have been built like a standard Ford passenger car. *Id.* at 1074-75. Similarly, in *Dawson v. Chrysler Corp.*, 630 F.2d 950 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981), the plaintiff's experts opined that the vehicle should have had a continuous side frame and an additional crossmember. *Id.* at 958.

¹¹ 391 F.2d 495 (8th Cir. 1968).

The Court of Appeals for the Eighth Circuit held that the plaintiff's allegations stated a cause of action. Noting that "automobiles are not made for the purpose of colliding with each other," the *Larsen* court nevertheless recognized that collisions are a "frequent and inevitable contingency of normal automobile use."¹² Consequently, the court reasoned, since collisions and resulting injuries are "readily foreseeable as an incident to the normal and expected use of an automobile," the manufacturer should be under a duty "to use reasonable care in the design of its vehicle to avoid subjecting the user to an unreasonable risk of injury in the event of a collision."¹³ Indeed, the statistical inevitability of collisions, according to the court, compelled a common-law duty of care to design a vehicle so as to minimize the effects of accidents.¹⁴ The *Larsen* court, however, spoke only in terms of *unreasonable* risks of enhanced injury.¹⁵ Accordingly, it disclaimed any duty "to design an accident-proof or fool-proof vehicle or even one that floats on water."¹⁶ Necessarily, therefore, the scope of the newly minted liability was limited to only those injuries which were actually *enhanced* by the defect:

Any design defect not causing the accident would not subject the manufacturer to liability for the entire damage, but the manufacturer should be liable for that portion of the damage or injury caused by the defective design over and above the damage or injury that probably would have occurred as a result of the impact or collision absent the defective design.¹⁷

In announcing a crashworthiness duty, the Eighth Circuit disagreed with the earlier Seventh Circuit decision in *Evans v. General Motors Corp.*¹⁸ which had held that such claims were not actionable as a matter of law. The plaintiff in *Evans* alleged that his

¹² *Id.* at 502.

¹³ *Id.*

¹⁴ *Id.* at 502-03. The *Larsen* court noted that between one-fourth and two-thirds of all cars are involved in accidents producing death or injury at some point during their use. *Id.* at 502.

¹⁵ *Id.* at 502-06.

¹⁶ *Id.*

¹⁷ *Id.* at 503. The *Larsen* court noted that a crashproof vehicle could not be designed under the present state of the art. *Id.* In crashworthy cases, however, the design should be examined on the basis of the technology practicably available at the time the car was manufactured, not at the time of the accident. In *Larsen*, the car in question was a 1963 Corvair, a relatively late model at the time of the collision in 1964.

¹⁸ 359 F.2d 822 (7th Cir.), *cert. denied*, 385 U.S. 836 (1966).

vehicle's frame design provided inadequate protection against side-impact. The *Evans* court concluded that the nature of the manufacturer's common-law duty was merely to ensure that the product was reasonably fit for its intended purpose.¹⁹ Recognizing that the intended purpose of a vehicle does not include its involvement in collisions, the Seventh Circuit viewed the requirement to construct collision-safe automobiles as more properly a legislative function.²⁰

In the years immediately following the *Larsen* decision, a "tug of war" emerged among courts considering the question—some following the *Evans* approach and others finding the *Larsen* rationale more persuasive.²¹ In this struggle, the federal courts seemed to play an important role as they hazarded "*Erie*-educated guesses,"²² regarding the approach state courts would adopt if faced with the

¹⁹ *Id.* at 825. The concept of equating legal duty with foreseeability or treating them coextensively may properly be criticized because many factors other than foreseeability determine the existence and scope of a duty. See Green, *Foreseeability in Negligence Law*, 61 COLUM. L. REV. 1401, 1417-18 (1961); Hoenic & Goetz, *supra* note 2, at 22-26; Hoenic & Werber, *supra* note 4, at 587-90. One court has noted, for example, that it certainly is foreseeable that cars will fall into bodies of water or water-filled ditches. See text accompanying note 16 *supra*. Yet, "*Larsen* recognized that there is no duty or burden upon the manufacturer as yet to design an automobile that floats upon the water. If the vehicle must be 'crashworthy,' then why not include safety on the water?" *Alexander v. Seaboard Air Line R.R.*, 346 F. Supp. 320, 327 (W.D.N.C. 1971). Similarly, although it is foreseeable that a car may collide at high speed with a large truck, such an occurrence could not reasonably give rise to liability merely because the car collapsed. *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1073 (E.D. Pa. 1969). See also *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1070 (4th Cir. 1974) (no liability despite foreseeability of 40 mile per hour collision with pole); *Yetter v. Rajeski*, 364 F. Supp. 105, 108 (D.N.J. 1973) (discussion of the limited role of foreseeability in formulating duty rules).

²⁰ *Evans v. General Motors Corp.*, 359 F.2d 822, 824 (7th Cir.), *cert. denied*, 385 U.S. 836 (1966).

²¹ For a collection of earlier cases following *Evans'* and *Larsen's* rationale, see Digges, *supra* note 4, at 1; Hoenic & Goetz, *supra* note 2, at 4-6; Hoenic & Werber, *supra* note 4, at 571; Roda, *supra* note 4, at 643; Annot., 42 A.L.R.3d 560 (1972). Occasionally, courts have attempted to tabulate lists of cases said to follow the differing viewpoints. See *Huff v. White Motor Corp.*, 565 F.2d 104, 110-11 (7th Cir. 1977).

²² Under *Erie R.R. v. Tompkins*, 304 U.S. 64 (1938), federal courts deciding diversity cases must apply the law of the state in which they sit and not any "federal common law." *Id.* at 78. Although the *Erie* doctrine does not permit a federal court to announce the state law which it might prefer, it does allow a federal court to predict what a state court would do if presented with the problem. See *McClung v. Ford Motor Co.*, 472 F.2d 240, 240 (4th Cir.), *cert. denied*, 412 U.S. 940 (1973). It is the duty of the federal court "to ascertain from all the available data what the state law is and apply it rather than to prescribe a different rule, however superior it may appear from the viewpoint of 'general law'." *West v. AT & T*, 311 U.S. 223, 237 (1940). Of the 33 cases listed in *Huff v. White Motor Corp.*, 565 F.2d at 110-11, which followed *Larsen* or *Evans*, 14 cases were decided by federal courts. Indeed, *Evans* and *Larsen* were decided by the Seventh and Eighth Circuits, respectively.

threshold legal issue.²³ Nevertheless, since a court opting to follow *Larsen* will be markedly extending products liability, the *Erie* task has been viewed with discomfort.²⁴

An Open-Ended Liability?

Shifting the focus to an amorphous standard of injury minimization, at first glance, may not seem to be a major extension of liability frontiers. Closer consideration, however, reveals the magnitude of the change.

Obviously cars cannot be redesigned from accident to accident. A manufacturer needs to know *in advance* of production what features to build into its automobiles.²⁵ When the standard of

²³ It appears that the task required by *Erie* is not a simple matter. Indeed, one sometimes can discern a lack of incisive reasons for a federal court's adoption of a particular approach. In *Huff v. White Motor Corp.*, for example, the Seventh Circuit, applying Indiana law, overruled *Evans*, reasoning that the state's adoption of strict tort liability reflected a "trend" that justified following the lead of other jurisdictions which had endorsed *Larsen*. 565 F.2d at 109. The reasoning of the *Huff* panel, however, was criticized by some of the Seventh Circuit judges in regular active service. 565 F.2d at 109 n.7. Two judges joined in a statement that the overruling of *Evans* was made "without any really persuasive basis in case law from the Indiana courts." *Id.* They also opined that the court had decided *Huff* "on what it thinks the law should be rather than, as we should, what the current law is." *Id.* Still another judge filed a statement noting that, if he were a panel member, he would have voted to certify the question to the Indiana Supreme Court "in view of the length of the time *Evans* has stood unabrogated by the Indiana courts." *Id.* Thus, it is evident that *Huff* was a controversial determination among the Seventh Circuit judges.

Considerable difficulty also may arise when different circuits disagree concerning the law of a particular state. Compare *Wilson v. Ford Motor Co.*, 656 F.2d 960, 960 (4th Cir. 1981) (per curiam) (holding North Carolina law does not permit crashworthiness claims) with *Seese v. Volkswagenwerk A.G.*, 648 F.2d 833, 849 (3d Cir. 1981) (holding North Carolina law would permit such claims). It has been unclear whether a federal court sitting outside the state whose law is to be applied should defer to the prediction of the federal court whose jurisdiction includes the state whose law governs the issue. A recent Second Circuit decision, however, held that such deference is required. See *Factors Etc., Inc. v. Pro Arts, Inc.*, 652 F.2d 278, 283 (2d Cir. 1981). If federal courts throughout the country freely interpret state law irrespective of the determination by federal courts sitting within the particular jurisdiction whose law is to be applied, chaos could result. For example, the Seventh Circuit's holding in *Huff* that Indiana law now follows *Larsen* instead of *Evans*, 565 F.2d at 109, might be rejected by a federal district judge sitting elsewhere on the ground that the opinion was "poorly reasoned." Cf. *Van Tine v. Nissan Motor Co.*, 463 F. Supp. 1274, 1276-77 (W.D. Pa. 1979) (district court in Pennsylvania construed West Virginia law contrary to earlier Fourth Circuit opinion but avoided conflict by holding that Pennsylvania law applied).

²⁴ *E.g.*, *Huddell v. Levin*, 537 F.2d 726, 732-33 (3d Cir. 1976); *Anton v. Ford Motor Co.*, 400 F. Supp. 1270, 1272 (S.D. Ohio 1975).

²⁵ Obviously, if an accident occurs years after a product was designed and a suit, in turn, is commenced years after the collision occurred, the outcome of a particular jury's verdict cannot affect the older design or those designs released in the intervening years.

care revolves around accident causation, the manufacturer has a readily cognizable task. It knows that it must simply make cars that do not unreasonably cause accidents. If, however, the legal standard is a general, open-ended duty to minimize injuries whenever accidents occur, very difficult problems inevitably arise. What degree of design safety and how many injury-minimization features are enough? In what collisions and at what speeds?²⁶ For example, if a large truck collides with a subcompact automobile at high speed, would or should liability be excused?²⁷ If not, what level of injury would or should the law tolerate? Would multiple fractures, paralysis, or death be unreasonable to expect in such an accident?²⁸ Should the small car have been built up in anticipation of foreseeable impacts with larger, heavier structures? Would such a course not compete with a national policy to encourage the manufacture of lighter, fuel-efficient vehicles?²⁹ Is it wise to emphasize

Since trial results are frequently appealed, further delay is built into the system. Additionally, commentators agree that specialized agencies or standard-setting bodies are better equipped than the courts to weigh the myriad of factors governing design safety or crash performance. See J. O'CONNELL & A. MEYERS, *SAFETY LAST* 188-89 (1966); O'Connell, *Taming the Automobile*, 58 Nw. U.L. REV. 299, 375 (1963); Noel, *Products Defective Because of Inadequate Directions on Warnings*, 23 Sw. L.J. 256, 258 (1969); see generally O'Donnell, *Design Litigation and the State of the Art: Terminology, Practice and Reform*, 11 AKRON L. REV. 627, 645-46 (1978); Raleigh, *The "State of the Art" in Product Liability: A New Look at an Old "Defense,"* 4 OHIO N.U.L. REV. 249, 258-61 (1977); Note, *Reforming the Law of Consumer Recovery and Enterprise Liability through the Uniform Commercial Code*, 60 VA. L. REV. 1013, 1013-14 (1974).

²⁶ See Hoenig & Goetz, *supra* note 2, at 26-28, 42-43, 67-69.

²⁷ At least one court has suggested that when a high speed collision occurs between vehicles of highly divergent weights liability could not reasonably be imposed. *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1073 (E.D. Pa. 1969).

²⁸ See note 3 *supra*. At borderline collision speeds many variables may influence life or death. See Hoenig & Goetz, *supra* note 2, at 48-51. For example, although a young, healthy crash victim may survive a given trauma, an aged, infirm car occupant may not. A restrained occupant may survive a second collision injury while an unrestrained occupant will die under the same circumstances. The hazards for unrestrained occupants are quite severe and have led the federal government to require various forms of "active" and "passive" restraints. See generally *Pacific Legal Foundation v. Department of Transp.*, 593 F.2d 1338, 1339-42 (D.C. Cir.), *cert. denied*, 444 U.S. 830 (1979) (dealing with air bag controversy).

Since cars cannot be redesigned after each accident and the applicable legal standard requires only protection against unreasonable risks of injury, there appears no justification in the crashworthiness area for invoking the negligence doctrine sometimes expressed as "taking the plaintiff as one finds him." For example, a reasonably crashworthy car does not become defective because a hemophiliac sustains a laceration and dies from bleeding. Similarly, when a rear end collision would normally produce merely a "whiplash" injury, the fact that a driver develops a phobia because of his psychological idiosyncracies should not permit a claim for consequential damages for mental illness.

²⁹ See *Caiazza v. Volkswagenwerk A.G.*, 647 F.2d 241, 247 n.12 (2d Cir. 1981); Dawson

that the smaller car be built up, rather than having the larger truck built down to make it more compatible in crashes with smaller vehicles?³⁰ If a car is built up, might it not become more aggressive to other vehicles, cyclists, or pedestrians?³¹

v. Chrysler Corp., 630 F.2d 950, 962-63 (3rd Cir. 1980), *cert. denied*, 450 U.S. 959 (1981).

³⁰ The primary onus of crashworthy liability has been thrust upon the maker of the vehicle which fares second best in the crash. In many respects, this constitutes an irrational burden. The damage sustained by a vehicle can depend upon the composition of the other car and a myriad of other circumstances. The aggressiveness of the collision partner, for example, is at least as logical a cause of a particular car's coming off second best as the alleged vulnerability of the vehicle. Indeed, it takes little imagination to conjure up a notion of who must yield when a 300 pound football player collides with a 150 pound football player. Which player, however, is responsible for the result? The characteristics of a particular collision partner and the speed or angle with which impact is made simply are not factors within the manufacturer's control.

³¹ A 1976 technical report by Columbia University's School of Engineering and Applied Science furnished an illustration of the hazards inherent in beefing up automobiles. See Tien & Testa, *Critical Assessment of Social and Economic Implications of Safety Cars* (August 1974). The authors analyzed the safety benefits and social implications of Experimental Safety Vehicles (ESV), which were experimental prototype safety cars conceived pursuant to a program of the National Highway Traffic and Safety Administration (NHTSA). The NHTSA guidelines for crash performance required that an ESV protect restrained occupants from death or serious injury in crashes equivalent to a head-on barrier crash at 50 miles per hour, side pole impact at 15 miles per hour, and rollover up to 70 miles per hour. In addition, the vehicle was required to meet stringent technical features which would help avoid crashes. "The principal objective of the ESV program is to demonstrate feasibility of this total safety concept, the results of which are to be used as criteria for the enforced design of all vehicles to be sold in the United States in the 1980's." Tien & Testa, *supra*, at 3. The authors concluded that if these vehicles were introduced into the market as standard items, they probably would be heavier and more aggressive, thus benefiting ESV occupants. The authors noted, however, that notwithstanding the safety features the vehicles would actually increase the nation's death toll for several years. Thus, even experimental vehicles designed exclusively for crash safety may not enhance the overall picture.

Moreover, the authors recognized the problem of introducing complementary crash designs, even of these "safety vehicles:"

The average weight of today's car is approximately 3,000 lbs. There are over 100 million such cars. In contrast, the lightest of the American ESV's weighs 4,900 lbs. If we introduce 10 million ESV's a year, we would need approximately ten years to replace all the conventional cars. During those ten years, what effect will the ESV's have on ordinary cars? A disastrous [sic] effect is not inconceivable.

. . . .

Even when all conventional cars are replaced by safety vehicles, the question of aggressiveness remains. Will a 1,500 lb. SV (Production Safety Vehicle) survive a crash with a 4,700 lb. SV? It is clear that such a question cannot be answered immediately unless design for crashworthiness has also considered compatibility.

Tien & Testa, *supra*, at 28. The report also analyzes the impact of such heavier safety cars upon energy needs: "From the energy viewpoint, it is apparent that the safety vehicle is out of line with current national needs. The already severe petroleum shortage in the U.S. would be greatly aggravated by manufacturing and operating 5,000+ lb. vehicles." Tien & Testa, *supra*, at 97.

Manifestly, collisions occur between every type of vehicle and an incalculable number of objects of different shapes and sizes at a myriad of angles and speeds. Although such occurrences, in the abstract, are readily foreseeable,³² is the general duty to minimize injury readily quantifiable such that the manufacturer may avoid liability *before* accidents occur?³³ If it is not, have we merely created a system of claim resolution that inevitably permits second-guessing the car's design by hindsight whenever a serious injury occurs?³⁴

³² One court has stated that "[n]early every accident situation [involving an automobile], no matter how bizarre, is 'foreseeable' if only because in the last fifty years drivers have discovered just about every conceivable way of wrecking an automobile." *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1070 (4th Cir. 1974) (citations omitted); *accord*, *Yetter v. Rajeski*, 364 F. Supp. 105, 108 (D.N.J. 1973).

³³ One court has suggested that "the prospect of product liability for injuries resulting from misuse and abuse keeps the manufacturer on his toes and thereby serves a socially useful purpose." *Self v. General Motors Corp.*, 42 Cal. App. 3d 1, 8, 116 Cal. Rptr. 575, 579 (Ct. App. 1974). How can the manufacturer stay "on his toes" and avoid liability if the performance levels that absolve him from culpability are not defined, quantified, or made known in advance but only appear via ad hoc determinations of juries applying retrospective tests derived from their own judgments?

³⁴ *Self v. General Motors Corp.*, 42 Cal. App. 3d 1, 116 Cal. Rptr. 575 (Ct. App. 1974), is a good example of the dilemma posed by allowing juries the unrestricted opportunity to second-guess designs. In *Self*, a 1963 Chrysler collided with a 1962 Chevrolet station wagon which had stopped on the highway shoulder because of a flat tire. *Id.* at 5, 116 Cal. Rptr. at 577. The station wagon was "knocked into a gully, its fuel tank ruptured, and the vehicle caught fire." *Id.* The impact speed was between 65 and 85 miles per hour. *Id.* at 4, 116 Cal. Rptr. at 577. The plaintiff contended that the vehicle's tank location was a product of faulty design. *Id.* at 5, 116 Cal. Rptr. at 577. The court conceded that "prosecution of a lawsuit is a poor way to design a motor vehicle, for the suit will almost invariably emphasize a single aspect of design to the total exclusion of all others." *Id.* at 7, 116 Cal. Rptr. at 579. It also conceded that crashworthy claims can and do focus upon all sides of a vehicle and "like an army in battle the vehicle can't be uniformly strong at all points and under all conditions." *Id.* at 8, 116 Cal. Rptr. at 579. Nevertheless, the presentation of conflicting evidence enabled the jury to "draw its own conclusions." *Id.* at 6, 116 Cal. Rptr. at 578. The court reasoned that "legislatures and courts will develop techniques for summary disposition of extravagant claims of defective design so that the good in product protection against injuries resulting from abuse and misuse is not drowned in a sea of unmeritorious demands for payment of the wages of recklessness and folly." *Id.* at 8, 116 Cal. Rptr. at 579-80. Fortunately for the manufacturer, a new trial was granted on other grounds. *Id.* at 14, 116 Cal. Rptr. at 584. Asserting that a judgment notwithstanding the verdict was appropriate, the dissenting judge reasoned that, in each case, "the involvement of the gas tank will depend on the circumstances of the particular crash," *id.* at 15, 116 Cal. Rptr. at 585 (Compton, J., concurring in part and dissenting in part), but "the fortuitous circumstances of a particular mishap should not be the controlling factor." *Id.* at 16, 116 Cal. Rptr. at 585 (Compton, J., concurring in part and dissenting in part). In this case, there was "no practical or reasonable way that an automobile [could have been] constructed so that its fuel tank [would have remained] intact against an impact from all directions at a speed of 65 to 85 miles per hour." *Id.* at 17, 116 Cal. Rptr. at 586 (Compton, J., concurring in part and dissenting in part).

Given current litigation practices, it would not be too difficult for experts to testify that a particular feature could have been made better or safer for the specific accident.³⁵ If a car were made to reasonably withstand a 30-mile-per-hour collision, some would suggest that the designed crash speed should have been 35, 50, or 70 miles per hour.³⁶ If padding is provided to cushion the impact, some would argue that there should have been more. Whether windshields should "pop out" in a crash is another point of contention.³⁷ Some will find fault with seats that rigidly remain anchored in a collision while some will blame seats that give way.³⁸ The po-

³⁵ According to a research study sponsored by the National Science Foundation, "the posture of proof . . . routinely employed by experts in products litigation has been narrow in focus." Donaher, Piehler, Twerski & Weinstein, *The Technological Expert in Products Liability Litigation*, 52 *TEX. L. REV.* 1303, 1311 (1974). The authors stated that "the too-frequent surfacing of the ubiquitous journeyman expert who will fashion his credentials as well as his conclusions 'to fit the crime' is lamentably predictive of a superficial conclusion." *Id.* at 1311-12.

Under the Federal Rules of Evidence an expert may render an opinion on the ultimate issue to be decided by the jury. *FED. R. EVID.* 704. He may do so without prior disclosure of the data on which the opinion is based, *FED. R. EVID.* 705, and can base his opinion on facts which are not admissible in evidence, *FED. R. EVID.* 703. The mere opinion of a paid expert may permit a jury to formulate crash safety standards that conflict with those promulgated by expert agencies after years of research and testing. Unsupported expert opinions appear to be tolerated by some trial courts no matter how qualitatively thin they may be. For example, in *Stonehocker v. General Motors Corp.*, 587 F.2d 151, 159 (4th Cir. 1978), the appellate court stated that a jury question may be presented concerning crash performance standards even upon the "thin testimony" of experts "in a field in which they had little knowledge, as they very nearly admitted." *Id.* Moreover, the trial judge excluded evidence that the subject vehicle had complied with federal motor vehicle safety standards, an evidentiary error reversed on appeal. *Id.* at 156-57. For analytical discussions regarding the multifaceted problems created by disregarding state of the art evidence simply because an expert testifies that a product should have been made better or safer, see O'Donnell, note 25 *supra*; Raleigh, note 25 *supra*.

³⁶ *Cf. Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1068-69 (4th Cir. 1974) (defective design claimed not to withstand 40 mile-per-hour frontal impact with pole); *Self v. General Motors Corp.*, 42 Cal. App. 3d 1, 4-5, 116 Cal. Rptr. 575, 577 (Ct. App. 1974) (defective design claimed not to withstand rear impact at 65 to 85 miles per hour).

³⁷ *Compare Gray v. General Motors Corp.*, 434 F.2d 110, 111 (8th Cir. 1970) (claim that windshield should be designed to "pop out" in an accident) *with Seese v. Volkswagenwerk A.G.*, 648 F.2d 833, 835 (3d Cir. 1981) (claim that windshield should be designed to be retained in high-speed upset).

³⁸ *Compare Seattle-First Nat'l Bank v. Talbert*, [1970-1973] *PROD. LIAB. REP. (CCH)* ¶ 6550 (Wash. 1970) *and Baumgardner v. American Motors Corp.*, 83 Wash. 2d 751, 752, 522 P.2d 829, 830 (1974) (en banc) (vehicles claimed to be uncrashworthy because seats remained rigidly anchored during collision and failed to yield) *with Walton v. Chrysler Motor Corp.*, 229 So. 2d 568, 569 (Miss. 1969) *and Volkswagen of America, Inc. v. Young*, 272 Md. 201, 205, 321 A.2d 737, 739 (1974) (claims that designs were uncrashworthy because seats gave way in collision).

tential variations for product redesign by hindsight are virtually endless because collisions occur under countless variable conditions. Each injurious collision could generate a potential lawsuit alleging that some feature should have been made differently. Such an open-ended system thrusts the manufacturer into the role of an insurer against injury whenever accidents occur.³⁹

The serious problems posed by the inherent inability of the judicial process to formulate appropriate safety standards regarding a manufacturer's conscious design choices are not new. Professor Henderson has forcefully discerned the distinction between courts and juries formulating safety standards on their own, as opposed to merely applying standards which have been created extrajudicially.⁴⁰ Courts are well-suited for the latter task but are inherently ill-suited for the former.⁴¹ In the crashworthiness area, the

³⁹ See *Dawson v. Chrysler Corp.*, 630 F.2d 950, 962 (3d Cir. 1980), cert. denied, 450 U.S. 959 (1981) (current law imposes on industry "responsibility of insuring vast numbers of persons involved in automobile accidents").

⁴⁰ Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, 73 COLUM. L. REV. 1531, 1531-34 (1973); Henderson, *Design Defect Litigation Revisited*, 61 CORNELL L. REV. 541, 542-57 (1976); Henderson, *Renewed Judicial Controversy Over Defective Product Design: Toward the Preservation of an Emerging Consensus*, 63 MINN. L. REV. 773, 774 (1979). Professor Henderson's thesis is discussed in *Bowman v. General Motors Corp.*, 427 F. Supp. 234, 241-42 & n.12 (E.D. Pa. 1977) (court agreed with Henderson's "excellent analysis" that design trade-off inquiry "complicates the process of products liability adjudication" but disagreed "that conscious design choice cases are beyond the competence of the Courts"). See also *McMullen v. Volkswagen of America, Inc.*, 274 Or. 83, 87-88, 545 P.2d 117, 120 (1976) (Henderson's thesis to unburden courts of standard-fixing task found "tempting" but rejected). For an appellate opinion strongly influenced by Professor Henderson's thesis, see *Owens v. Allis-Chalmers Corp.*, 83 Mich. App. 74, 79-80, 268 N.W.2d 291, 294 (Ct. App. 1978) (adjudication must necessarily play a limited role in setting design standards which should be "extrajudicially established").

⁴¹ Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, supra note 40, at 1534, 1558 ("judicial coin-flipping" and decisions by jury "whim" threaten confidence in judicial process); Henderson, *Renewed Judicial Controversy Over Defective Product Design: Toward the Preservation of an Emerging Consensus*, supra note 40, at 779-80. Professor Henderson states:

The adjudicatory process is inadequate as a method of resolving, on a case-by-case basis, the vague question of whether or not risks presented by a particular product are unreasonable. When forced to make such decisions, courts must resolve complex and often times highly technical issues of design alternatives equipped only with legal principle reduced to its most basic degree of generalization: a balancing test. In effect, the courts are forced to second-guess the designers; they are forced to redesign the product themselves. The result is to push the adjudicatory process to the brink of arbitrariness.

Id. Paying deference to Professor Henderson's excellent and probing analysis of the problem, this writer previously has urged that as long as courts adjudicate the merits of countless design choices in all manner of products, they should abandon their unjustified fascination with strict tort liability and resolve cases under negligence principles. See, e.g., Hoenig,

design resolution problem is further exacerbated by shifting the focus of the litigation inquiry from accident causation to an open-ended standard of "injury-minimization."⁴² An additional complication is the predisposition of many courts to employ the theory of so-called strict tort liability.⁴³ Under strict liability, traditional tests of reasonable care are theoretically bypassed, restricted, or modified.⁴⁴ Indeed, a jury might receive an instruction that the

Product Designs and Strict Tort Liability: Is There a Better Approach?, 8 Sw. U.L. REV. 109, 137 (1976). The reasonable conduct inquiry under negligence would more clearly permit jury consideration of all relevant factors. *Id.* at 122. This is extremely important in the complex area of automobile crashworthiness. Hoenig & Goetz, *supra* note 2, at 38-40. A system of crediting a manufacturer's compliance with applicable crash safety standards, coupled with the application of a reasonableness inquiry could minimize uncontrolled jury second-guessing of established collision design standards. See Hoenig, *Products Liability Problems and Proposed Reforms*, 1977 INS. L.J. 213, 233-34.

⁴² If the traditional causation claim presents difficult policy problems, expanding the scope of the inquiry to include the manner in which designs might somehow minimize injuries in a given accident obviously magnifies the difficulty. Indeed, the jury then is saddled with the additional task of formulating design standards dealing with the way in which a particular design might have affected the severity of the injuries.

⁴³ *E.g.*, Dawson v. Chrysler Corp., 630 F.2d 950, 956 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981) (applying New Jersey law); Huff v. White Motor Corp., 565 F.2d 104, 106-07 (7th Cir. 1977) (applying Indiana law); Nanda v. Ford Motor Co., 509 F.2d 213, 218-19 (7th Cir. 1974) (applying Illinois law); Cronin v. J.B.E. Olson Corp., 8 Cal. 3d 121, 129, 501 P.2d 1153, 1158, 104 Cal. Rptr. 433, 438 (1972) (en banc); Turner v. General Motors Corp., 584 S.W.2d 844, 848 (Tex. 1979); Ellithorpe v. Ford Motor Co., 503 S.W.2d 516, 519 (1973); Baumgardner v. American Motors Corp., 83 Wash. 2d 751, 758-59, 522 P.2d 829, 833-34 (1974) (en banc). Recently, the Supreme Court of Ohio used the theory of strict liability in adjudicating a crashworthiness claim. Leichtamer v. American Motors Corp., 67 Ohio St. 2d 456, 424 N.E.2d 568, 575 (1981). The *Leichtamer* dissent, however, urged that in an enhancement case based upon defective design, "the manufacturer should be held liable only when the plaintiff is able to prove that the manufacturer was negligent in adopting his chosen design." 424 N.E.2d at 583 (Holmes, J., dissenting). The dissenting judges emphasized that: (1) standards for imposition of strict liability provide insufficient guidance to the jury; (2) courts have had difficulty in defining section 402A liability and have exhibited a lack of understanding of the key phrase "defective condition unreasonably dangerous"; and (3) courts, lawyers, and jurors are more familiar with negligence concepts which are applied uniformly. *Id.* at 584 (Holmes, J., dissenting). There is precedent for rejecting strict liability in enhanced injury design cases and applying negligence theory instead. See Volkswagen of America, Inc. v. Young, 272 Md. 201, 220-21, 321 A.2d 737, 747 (1974); Bolm v. Triumph Corp., 33 N.Y.2d 151, 157-58, 305 N.E.2d 769, 772-73, 350 N.Y.S.2d 644, 649 (1973) (standards for imposing liability for unreasonably dangerous design defects are general negligence principles). Indeed, the *Larsen* case was based upon negligence principles. *Larsen v. General Motors Corp.*, 391 F.2d 495, 502-06 (8th Cir. 1968). An argument also can be made, on the basis of the commentary to section 402A, that crashworthiness liability in certain cases was not contemplated in the Restatement. See Hoenig & Werber, *supra* note 4, at 590-92.

⁴⁴ Although many courts and commentators refer to strict tort liability, much depends upon the particular standard or test being articulated. Because so many variations have been published, one may state confidently that no uniform test exists. Although full exposi-

manufacturer may be held liable for a defective product notwithstanding the defendant's exercise of all possible care in the manufacture of that product.⁴⁵ Ostensibly, strict liability directs the jury towards a result-oriented inquiry—how well did the product per-

tion of the various tests, glosses, nuances, and variations is beyond the scope of this article, discussions of these concepts are contained in: RESTATEMENT (SECOND) OF TORTS § 402A (1965); Department of Commerce Model Uniform Product Liability Act, 44 Fed. Reg. 62,714 (1979); Birnbaum, *Unmasking the Test for Design Defect: From Negligence [to Warranty] to Strict Liability to Negligence*, 33 VAND. L. REV. 593, 597-643 (1980); Epstein, *Products Liability: The Search for the Middle Ground*, 56 N.C.L. REV. 643, 648-58 (1978); Fischer, *Products Liability—The Meaning of Defect*, 39 MO. L. REV. 339, 339-58 (1974); Green, *Strict Liability Under Sections 402A and 402B: A Decade of Litigation*, 54 TEX. L. REV. 1185, 1202-11 (1976); Henderson, *Renewed Judicial Controversy Over Defective Product Design: Toward the Preservation of an Emerging Consensus*, *supra* note 40, at 773-804; Henderson, *Manufacturers' Liability for Defective Product Design: A Proposed Statutory Reform*, *supra* note 40, at 625-27; Hoenig, *Product Designs and Strict Tort Liability: Is There a Better Approach?*, 8 SW. U.L. REV. 109, 112-22 (1976); Keeton, *Product Liability and the Meaning of Defect*, 5 ST. MARY'S L.J. 30, 30-39 (1973); Montgomery & Owen, *Reflections on the Theory and Administration of Strict Tort Liability for Defective Products*, 27 S.C.L. REV. 803, 808-24 (1976); Phillips, *The Standard for Determining Defectiveness in Products Liability*, 46 U. CIN. L. REV. 101, 102-21 (1977); Schwartz, *The Uniform Product Liability Act—A Brief Overview*, 33 VAND. L. REV. 579, 584-87 (1980); Twerski & Weinstein, *A Critique of the Uniform Product Liability Law—A Rush to Judgment*, 28 DRAKE L. REV. 221, 223-43 (1979); von Hülsen, *Design Liability and State of the Art: The United States and Europe at a Crossroads*, 55 ST. JOHN'S L. REV. 450, 464-73 (1981); Wade, *On the Nature of Strict Tort Liability for Products*, 44 MISS. L.J. 825, 828-34 (1973); Wade, *On Product "Design Defects" and Their Actionability*, 33 VAND. L. REV. 551, 551-75 (1980); Walkowiak, *Product Liability Litigation and the Concept of Defective Goods*, 44 J. AIR L. & COM. 705, 713-44 (1978).

Key definitions, formulations, applications, or discussions of various forms of strict liability can be found in the following recent cases: *Barker v. Lull Eng'r Co.*, 20 Cal. 3d 413, 422, 573 P.2d 443, 449, 143 Cal. Rptr. 225, 231 (1978) (two-pronged test for defective design includes "consumer expectation" test or "risk-utility" test); *Aller v. Rogers Mach. Mfg. Co.*, 268 N.W.2d 830, 834 (Iowa 1978) ("unreasonably dangerous" test where proof of unreasonableness involves risk-utility balancing process); *Back v. Wickes Corp.*, 375 Mass. 633, 640, 378 N.E.2d 964, 969 (1978) ("implied warranty" test coextensive with section 402A standard); *Suter v. San Angelo Foundry & Mach. Co.*, 81 N.J. 150, 169, 406 A.2d 140, 149 (1979) (plaintiff must prove product design "improper" or "not reasonably suitable and safe and fails to perform contrary to user's reasonable expectation of safety"); *Phillips v. Kimwood Mach. Co.*, 269 Or. 485, 492-93, 525 P.2d 1033, 1036 (1974) (en banc) ("reasonably prudent manufacturer" test); *Azarello v. Black Bros. Co.*, 480 Pa. 547, 559-60, 391 A.2d 1020, 1027 (1978) (unreasonably dangerous test eliminated); *Turner v. General Motors Corp.*, 584 S.W.2d 844, 851 (Tex. 1979) ("risk-utility" test); *Seattle-First Nat'l Bank v. Tabert*, 86 Wash. 2d 145, 154, 542 P.2d 774, 779 (1975) (en banc) ("consumer expectations" test coupled with "risk-utility" factors). See generally RESTATEMENT (SECOND) OF TORTS § 402A (1965) (defective condition unreasonably dangerous).

⁴⁵ *E.g.*, RESTATEMENT (SECOND) OF TORTS § 402A(2)(a) (1965). This provision states that strict liability is imposed upon one who sells a product in a "defective condition unreasonably dangerous" despite the fact that the "seller has exercised all possible care in the preparation and sale of his product." *Id.*

form in this accident—rather than towards the reasonableness of design choices under all the relevant circumstances. Such a limited perspective amplifies the other problems associated with “crashworthiness” design litigation.⁴⁶

The potential for open-ended liability engendered by the sweeping scope of *Larsen's* open-ended duty of injury-minimization may not be immediately evident. Upon a cursory reading, *Larsen* appears to be applicable only to the automotive industry. A critical reading, however, reveals that the duty is one of general application to *all* products.⁴⁷ If *Larsen* is extended to its logical extreme, all products would be subject to litigation when it is alleged that some feature could have been made safer or better so as to minimize injuries.⁴⁸ Indeed, variations on the theme are endless if a general duty to minimize injuries to some unspecified extent is to be the governing standard. Although the full breadth of *Larsen's* policy implications for other products seems to be underestimated at the present time, it is clear that in automobile cases the *Larsen* doctrine is being applied extensively with very serious consequences.⁴⁹

Troubling Policy Dilemmas?

More than a dozen years after *Larsen's* announcement of in-

⁴⁶ For other problems associated with the application of strict liability to crashworthiness claims, see notes 92-151 and accompanying text *infra*.

⁴⁷ *Larsen v. General Motors Corp.*, 391 F.2d 495, 504 (8th Cir. 1968).

⁴⁸ See, e.g., *Bruce v. Martin-Marietta Corp.*, 544 F.2d 442, 444 (10th Cir. 1976); *Trust Corp. of Montana v. Piper Aircraft Corp.*, 506 F. Supp. 1093, 1094 (D. Mont. 1981); *McGee v. Cessna Aircraft Co.*, 82 Cal. App. 3d 1005, 1007, 147 Cal. Rptr. 694, 695 (Ct. App. 1978) (aircraft); cf. *Bayamon Thom McAn, Inc. v. Miranda*, 409 F.2d 968, 973 (1st Cir. 1969) (rejecting duty to equip motor-driven hobby horse with straps, seatbelts, or surrounding rugs or cushions); *Zoerner v. Eisner Grocery Co.*, 111 Ill. App. 2d 342, 344, 250 N.E.2d 156, 157 (Ct. App. 1969) (directed verdict affirmed for shopping cart manufacturer where cart not equipped with seat belts or other restraint devices). See also *Stueve v. American Honda Motors Co.*, 457 F. Supp. 740, 743-44 (D. Kan. 1978) (motorcycles); *Howard v. Sears, Roebuck & Co.*, 437 F. Supp. 883, 884 (S.D. Miss. 1977), *aff'd mem.*, 584 F.2d 388 (5th Cir. 1978) (exploding freezer); *Bernier v. Boston Edison Co.*, 403 N.E.2d 391, 395-96 (Mass. 1980) (utility pole); *Back v. Wickes Corp.*, 375 Mass. 633, 634-35, 378 N.E.2d 964, 967 (1978) (motor home).

⁴⁹ See *Huff v. White Motor Corp.*, 565 F.2d 104, 110-11, 106 n.1 (7th Cir. 1977) and cases cited therein. Not all jurisdictions have decided to allow crashworthy claims, and some courts have explicitly rejected the doctrine. E.g., *Wilson v. Ford Motor Co.*, 656 F.2d 960, 960 (4th Cir. 1981) (per curiam) (North Carolina law); *McClung v. Ford Motor Co.*, 472 F.2d 240, 240 (4th Cir. 1973) (West Virginia law); *Simpson v. Hurst Performance, Inc.*, 437 F. Supp. 445, 447 (M.D. N.C. 1977), *aff'd*, 588 F.2d 1351 (4th Cir. 1978) (North Carolina law).

jury enhancement liability, some serious strains are surfacing concerning the adjudication of such claims. Perhaps the most explicit statement of a court's uneasiness with the current system may be found in the Third Circuit's recent decision of *Dawson v. Chrysler Corp.*⁵⁰ In *Dawson*, a police car went out of control and struck an unyielding steel pole broadside at a forty-five degree angle. As a result of the force of the collision, the vehicle "literally wrapped itself around the pole."⁵¹ The pole had ripped through the car body and allegedly crushed the driver between the seat and the "header" area of the roof above the windshield. The plaintiff, a quadriplegic, sued the manufacturer contending that the existing frame of the patrol car was unable to withstand side impacts at relatively low speeds, thereby permitting the pole to intrude the passenger area. Furthermore, the plaintiff's experts testified that their proposed improvements in the frame design would have been feasible and would have prevented the plaintiff from being seriously injured. Their technical theory was that a continuous side frame and crossmember would have deflected the car away from the pole after a minimal intrusion.⁵² Conversely, the defendant's experts vigorously asserted that the vehicle complied with all federal vehicle safety standards and that deformation of the vehicle body is desirable in most collisions because it absorbs the impact of the crash and decreases the rate of deceleration of the vehicle's occupants. The defense experts asserted, therefore, that for most types of accidents the design offered by the plaintiff's experts would be less safe than the existing design. The defense also established that the plaintiff's proposed design would add between 200 and 500 pounds to the vehicle's weight and approximately \$300 to the price of the car. Moreover, the defense experts testified that the vehicle's "unibody" construction was stronger than comparable competitive models.⁵³ Nevertheless, the jury awarded the plaintiff

⁵⁰ 630 F.2d 950 (3d Cir. 1980).

⁵¹ *Id.* at 954.

⁵² *Id.* A design analyst, a mechanical engineer, and a biochemical engineer testified as experts on behalf of the plaintiff. *Id.* at 958. According to these experts, had the vehicle been designed with a full, continuous steel side-door frame and a crossmember running through the floor boards, the car would have "bounced" off the pole and "Dawson would have been able 'to walk away from the accident' with but a bruised shoulder." *Id.*

⁵³ *Id.* at 954. Chrysler had defended on two theories. First, Chrysler contended that it had no duty to manufacture a "crashworthy" vehicle to protect the occupant under the circumstances of this violent accident. *Id.* Second, it asserted that "in any event," the vehicle in question was not defective. *Id.*

more than \$2 million in damages.

On appeal, the Third Circuit considered a variety of issues dealing with duty, causation, evidence, and damages. Reluctantly, the circuit court affirmed the judgment, noting its "uneasiness regarding the consequences of [the] decision" and similar decisions "of other courts throughout the country."⁵⁴ Indeed, the *Dawson* court expressed the "troubling public policy dilemma":

[I]ndividual juries in the various states are permitted, in effect, to establish national automobile safety standards. The result of such an arrangement, predictably, is not only incoherence in the safety requirements set by disparate juries, but also the possibility that a standard established by a jury in a particular case will conflict with other policies regarding the economics of the automobile industry as well as energy conservation programs.⁵⁵

Elaborating upon the problem of jury-formulated standards, the court stated:

[W]hile the jury found Chrysler liable for not producing a rigid enough vehicular frame, a factfinder in another case might well hold the manufacturer liable for producing a frame that is too rigid. Yet, as pointed out at trial, in certain types of accidents—head-on collisions—it is desirable to have a car designed to collapse upon impact because the deformation would absorb much of the shock of the collision, and divert the force of deceleration away from the vehicle's passengers. In effect, this permits individual juries applying varying laws in different jurisdictions to set nationwide automobile safety standards and to impose on automobile manufacturers conflicting requirements. It would be difficult for members of the industry to alter their design and production behavior in response to jury verdicts in such cases, because their response might well be at variance with what some other jury decides is a defective design. Under these circumstances, the law imposes on the industry the responsibility of insuring vast numbers of persons involved in automobile

⁵⁴ *Id.* at 962. The *Dawson* court indicated that although the legal questions in the case, as governed by New Jersey law, were "relatively straight-forward," the public policy issues it faced were complex and involved economic and social issues on a national scale. *Id.* at 953.

⁵⁵ *Id.* The *Dawson* court cited the very case it was deciding as an example of the jury's power to determine national standards. While the New Jersey Supreme Court had established a strict liability standard by defining a defective product as any product which is not "reasonably fit, suitable and safe for its intended use," it was left to the jury to decide in each case whether the product met that standard. *Id.* In doing so, the jury had to formulate its own version of acceptable crash safety standards.

accidents.⁵⁶

The impact of a case-by-case method of establishing automobile safety requirements upon "other national social and economic goals" was deemed "equally serious" by the court.⁵⁷ Moreover, the Third Circuit noted that notwithstanding the energy crisis and severe competition with foreign automobile markets, the present system of regulation "by ad hoc adjudications" still permits juries to hold manufacturers culpable for not producing a car that is heavier and likely to be less fuel-efficient.⁵⁸

Viewing the public policy questions as being "beyond the competence" of the court, the Third Circuit stopped short of judicially resolving this "important conflict that implicates broad national concerns."⁵⁹ Instead, the court noted that these concerns are ones with which Congress, rather than the courts, "ultimately must grapple."⁶⁰ Accordingly, the court was content merely to "bring the problem to the attention of the legislative branch."⁶¹ Although the *Dawson* court may have been too hasty in assessing the situation as one beyond judicial correction,⁶² its recognition of a major defi-

⁵⁶ *Id.* at 962. For the statements of other courts decrying the role of the manufacturer as an insurer, see note 70 *infra*.

⁵⁷ 630 F.2d at 962.

⁵⁸ *Id.* at 963.

⁵⁹ *Id.* at 953.

⁶⁰ *Id.*

⁶¹ *Id.* at 963.

⁶² Apparently, the court in *Dawson* was influenced by the existence of a provision in the National Traffic and Motor Vehicle Safety Act (the Act), providing that compliance with a federal motor vehicle safety standard does not exempt any person from common law liability. 15 U.S.C. § 1397(c) (1976). The court seemed to view this provision as authorizing the states to create freely varied liability standards regarding automotive designs and structures, and to delegate to juries the power to determine a manufacturer's conformity to such standards. 630 F.2d at 962. Such an arrangement, the court stated, effectively permitted "individual juries applying varying laws in different jurisdictions to set nationwide automobile safety standards and to impose on automobile manufacturers conflicting requirements." *Id.* Thus, the court concluded, since Congress designed this system of "regulation by ad hoc adjudications," Congress is "best suited" to change that system. *Id.* at 963.

The arrangement by which juries set national standards, however, was not created by Congress. On the contrary, Congress expressly prohibited any state from establishing motor vehicle safety standards which are not "identical" to the federal standards. 15 U.S.C. § 1392(d) (1976). The use of the jury system to set standards for crashworthiness liability plainly emanates from and is tolerated by the courts themselves. The *Larsen* doctrine itself is a creation of judges and is based upon common law, rather than a statutory development. Thus, it is arguably appropriate that the courts should solve a problem that they created. Indeed, in 1966, when Congress enacted the Act, crashworthiness lawsuits were not yet permitted by the courts. See *Knippen v. Ford Motor Co.*, 546 F.2d 993, 999 (D.C. Cir. 1976); *Evans v. General Motors Corp.*, 359 F.2d 822, 824 (7th Cir. 1966). The Act was passed well

ciency with jury-formulated crash standards and its clarion call for relief⁶³ is a courageous step forward in developing a system that more fairly and efficiently harmonizes policy objectives.⁶⁴

In the approximately 15 years of ferment concerning the crashworthiness issue, courts seem to have come virtually full circle. Earlier, the *Evans* court stated that crash performance standards were more properly a legislative function, thereby precluding common-law liability.⁶⁵ More recently, the court in *Dawson* suggested the same thing, but nonetheless upheld multimillion dollar liability. In the interim, numerous courts grappled with the enormous problems and conflicting considerations associated with crashworthiness liability.⁶⁶ Many of the reported cases, however,

before the *Larsen* case first allowed such claims. Thus, Congress could not have contemplated that juries would be permitted to set and impose indiscriminate crash standards which conflict with carefully researched federal standards. The resulting tension between jury-imposed crash standards and federal requirements poses some fairly classic constitutional problems. See notes 315-402 and accompanying text *infra*.

⁶³ The congressional relief called for by the *Dawson* court presumably could take the form of an amendment to 15 U.S.C. § 1397(c) which now reads: "[c]ompliance with any Federal motor vehicle safety standard issued under this subchapter does not exempt any person from any liability under common law." 15 U.S.C. § 1397(c) (1976). Language could be added to make it clear that compliance with crash standards precludes crashworthiness liability regarding performance covered by the standard.

⁶⁴ Judge Adams, who authored the Third Circuit's opinion in *Dawson*, later took up the same theme in a dissenting opinion. See *Seese v. Volkswagenwerk A.G.*, 648 F.2d 833, 855-56 (3d Cir. 1981) (Adams, J., dissenting). Judge Adams viewed the complex problems presented in *Seese* as underscoring the perception made by the *Dawson* court that the present compensation system, which permits "individual juries under different state systems to arrive at discrepant outcomes that impose conflicting standards on manufacturers, is far from efficient or fair." *Id.* at 855 (Adams, J., dissenting). Moreover, he noted that the "irrationalities in the existing system" allow jury verdicts to reach beyond federal safety standards and impose "conflicting requirements on producers attempting to satisfy a nationwide market." *Id.* (Adams, J., dissenting). Thus, Judge Adams concluded, the public is left "far from the goal of reducing and fairly distributing the sum of accident costs as well as the costs of reducing the number of future collisions." *Id.* (Adams, J., dissenting).

⁶⁵ *Evans v. General Motors Corp.*, 359 F.2d 822, 824 (7th Cir. 1966); see note 20 and accompanying text *supra*.

⁶⁶ In *Self v. General Motors Corp.*, the court conceded that the "prosecution of a lawsuit is a poor way to design a motor vehicle," 42 Cal. App. 3d 1, 7, 116 Cal. Rptr. 575, 579 (Ct. App. 1974), and wistfully adverted to some future day when "legislatures and courts will develop techniques for summary disposition of extravagant claims of defective design." 42 Cal. App. 3d at 8, 116 Cal. Rptr. at 579. The Eighth Circuit's decision in *Polk v. Ford Motor Co.*, 529 F.2d 259 (8th Cir.) (en banc), *cert. denied*, 426 U.S. 907 (1976), also illustrates the judicial struggle in this context. In *Polk*, a 1970 vehicle traveling 45 to 50 miles per hour was struck in the rear by a vehicle traveling about 100 miles per hour. After the impact, the slower car jumped a 9-inch curb, struck a concrete retaining wall, overturned, and slid on its roof 100 feet before coming to rest. The roof supports collapsed and the car caught fire. *Id.* at 263. A major issue on appeal was whether Missouri would allow enhanced

merely have involved the threshold issues of whether a duty exists and whether an expansion to mere injury-minimization liability should be permitted as a matter of policy.⁶⁷ Practical and difficult questions concerning the actual litigation of crashworthiness suits and the reasonable limits of liability under such claims have not yet been settled.⁶⁸ Indeed, the problems may prove to be insoluble via common-law development. Furthermore, it is predictable that the ferment and uneasiness indicated by the *Dawson* court will continue to grow if courts do not recognize that they have created a doctrinal form of open-ended and unlimited liability that makes the manufacturer a virtual insurer against collision-related injuries. Such enormous pressure cannot be tolerated indefinitely, and eventually relief must come, perhaps as it has by legislation in some areas of general products liability.⁶⁹ Mere lip service that a

injury liability in such circumstances. *Id.* at 264. Initially, a three judge panel of the Eighth Circuit Court of Appeals held that the trial judge should have directed a verdict for the defense because Missouri law could not permit such liability. *See* [1974] PROD. LIAB. REP. (CCH) ¶ 7305, at 13,351 (8th Cir.). The concurring judge in *Folk*, without resort to legal doctrines, found the facts sufficient to preclude liability. He stated:

The Ford was propelled for 100 feet on its roof after structural damage from the impact at some 50 miles an hour. Countless hypothetical cases can be envisioned such as a car driving by a construction site at a moment when a steel girder falls, demolishing the car roof. A car at rest might be struck from the rear at a low speed, causing a passenger to sustain a whiplash neck injury. Query: whether common sense would require the manufacturers of cars to build roofs to cope with falling girders or cars fully protected against whiplash injuries. Even military tanks are not impervious to destruction and burning if struck by sufficient force.

[1974] PROD. LIAB. REP. (CCH) ¶ 7305, at 13,353 (Moore, J., concurring).

A dissenting judge, however, believed that Missouri law would allow crashworthiness liability and that a jury question was presented. He noted that "[t]he division in this panel is substantial." *Id.* at 13,354. Following a rehearing en banc, the Eighth Circuit overturned the prior panel opinion, affirming the district court's judgment. *See* 529 F.2d at 264. For another example of this judicial struggle, see *Huff v. White Motor Corp.*, 565 F.2d 104, 107-08 (7th Cir. 1977). *See generally* note 23 *supra*.

⁶⁷ *E.g.*, *Larsen v. General Motors Corp.*, 391 F.2d 495, 498 (8th Cir. 1968); *Anton v. Ford Motor Co.*, 400 F. Supp. 1270, 1272 (S.D. Ohio 1975); *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1067 (E.D. Pa. 1969); *Volkswagen of America, Inc. v. Young*, 272 Md. 201, 203-04, 321 A.2d 737, 740 (1974).

⁶⁸ The diversity of judicial approaches is illustrated in *Seese v. Volkswagenwerk A.G.*, 648 F.2d 833, 839-40 (3d Cir. 1981). *See also* *Huddell v. Levin*, 537 F.2d 726, 737 (3d Cir. 1976); *Self v. General Motors Corp.*, 42 Cal. App. 3d 1, 6-8, 116 Cal. Rptr. 575, 578-79 (Ct. App. 1974); *Leichtamer v. American Motors Corp.*, 67 Ohio St. 2d 456, 424 N.E.2d 568, 575-76 (1981).

⁶⁹ Many states have enacted legislation to correct perceived abuses in products liability litigation. These remedial measures have included, for example, statutes of "repose" under which the periods of limitations run from the time of manufacture or sale of the product, irrespective of the date of injury. *E.g.*, S.D. CODIFIED LAWS ANN. § 15-2-12.1 (Supp. 1981) (6 years from delivery to first purchaser); UTAH CODE ANN. § 78-15-3 (1977) (6 years after first

manufacturer need not build an accidentproof or crashproof car or that a manufacturer is not an insurer,⁷⁰ cannot mask forever the fact that the *cumulative* burden actually being imposed is to require a virtually crashproof car or, in the alternative, to require manufacturers to insure occupants against injuries.⁷¹

purchase or 10 years after date of manufacture). In addition, some states have adopted statutory measures creating defenses such as misuse of the product, patent danger, product alteration, state of the art, and compliance with standards. For examples of statutes establishing a defense based on the plaintiff's misuse of the product, see ARIZ. REV. STAT. ANN. § 12-683(3) (Supp. 1980-1981); KY. REV. STAT. § 411.320(3) (Supp. 1980); N.C. GEN. STAT. § 99B-4(3) (1979). For instances of state laws which permit a defense or recognize a rebuttable presumption based on the product's conforming to the prevailing state of the art, see ARIZ. REV. STAT. ANN. § 12-683(1) (Supp. 1980-1981); IND. CODE ANN. § 34-4-20A-4(b)(4) (Burns Supp. 1980); NEB. REV. STAT. § 25-21,182 (1979). Statutes which enable a manufacturer to defend on the grounds that the product has been altered include, KY. REV. STAT. § 411.320(2) (Supp. 1980), TENN. CODE ANN. § 29-28-108 (1980), and UTAH CODE ANN. § 78-15-5 (1977). For statutes which establish a defense based on the manufacturer's compliance with existing standards, see COLO. REV. STAT. § 13-21-403(1)(b) (Supp. 1980); TENN. CODE ANN. § 29-28-104 (1980); UTAH CODE ANN. § 78-15-6(3) (1977).

For discussions of various state statutory reforms, see MODEL UNIFORM PRODUCT LIABILITY ACT, reprinted in 44 Fed. Reg. 62,714 (1979); Friedman, *State Product Liability Legislation*, in 1980 SMU PRODUCTS LIABILITY INSTITUTE: UNIFORM PRODUCTS LIABILITY ACT 15-1 to 15-23 (1980); Hoening, *New Statutes May Govern*, N.Y.L.J., May 31, 1978, at 1, col. 1; Twerski, Weinstein, Donaher & Pehler, *Shifting Perspectives in Products Liability: From Quality to Process Standards*, 55 N.Y.U.L. Rev. 347, 351 nn.9-10, 352 n.11 (1980).

⁷⁰ Numerous courts at least have acknowledged vague, outer limits on crashworthiness liability. In *Larsen v. General Motors Corp.*, 391 F.2d 495, 502 (8th Cir. 1968), the Eighth Circuit conceded that a manufacturer is not obligated to build an "accident-proof" or "fool-proof" vehicle. Other courts have made similar pronouncements. See, e.g., *Polk v. Ford Motor Co.*, 529 F.2d 259, 269 (8th Cir.) (manufacturers are not "absolute insurers"), *cert. denied*, 426 U.S. 907 (1976); *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1073 (E.D. Pa. 1969) (no obligation to manufacture a crashproof vehicle); *Brandenburger v. Toyota Motor Sales, U.S.A., Inc.*, 162 Mont. 506, 517, 513 P.2d 268, 274 (1973) (no duty owed to manufacture a crashproof vehicle); *Friedrich v. Anderson*, [1974] PROD. LIAB. REP. (CCH) ¶ 7184, at 12,882 (Neb. 1974) ("automobile manufacturer is not an insurer that its product is, from a design viewpoint, incapable of producing injury"); *Johnson v. American Motors Corp.*, 225 N.W.2d 57, 62 (N.D. 1974) (no duty to make an accidentproof or foolproof automobile); *Ellithorpe v. Ford Motor Corp.*, 503 S.W.2d 516, 519 (1973) (duty "does not require construction and design of an [absolutely safe] automobile"); *Baumgardner v. American Motors Corp.*, 83 Wash. 751, 756, 522 P.2d 829, 832 (1974) (en banc) ("manufacturer is not expected to produce an accident free product, it is not an insurer of the users of its product and it need not adopt every possible safety device"). All of these statements reflect correct legal principles.

⁷¹ See *Dawson v. Chrysler Corp.*, 630 F.2d 950, 962 (3d Cir. 1980). In *Dawson*, the court explicitly stated that the current system of crashworthiness law "imposes on the industry the responsibility of insuring vast numbers of persons involved in automobile accidents." *Id.* When the focus is shifted from individual cases to the broader body of crashworthiness litigation as a whole, one can readily discern that the *cumulative* burden being imposed is a judicial mandate to produce a virtually "crashproof" vehicle. The claimed crashworthy performance in the body of cases has involved an array of collision speeds in a countless variety

CAN THE PROCESS OF CLAIM RESOLUTION BE IMPROVED?

Should courts continue to adjudicate in the crashworthiness area, it is evident that the applicable concepts of claims resolution cannot subsist as a form of "judicial coin flipping" constituting a threat to the integrity of the judicial process.⁷² The courts must responsibly exercise control over the proceedings so that the jury appropriately considers the reasonableness of the design choice in light of all relevant circumstances and decides the liability issues without sympathy, speculation, or conjecture.

A qualitative inquiry into the nature of the claim initially should disclose whether it is one that falls within more established, nonspeculative, or tolerable categories which permit courts to adjudicate without threatening the integrity of the judicial process.⁷³ For example, claims of enhanced injuries resulting from noncompliance with *applicable* crash safety standards⁷⁴ is one category which inherently minimizes speculative or conjectural tendencies because the factfinder can refer to a specific, objective performance level dictated by an applicable government standard. Thus, a uniform result is engendered when the jury has an extrajudicially established standard to refer to, understand, and apply to the facts.⁷⁵ Notwithstanding the technical complexity of the subject matter, the jury's inquiry is relatively simple. Was there noncompliance with certain applicable standards? Did such noncompliance cause injuries over and above those that otherwise would have been sustained had the vehicle complied with the standard? To what ex-

of accidents. Indeed, it seems evident from a general review of the cases that the only real limitation upon filing claims in this area is the willingness, resourcefulness, and imagination of the claimants' counsel. Under such open-ended circumstances, the *cumulative* burden is potentially one of "crashproofness."

⁷² Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, *supra* note 40, at 1534, 1558.

⁷³ See generally Hoenig, *Understanding "Second Collision" Cases in New York*, *supra* note 4, at 50-55; Hoenig & Goetz, *supra* note 2, at 83-86.

⁷⁴ If a standard-setting agency promulgates specifications for a particular vehicle, a manufacturer's noncompliance may give rise to an action for enhanced injury. The crash-worthy cases, however, do not reveal many claims falling into this category. *Cf.* General Motors Corp. v. Simmons, 558 S.W.2d 855, 859-61 (Tex. 1977) (safety glass). There is, however, ample support for the proposition that violation of an applicable government standard or regulation is actionable. See James, *Statutory Standards and Negligence in Accident Cases*, 11 LA. L. REV. 95, 96-97 (1950); Morris, *The Role of Administrative Safety Measures in Negligence Actions*, 28 TEX. L. REV. 143, 143 (1949).

⁷⁵ See Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, *supra* note 40, at 1534; note 41 *supra*.

tent were the claimant's injuries enhanced? In such a case, the jury is not required to second guess what the design should have been, to make judgments that conflict with other policies, or to speculate about what would have been better or stronger for the particular accident under consideration.

Another type of claim tolerable to the law is one which alleges that an *express* promise of a specific level of crash performance has not been fulfilled. If the manufacturer *expressly* warrants that the vehicle possesses a certain safety feature or characteristic of crash performance, the user may be entitled to rely upon such a promise.⁷⁶ For example, when a manufacturer expressly warrants the roof of a car to be a seamless steel roof and the car overturns, an occupant cut by a jagged edge of a welded point running across the roof of the automobile may sue for the enhanced injuries.⁷⁷ Similarly, when automobile glass is expressly warranted as shatter-proof but unreasonably breaks in an accident, an action can be maintained for the injuries aggravated by the breaking glass.⁷⁸ In such cases, when a feature fails to perform as claimed, a suit for enhanced injuries may be appropriate.⁷⁹

⁷⁶ U.C.C. § 2-313 (1978 version). See generally Note, *Reforming the Law of Consumer Recovery and Enterprise Liability through the Uniform Commercial Code*, *supra* note 25, at 1013-14; see also *id.* § 2-315.

⁷⁷ See *Bahlman v. Hudson Motor Car Co.*, 290 Mich. 683, 686, 288 N.W. 309, 311 (1939).

⁷⁸ See *Bird v. Ford Motor Co.*, 15 F. Supp. 590, 591 (W.D.N.Y. 1936); *Baxter v. Ford Motor Co.*, 168 Wash. 456, 463-64, 12 P.2d 409, 412 (1932).

⁷⁹ A representation or express warranty made by the manufacturer or dealer must clearly relate to some aspect of crash performance. For example, a representation that a car has "unibody construction" does not warrant any aspect of "second collision" safety. Similarly, a representation that a car's bumpers are "energy absorbing" does not suggest that bumpers will protect against "second collision" injuries in severe accidents. Fact patterns, however, can be articulated which present closer questions. Not long ago, a manufacturer advertised by showing films of its sedans, equipped with instrumented dummy devices, impacting against a rigid crash barrier. The advertising spoke of a "rigid body cell" protecting the occupant in crashes. If a purchaser demonstrably relied upon such representations and they proved false, there might be cause for suit. It is established law, however, that the user may not recover for relying upon that which a reasonably prudent person had no right to believe. The advertisements or representations require a "fair reading of the language" and not mere subjective "impressions." See *Rachlin v. Libby-Owens-Ford Glass Co.*, 96 F.2d 597, 599 (2d Cir. 1938) (safety glass represented as providing "the greatest available protection" not properly construable as "exemption from injury from broken glass"). Under section 402B of the Restatement (Second) of Torts, a strict liability action for misrepresentation requires justifiable reliance. Comment g to section 402B excludes from liability mere "puffing" as, for example, a statement that an automobile "is the best on the market for the price." RESTATEMENT (SECOND) OF TORTS § 402B, Comment g (1965). Thus, if a salesman touts a subcompact car as being "so sturdy it will withstand a 100 mile per hour collision

Another class of potentially acceptable crashworthy claims are those in which enhanced injuries result from a safety device's failure to perform as designed because of a defect in materials, construction, or assembly. In these cases, the noncompliance of the safety device with the manufacturer's specifications renders it unfit to perform the particular task for which it was designed. An illustrative case is *Cronin v. J.B.E. Olson Corp.*,⁸⁰ where a bread delivery salesman was propelled through the windshield of his truck following a collision. An aluminum safety hasp designed to keep bread trays in place broke on impact causing the loaded trays to move forward, strike the claimant in the back, and hurl him through the windshield. The plaintiff's expert testified that the safety hasp had metallurgical flaws which significantly lowered its tolerance to force below that of a normal hasp. Moreover, it was demonstrated that had the device not been porous it would have withstood the impact, thereby restraining the trays. The court upheld liability because the defect in materials prevented performance of the specifically intended function of the safety hasp and they proximately caused the plaintiff's enhanced injuries. This case presents an actionable circumstance because the safety device failed to perform as the manufacturer had intended. More importantly, uniformity in result may be achieved and jury speculation avoided because the jury has a definable performance standard as a frame of reference in which to adjudicate defectiveness.

The previous example should be distinguished from those suits which merely amount to a generalized claim that a safety device should prevent all injuries. The decision in *Hurt v. General Motors Corp.*,⁸¹ exemplifies such a claim.⁸² In *Hurt*, the plaintiff, a passenger riding in the front of a sedan, was wearing her seatbelt but not her shoulder harness. The car in which she was travelling was struck from the left by another vehicle, and as a result of the collision, the plaintiff's body "submarined" underneath the seatbelt. Subsequently, her physicians discovered a ruptured colon, re-

with a Mack truck," the purchaser seemingly would have no rational basis upon which to believe such puffing. The test of reasonable reliance is an objective one not based upon subjective gullibility.

⁸⁰ 8 Cal. 3d 121, 501 P.2d 1153, 104 Cal. Rptr. 433 (1972).

⁸¹ 553 F.2d 1181 (8th Cir. 1977).

⁸² In *Hurt*, the verdict in favor of the defendant-manufacturer was affirmed because the Eighth Circuit concluded that the plaintiffs' case "utterly lacked merit." 553 F.2d at 1185. Indeed, it was noted that "it would have been incumbent for the district court to have set aside any verdict granted to the plaintiffs." *Id.*

quiring surgery.

Suing for her ruptured colon and related damages, the plaintiff proffered federal safety standards which required a seatbelt to provide pelvic restraint.⁸³ The standards mandated the manufacturer to set seatbelts at an angle within an allowable range of 20° to 75°.⁸⁴ Although the seatbelt's angle had been 45°, the plaintiff claimed that her pelvis had not been restrained in the accident. The experts agreed that the plaintiff had "submarined," but disagreed as to the desirable seatbelt angle. To prevent submarining upon a frontal impact, one expert opined, the angle should be 90°. This proposal, however, would mean that a vehicle so equipped could not be sold because it would violate federal standards. Another of the plaintiff's experts testified that the angle should have been closer to the maximum, thereby providing "more" pelvic support.⁸⁵

The appellate court correctly discerned that the expert testimony amounted to nothing more than an opinion "that in this particular accident . . . the seat belt did not prevent *complete* pelvic movement in a front end collision."⁸⁶ Since the federal standard had been satisfied, the court concluded that the plaintiff was not entitled to recovery. Moreover, the court emphasized:

The standards do not require a guarantee that the pelvis, which is restrained by the seat belt, will not move at all upon impact. That the 45° seat belt did not prevent the injury in this case is not sufficient to establish a jury issue that the product was defective. The seat belt did not fail. [Plaintiff] testified that after impact she remained tightly restrained, although her body had shifted its position.⁸⁷

The evidence simply did not indicate the existence of a "defect." Although a different seatbelt angle might have prevented the plaintiff's particular injury in this accident, the seatbelt could not be characterized as "defective in the general context of motor vehicle accidents."⁸⁸

When the crashworthy claim is based upon noncompliance with an applicable safety standard, the breach of a manufacturer's

⁸³ *Id.* at 1182-83.

⁸⁴ *Id.* at 1183.

⁸⁵ *Id.*

⁸⁶ *Id.* (emphasis added).

⁸⁷ *Id.* at 1184.

⁸⁸ *Id.*

express promise, or upon the failure of a safety device to perform as designed,⁸⁹ the jury can refer to definitive, specific, and nonjudicial standards of safety performance. Thus, the jury need not speculate or second-guess the manufacturer's design, or be called upon to formulate ad hoc safety standards. Rather, there would exist an identifiable frame of reference or objective standard against which the jury could measure the vehicle's accident performance. Indeed, these identifiable bases of liability sharply differ from the generalized claim that the vehicle should have been made better, safer, or stronger for the particular accident.⁹⁰ The very nature of the latter inquiry thrusts the jury into the standard-setting process itself. It is in this untenable context that the courts must guard against a trial charade in which complex state of the art standards are rewritten by little more than jury whim⁹¹ in order to compensate a sympathetic claimant.

It may be apparent from the preceding discussion that courts presently are at a crossroads. The dilemma the courts face is one which they created by rapidly expanding liability frontiers. If courts and juries are ill-suited to redesign cars from accident to accident with regard to collision performance, should crash design be immune from litigation in the courts? Conversely, if all potential crashworthiness design claims are to be litigated whenever the opinion of an expert or the severity of an injury creates a factual issue, will not courts and juries endlessly have to formulate their own ad hoc crash performance standards in derogation of other important policies? It is submitted that courts can continue to play a constructive role in the resolution of crashworthiness claims if they (1) apply concepts of legal responsibility clearly based upon reasonableness; (2) give due deference to crash safety standards

⁸⁹ See notes 72-79 and accompanying text *supra*.

⁹⁰ The fact that a crashworthy suit involves an allegedly defective safety device does not mean that the claim is one falling into the tolerable category. If the gravamen of the claim is that the device did not do its intended job, the jury's inquiry would not involve the formulation of its own standards. If the crux of the claim, however, is that the safety device should have been designed better, or stronger, the jury is being asked to create the standard. See, e.g., *Hurt v. General Motors Corp.*, 553 F.2d 1181, 1185 (8th Cir. 1977). In *Huddell v. Levin*, 537 F.2d 726 (3d Cir. 1976), the plaintiff's experts found fault with the head restraint's design because, they claimed, the metal was not sufficiently deformable and the area of potential head impact was unnecessarily restricted. In other words, they attacked the manufacturer's design choice itself. Such attacks are generalized crashworthiness claims that merely happen to focus upon a crash safety device.

⁹¹ See Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, *supra* note 40, at 1558.

promulgated by the expert agency charged with the task or to the state of the art; (3) establish qualitative criteria of proof required from claimants before injury-minimization claims are sent to the jury; and (4) responsibly guard the process of claims resolution from being influenced by sympathy or decided upon speculation. To avoid a haphazard adjudication system, courts will have to announce requirements that clearly hold claimants accountable for qualitative, high-level degrees of proof. Fortunately, there are signs that the courts may be moving in this direction, albeit somewhat slowly. Apart from the substantive legal rules surrounding crashworthiness, however, there are lingering constitutional questions which, surprisingly, have not yet been fully treated by the courts. The following discussion focuses upon these subjects as well as the emerging requisites of proof in these cases.

THE ROLE OF REASONABLENESS IN MEASURING DESIGN RESPONSIBILITY

Negligence or Strict Liability

The courts' recent fascination with strict tort liability⁹² in the design defect area is perplexing since the appropriate predicate for liability is fault. Dean Prosser, the Reporter for the *Restatement* section which first announced strict tort liability,⁹³ noted that any analysis of a design defect "rests primarily upon a departure from proper standards of care," and, therefore, concluded that "the tort is essentially a matter of negligence" premised upon a "duty to use reasonable care to design a product that is reasonably safe for its intended use, and for other uses which are foreseeably probable."⁹⁴ Similarly, other noted commentators who have spoken in terms of strict tort liability employ risk-utility analyses which are clearly based upon negligence criteria.⁹⁵ Moreover, the commentary to the Model Uniform Product Liability Act⁹⁶ states that although some

⁹² See notes 40-45 *supra*.

⁹³ RESTATEMENT (SECOND) OF TORTS § 402A (1965). For an informative account of the history underlying the establishment of the Restatement's section on strict tort liability, see Wade, *On the Nature of Strict Tort Liability for Products*, *supra* note 44, at 830-31. See also Putman v. Erie City Mfg. Co., 338 F.2d 911, 918-19 (5th Cir. 1964).

⁹⁴ W. PROSSER, HANDBOOK OF THE LAW OF TORTS § 96, at 641, 644-45 (4th ed. 1971), quoted in, *Roach v. Kononen*, 269 Or. 457, 463, 525 P.2d 125, 128 (1974).

⁹⁵ See Keeton, *Product Liability and the Meaning of Defect*, *supra* note 45, at 37-38; Wade, *On the Nature of Strict Tort Liability for Products*, *supra* note 44, at 834-35.

⁹⁶ 44 Fed. Reg. 62,714, 62,714-50 (1979). The proposed Model Act followed a massive

courts have indicated strict liability should be applied to design cases, "it is difficult to find an adequate rationale to support that result."⁹⁷ In design cases, "a firmer liability foundation is needed" because "application of uncertain strict liability principles" impugns the whole product line.⁹⁸ Thus, the commentary concluded, "[i]n terms of creating incentives for loss prevention, the approach of applying strict liability principles to design . . . cases represents an 'overkill'; a fault system will provide the needed incentive."⁹⁹ A number of commentators have urged persuasively that misleading, uncertain, and confusing tests of strict liability should be abandoned with regard to product design claims in favor of an open, unequivocal reliance upon negligence principles.¹⁰⁰ Indeed, Dean Leon Green has stated that for design cases the negligence action would "better serve the law, the litigants and the community."¹⁰¹

When one carefully considers the manner in which some courts interpret and apply strict liability, it becomes evident that, in actuality, negligence principles are being employed. An illustrative case is *Phillips v. Kimwood Machine Co.*,¹⁰² a precedent often cited to support the proposition that strict liability differs from negligence because the former imputes to a manufacturer knowledge of the product's harmful character.¹⁰³ Although *Phillips* does

18-month interagency "Task Force" study on the topic of products liability which included consideration of the views of consumer and product seller groups, reviews of congressional hearings, and independent contractors' studies. It also included "a thorough review" of "all major case law and law review literature that had been published since the time of the Task Force's 'Legal Study.'" 44 Fed. Reg. at 62,714. Among the purposes of the Model Act was "to ensure that persons injured by unreasonably unsafe products receive reasonable compensation for their injuries." *Id.*

⁹⁷ 44 Fed. Reg. at 62,722.

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ Birnbaum, *Unmasking the Test for Design Defect: From Negligence [to Warranty] to Strict Liability to Negligence*, *supra* note 44, at 649. Professor Birnbaum has noted that while it may seem harmless for courts and scholars to use the term strict liability when, in actuality, a negligence standard will be applied, such "sophistry" leaves the jury to "formulate random and unpredictable judgments." *Id.* at 649. Rather than place such a strain on our system of adjudicating tort claims, Professor Birnbaum concludes, "it is time for courts to adopt, unequivocally and forthrightly, a pure negligence/risk-utility test in design defect cases." *Id.* See also Hoenig, *Product Designs and Strict Tort Liability: Is There a Better Approach?*, *supra* note 44, at 134.

¹⁰¹ Green, *Strict Liability Under Sections 402A and 402B: A Decade of Litigation*, *supra* note 44, at 1213.

¹⁰² 269 Or. 581, 525 P.2d 1033 (1974).

¹⁰³ See 2 FRUMER & FRIEDMAN, *PRODUCTS LIABILITY* § 16A [4][f][iv][B], at 3B-136.2(h)-(j) (1981); Birnbaum, *supra* note 44, at 618.

make this doctrinal distinction, the essential core of the primary inquiry remains, according to the court, "whether the seller would be negligent" if he marketed the product knowing of the risk involved.¹⁰⁴ The test announced, therefore, is that of a "reasonably prudent manufacturer," a liability standard obviously akin to negligence except for the additional factor of imputed knowledge.¹⁰⁵ In applying the concept of strict liability, the *Phillips* court even preferred using negligence terminology to describe defectiveness because it preserves the familiar terms and thought process with which courts, lawyers, and jurors customarily deal.¹⁰⁶ Despite the court's essential focus upon negligence theory, the added factor of imputed knowledge, intended to give substance to strict liability in design cases, adds little to traditional standards of negligence.¹⁰⁷ Indeed, as it relates to design cases, the doctrinal distinction drawn by the court is essentially academic.

Under negligence principles, the manufacturer is held to the standard of an expert in the field, and therefore is chargeable with knowing all that the circumstances reasonably dictate. Accordingly, there can be no significant difference between negligence and strict liability unless manufacturers are to be held liable for failing to design against risks that were unforeseeable when the product was marketed.¹⁰⁸ Few, if any, courts would allow the imposition of liability for unknowable or unforeseeable risks.¹⁰⁹ Necessarily,

¹⁰⁴ *Phillips v. Kimwood Mach. Co.*, 269 Or. 485, 492, 525 P.2d 1033, 1036 (1974) (emphasis in original) (footnote omitted).

¹⁰⁵ *Id.* It is interesting to compare the *Phillips* court's textual statement with its later references to a "reasonable person," "a seller acting reasonably," a "manufacturer who would be negligent," a manufacturer "not acting reasonably," and a "reasonably prudent manufacturer," all of which reflect a negligence standard. *Id.* at 492-94, 501 n.16, 525 P.2d at 1036-37, 1038-39, 1040 n.16.

¹⁰⁶ *Id.* at 498, 525 P.2d at 1037. The court's recommended jury instruction expressly refers to a "reasonably prudent manufacturer"—unmistakably a negligence standard. *Id.* at 501 n.16, 525 P.2d at 1040 n.16.

¹⁰⁷ W. PROSSER, *HANDBOOK OF THE LAW OF TORTS* § 99, at 659 & nn.72-73 (4th ed. 1971).

¹⁰⁸ One author interprets the *Phillips* case as imputing only knowable risks. Vetri, *Products Liability: The Developing Framework for Analysis*, 54 OR. L. REV. 293, 299 (1975). Limiting imputation to knowable risks at the time of marketing can be viewed as "tantamount to maintaining the burden on plaintiff to prove that the risk was reasonably foreseeable"—a negligence test. *Id.* at 301. If this is the case, then there is no practical difference between negligence and strict liability in design cases.

¹⁰⁹ See, e.g., *Huff v. White Motor Corp.*, 565 F.2d 104, 109 (7th Cir. 1977) ("since collisions . . . are foreseeable events, the scope of liability should be commensurate with the scope of the foreseeable risks."); *Borel v. Fibreboard Paper Prods. Corp.*, 493 F.2d 1076, 1088 (5th Cir. 1973) ("requirement that the danger be reasonably foreseeable, or scientifically discoverable, is an important limitation of the seller's liability."), *cert. denied*, 419 U.S.

therefore, culpability is determined by analyzing the knowledge or foreseeability existing at the time of manufacture.¹¹⁰ No court considering a crashworthiness question has held a manufacturer liable for unforeseeable or unknowable risks.¹¹¹ Thus, the *Phillips* strict liability test amounts to little more than a negligence standard.

Similar comments are applicable to other announced tests of strict tort liability whose kinship to negligence cannot be ignored. For example, under the risk-utility balancing test¹¹² the jury is asked to balance the utility of the product against the risk of its use. This analysis involves "making trade-offs that take into account design or performance requirements, the effects of those requirements on reducing hazards, the utility and cost of the product, and technological capabilities."¹¹³ Commentators seeking to clarify, illustrate, or interpret the creature known as strict liability attempt to identify specific factors that bear upon risk-utility analysis by compiling lists of considerations which are helpful but not uniform.¹¹⁴ Risk-utility balancing, however, is not a new concept. Weighing risk against utility is nothing more than a traditional ap-

869 (1974).

¹¹⁰ *E.g.* MODEL UNIFORM PRODUCT LIABILITY ACT § 104(B)(1), reprinted in 44 Fed. Reg. 62,714, 62,721 (1979) [hereinafter cited as UPLA] (time of manufacture). See also UPLA § 104(B), Analysis, reprinted in 44 Fed. Reg. at 62,723-24 (balancing risk-utility factors "existing at the time of manufacture"). Under the UPLA, "probative" evidence in the design inquiry includes "the technological and practical feasibility" of preventing the claimant's harm. *Id.* at 62,721. Obviously, if a risk is unknowable or unforeseeable, there is no practical feasibility in designing against it.

¹¹¹ *Id.* at 62,723. The *Larsen* decision itself is heavily predicated upon "readily foreseeable" collision risks. See *Larsen v. General Motors Corp.*, 391 F.2d 495, 502 (8th Cir. 1968). See also *Huff v. White Motor Corp.*, 565 F.2d 104, 109 (7th Cir. 1977); *Leichtamer v. American Motors Corp.*, PROD. SAFETY & LIAB. REP. (BNA) ¶ 653, 655-56 (Ohio 1981).

¹¹² Not all "risk-utility" tests are identical. See generally Birnbaum, *supra* note 44, at 593; Twerski, Weinstein, Donaher & Piehler, *supra* note 69, at 354-57 & nn.19-24. The authors of the latter article stated that there is an "overwhelming consensus among courts deciding design defect cases . . . that risk/utility analysis should be used as either an exclusive or an alternate ground of liability." *Id.* at 355.

¹¹³ Twerski, Weinstein, Donaher & Piehler, *supra* note 69, at 356.

¹¹⁴ Fischer, *Products Liability—The Meaning of Defect*, *supra* note 44, at 359 (15 factors); Montgomery & Owen, *Reflections on the Theory and Administration of Strict Tort Liability for Defective Products*, *supra* note 44, at 818 (four factors). The provision on design responsibility in the UPLA sets forth five factors which represent "evidence that is especially probative" in evaluating design safety. See UPLA § 104(B)(2), reprinted in 44 Fed. Reg. 62,714, 62,721 and Analysis, at 62,723 (1979); Shapo, *A Representational Theory of Consumer Protection: Doctrine, Function and Legal Liability for Product Disappointment*, 60 VA. L. REV. 1109, 1370-71 (1974) (13 factors); Twerski, Weinstein, Donaher & Piehler, *supra* note 69, at 356-57 & n.23 (14 factors); Wade, *On the Nature of Strict Tort Liability for Products*, *supra* note 44, at 837-38 (seven factors or considerations).

proach to determining design safety under a *negligence* theory. Indeed, nearly 20 years ago, Professor Noel, in his classic paper on design negligence, observed:

The manufacturer does not have to make a product which is "accident-proof" or "fool-proof." Liability is imposed only when an unreasonable danger is created. Whether or not this has occurred should be determined by general negligence principles, which involve "a balancing of the likelihood of harm, and the gravity of harm if it happens, against the burden of the precaution which would be effective to avoid the harm."¹¹⁵

Thus, risk-utility balancing not only stems from "basic negligence principles"¹¹⁶ but, more significantly, was specifically borrowed to explain what the parameters should be for strict tort liability.¹¹⁷ If, however, strict liability must rely upon negligence

¹¹⁵ Noel, *Manufacturer's Negligence of Design or Directions for Use of a Product*, 71 YALE L.J. 816, 818 (1962) (quoting 2 HARPER & JAMES, TORTS § 28.4, at 1542 (1956)); See Birnbaum *supra* note 44, at 649. Professor Birnbaum states that "the risk-utility balancing test is but a detailed version of Judge Learned Hand's negligence calculus." *Id.* (citing *United States v. Carroll Towing Co.*, 159 F.2d 169, 173 (2d Cir. 1947)).

¹¹⁶ Noel, *supra* note 115, at 818.

¹¹⁷ The tortuous development of strict tort liability in California illustrates how the bench, bar, and litigants have been frustrated by uncertainty in interpreting and understanding strict liability. See generally Birnbaum, *supra* note 44, at 602-10; Hoenig, *Product Designs and Strict Tort Liability: Is There A Better Approach?*, *supra* note 44, at 116-18. Initially, the California Supreme Court postulated that liability exists when a product "proves to have a defect that causes injury to a human being." *Greenman v. Yuba Power Prods.*, 59 Cal. 2d 57, 60, 377 P.2d 897, 900, 27 Cal. Rptr. 697, 700 (1963). In *Greenman*, the court seemed to link the notion of defectiveness with negligence by stating that the "[p]laintiff introduced substantial evidence that his injuries were caused by defective design and construction of the [product]. . . . The jury could therefore reasonably conclude that the manufacturer negligently constructed the product." *Id.* at 60, 377 P.2d at 899, 27 Cal. Rptr. at 699 (emphasis in original). Shortly after *Greenman*, section 402A of the Restatement (Second) of Torts established liability for a "defective condition unreasonably dangerous to the user or consumer." The California court, however, later repudiated the Restatement test of strict liability because the words "unreasonably dangerous" supposedly connoted negligence and "burdened the injured plaintiff" with proof of the element of unreasonable danger. *Cronin v. J.B.E. Olsen Corp.*, 8 Cal. 3d 121, 132-33, 501 P.2d 1153, 1161-62, 104 Cal. Rptr. 433, 441-42 (1972). Under *Cronin*, the term defect was to be the prevailing test. This development was sharply criticized. See Birnbaum, *supra* note 44, at 603; Hoenig, *Product Designs and Strict Tort Liability: Is There A Better Approach?*, *supra* note 44, at 116-17. Subsequently, the California court adopted a two-pronged test in *Barker v. Lull Eng'r Co.*, 20 Cal. 3d 413, 432, 573 P.2d 443, 455, 143 Cal. Rptr. 225, 237 (1978), which employs either the consumer expectation test or risk-utility weighing. In the latter case, if a plaintiff proves that the design caused the injury, the burden shifts to the defendant to prove that the benefits of the challenged design outweigh the risk of danger inherent in such design. See *id.* at 431, 573 P.2d at 455, 143 Cal. Rptr. at 237. Professor Birnbaum correctly suggested that the *Barker* test, relying as it does upon a risk-utility analysis, "betrays the

criteria to have content and to be understood, why abandon negligence in the first place? Why not openly admit that when risk-utility balancing forces juries to consider the propriety of a manufacturer's design decisions in terms of benefits, risks, design alternatives, and trade-offs, the jury is really determining whether the manufacturer acted reasonably?¹¹⁸

Strict Liability Label But Negligence Content?

The negligence orientation of the more popular strict liability tests also is apparent in crashworthiness cases.¹¹⁹ Three recent decisions, however, illustrate the essentially negligence complexion of the basic inquiry as well as the doctrinal tension resulting from this position.

In *Turner v. General Motors Corp.*,¹²⁰ the plaintiff claimed that an automobile which had overturned was uncrashworthy because enhanced injuries were sustained when the roof caved in during the accident. The Supreme Court of Texas, ruled that crashworthiness design cases are subject to rules of strict liability and that the appropriate test for strict liability was "risk/utility balancing."¹²¹ The *Turner* court formulated a model jury instruc-

underlying negligence calculus" inherent in the balancing test. Birnbaum, *supra* note 44, at 609. Developments in California, therefore, appear to have proceeded in a circular pattern during a relatively brief period. These wide policy swings have caused confusion, uncertainty, and frustration. While it appears that strict products liability can be explained only by reference to negligence principles, the California court has attempted to distinguish negligence concepts by declaring that in strict liability cases the jury's focus must shift from conduct to the product. In reality, however, the jury must consider the manufacturer's conduct when it balances risk-utility factors. "Conceptually and analytically, this approach bespeaks negligence." Birnbaum, *supra* note 44, at 609-10. The shift in focus is "nothing more than semantic artifice." *Id.* at 648.

¹¹⁸ Professor Birnbaum has succinctly stated:

The ineluctable conclusion is that the competing factors to be weighed under a risk-utility balancing test invite the trier of fact to consider the alternatives and risks faced by the manufacturer and to determine whether in light of these he exercised reasonable care in making the design choices he did. Instructing a jury that weighing factors concerning conduct and judgment must yield a conclusion that does not describe conduct is confusing at best.

Birnbaum, *supra* note 44, at 648; see Hoenig, *Product Designs and Strict Tort Liability: Is There A Better Approach?*, *supra* note 44, at 121 ("In design cases much more than the product is impugned. The designer's conduct is impugned as well, for the allegations necessarily question the manufacturer's balancing of the harm against the utility of the product in the light of industry standards.").

¹¹⁹ See, e.g., note 43 *supra*, and cases cited therein.

¹²⁰ 584 S.W.2d 844 (Tex. 1979).

¹²¹ *Id.* at 847. The *Turner* court stated, without further explanation, that the applica-

tion that defines a defectively designed product as one that is "unreasonably dangerous as designed, taking into consideration the utility of the product and the risk involved in its use."¹²² Considering the negligence origins of risk-utility balancing previously discussed,¹²³ did the Texas court adopt a negligence-oriented test disguised as strict liability? Some members of the court thought so. Two dissenting judges in *Turner* asserted that the majority opinion "merges strict liability into negligence liability, and for all practical purposes abolishes strict liability in tort as to defective design."¹²⁴ The dissent perceived that a jury's consideration

tion of strict liability principles to crashworthiness cases was a "logical extension of the rationale" of its prior decisions. *Id.* at 848; see *Henderson v. Ford Motor Co.*, 519 S.W.2d 87, 92-94 (Tex. 1974); *Pittsburgh Coca-Cola Bottling Works v. Ponder*, 443 S.W.2d 546, 547-49 (Tex. 1969). Quoting the Seventh Circuit, the court concluded that "[t]here is no rational basis for limiting the manufacturer's liability to those instances where a structural defect has caused the collision and resulting injury." 584 S.W.2d at 848 (quoting *Huff v. White Motor Corp.*, 565 F.2d 104, 109 (7th Cir. 1977)).

¹²² 584 S.W.2d at 847 n.1. The court fashioned the following instruction to be given to the jury in strict liability cases based on design defects:

SPECIAL ISSUE NO. 1

Do you find from a preponderance of the evidence that at the time the [product] in question was manufactured by [the manufacturer] the [product] was defectively designed?

By the term "defectively designed" as used in this issue is meant a product that is unreasonably dangerous as designed, taking into consideration the utility of the product and the risk involved in its use.

Id. The court announced that the jury was to be directed in general terms to consider the utility of the product and the risks involved in its use. *Id.* at 847. In declaring this general instruction, the court eliminated the bifurcated consumer expectation/prudent manufacturer test which was created in *Henderson v. Ford Motor Co.*, 519 S.W.2d 87, 92 (Tex. 1974) and *General Motors Corp. v. Hopkins*, 548 S.W.2d 344, 351 (Tex. 1977). The *Turner* court held that "henceforth in the trial of strict liability cases involving design defects the issue and accompanying instruction will not include either the element of the ordinary consumer or of the prudent manufacturer; to the extent of any conflict in such respects, *Henderson* and *Hopkins* are overruled." 584 S.W.2d at 847. The court was persuaded "by the inconclusiveness of the idea that jurors would know what ordinary consumers would expect in the consumption or use of a product, or that jurors would or could apply any standard or test outside that of their own experience and expectations." *Id.* at 851. See generally Casenote, *Products Liability—"Crashworthiness," Strict Liability and the Demise of the Henderson Bifurcated Test in Design Defect Cases—Special Issues Will No Longer Define "Unreasonably Dangerous" But Will Require Balancing of Utility and Risk*, *Turner v. General Motors Corp.*, 584 S.W.2d 884 (1979), 11 TEX. TECH. L. REV. 953, 956-58, 966-70 (1980).

¹²³ See notes 115-118 and accompanying text *supra*.

¹²⁴ 584 S.W.2d at 853 (Campbell, J., concurring in part and dissenting in part). The dissenting judges preferred the Restatement's consumer expectation test since it focused solely upon the consumer's contemplation of the danger and not upon what the reasonable manufacturer contemplates. *Id.* at 854 (Campbell, J., concurring in part and dissenting in part). They considered the consumer expectation inquiry a true strict liability formulation. *Id.* (Campbell, J., concurring in part and dissenting in part). This view was rejected by the

whether a product is unreasonably dangerous involves a determination whether the manufacturer acted prudently—a *negligence* inquiry.¹²⁶ The doctrinal tensions reflected in the *Texas* court's struggle to define strict liability lead to striking functional results. The *Turner* majority's decision to adopt a negligence-oriented test, albeit disguised as strict liability, to resolve design cases fundamentally was correct. The court's insistence on labeling the theory "strict liability," however, was unfortunate because confusion regarding the real nature of the inquiry is likely to be further perpetuated. At the same time, the dissent correctly identified the negligence flavor of the majority's test, but incorrectly chose to reject it in favor of a form of liability intolerable to the law.

A second recent case, *Ford Motor Co. v. Hill*,¹²⁶ reflects a court's candor in recognizing the propriety of a negligence analysis in crash design cases. Despite such intellectual honesty, the *Hill* court adopted a strict liability formulation. The court held that in all design cases, including second collision design cases, a claimant may sue under both strict liability and negligence theories. Nonetheless, the court frankly conceded the fundamental negligence focus of crashworthiness design inquiries: "[i]t appears that analysis of whether a product is in a defective condition unreasonably dangerous to the user involves a negligence analysis in a 'design defect' case, unlike the analysis ordinarily required in a 'manufacturing flaw' situation."¹²⁷ The court concluded, however, that "this does

Supreme Court of Oregon in *Phillips v. Kimwood Mach. Co.*, 269 Or. 485, 493, 525 P.2d 1033, 1037 (1974), on the ground that the two tests are virtually identical. The *Phillips* court reasoned that "the two standards are the same because a seller acting reasonably would be selling the same product which a reasonable consumer believes he is purchasing." *Id.*

¹²⁶ 584 S.W.2d at 854 (Campbell, J., concurring in part and dissenting in part).

¹²⁶ [1981] PROD. LIAB. REP. (CCH) ¶ 9026 (Fla. 1981). In *Hill*, a truck traveling on a wet highway with bald tires was overloaded with over 4,000 pounds of gasoline and oil. The truck skidded and spun around backwards onto the median strip of the highway. The heavy tank part of the trunk was torn loose when the rear wheels dug into the soft median. The tank became embedded deeply in the median and had stopped when the still moving cab slammed into the tank, causing the release of two latch hooks. In "whiplike" fashion the hinged cab snapped open and then shut again. *Ford Motor Co. v. Hill*, 381 So. 2d 249, 250 (Fla. Dist. Ct. App. 1979), *aff'd*, [1981] PROD. LIAB. REP. (CCH) ¶ 9026 (Fla. 1981). The plaintiff alleged that the design of the latching hooks which secured the hinged cab was defective. [1981] PROD. LIAB. REP. (CCH) ¶ 9026, at 20,862. The allegations of design defect centered on the two parallel lever rods which secured the latch hooks of the cab. The plaintiff contended that the latch hooks should have been connected to the lever rods in opposite directions. The plaintiff alleged that if this had been the design, only one hook would have been released. *Id.*

¹²⁷ *Id.* at 20,863.

not mean it is erroneous to apply the doctrine of strict liability to design defect cases."¹²⁸ Apparently, the court, despite its candid concession about "negligence analysis," was motivated by a desire not to differentiate between design and manufacturing defects.¹²⁹ The *Hill* court, however, concluded that the pattern jury instruction on products liability required improvement to cover the inadequacies of the charge on design responsibilities.¹³⁰

The *Hill* case, in effect, signifies that "negligence analysis" is really the appropriate core inquiry in crashworthiness design claims notwithstanding that Florida law will continue to refer to the legal theory as "strict liability." While the court's candor is refreshing, its choice of label is somewhat unfortunate. Trial judges, lawyers, and litigants will continue to be uncertain whether a distinction between the two theories exists. Moreover, this nebulous dichotomy may be confusing to jurors who receive double charges when both negligence and strict liability theories are asserted. Hopefully, upon closer scrutiny, such ambiguity can be dispelled, and the true negligence complexion of the design inquiry will prevail.

In the third case, *Leichtamer v. American Motors Corp.*,¹³¹ the Supreme Court of Ohio adopted a form of strict liability based upon the "consumer expectations" test contained in section 402A of the Restatement.¹³² In *Leichtamer*, a jeep occupied by four "off-road" enthusiasts was upended in a "pitch-over" accident. The vehicle landed upside down causing two injuries and two deaths. The

¹²⁸ *Id.* The court felt that it would be a "better rule" to apply strict product liability principles to "all manufactured products" regardless of whether a design or manufacturing defect is in issue. *Id.* at 20,864.

¹²⁹ See note 128 *supra*. The *Hill* court quoted with approval a portion of the opinion in *Huff v. White Motor Corp.*, 565 F.2d 104, 109 (7th Cir. 1977), in which the Seventh Circuit refused to distinguish accident causation and second collision liability. [1981] PROD. LIAB. REP. (CCH) ¶ 9026, at 20,863. Similarly, the court quoted a Nebraska case that refused to differentiate design and manufacturing defects. *Id.* at 20,864. One could conclude, therefore, that the court simply wanted one test to apply to both design and manufacturing defects. Indeed, this would explain the court's mandate to draft a new jury instruction which sufficiently charges on design issues.

¹³⁰ [1981] PROD. LIAB. REP. (CCH) ¶ 9026, at 20,864 n.4.

¹³¹ 67 Ohio St. 2d 456, 424 N.E.2d 568 (1981).

¹³² Section 402A of the Restatement imposes strict liability where a product is in a "defective condition unreasonably dangerous" to the user. The Restatement commentary specifies that for a product to be unreasonably dangerous, "the article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge to the community as to its characteristics." RESTATEMENT (SECOND) OF TORTS § 402A, Comment i (1965).

plaintiffs sued the manufacturer for enhanced injuries contending that the vehicle's rollbar had collapsed because of weakness of the sheet metal housing to which it was attached. The manufacturer asserted that the rollbar was an optional device provided solely for protection in siderolls and not pitchovers.¹³³

The *Leichtamer* court, in a divided opinion, rejected the defendant's contention that strict liability should *not* be used to resolve a crashworthiness design claim.¹³⁴ The court, however, was troubled by the "cloud of doubt" raised by Dean Prosser concerning section 402A's inapplicability to design cases.¹³⁵ The noted torts scholar had observed that product design liability, "though it may occasionally be called strict, appears to rest primarily upon a departure from proper standards of care, so that the tort is essentially a matter of negligence."¹³⁶ Nevertheless, the majority overcame this significant conceptual problem by noting that the "vast weight of authority" supports both strict liability and negligence suits for design defects.¹³⁷ Indeed, a spirited rationale was offered by the court in favor of the consumer expectations test,¹³⁸ a standard, however, which has been sharply criticized elsewhere.¹³⁹

¹³³ 424 N.E.2d at 571-72. The *Leichtamer* court rejected the defendant's argument that the rollbar was provided solely for a sideroll. The court charged the defendant with knowledge that pitchovers were foreseeable, and declared that "[a] roll bar should be more than mere ornamentation," *id.* at 576, even though the manufacturer is "under no obligation to design a 'crash proof' vehicle," *id.* at 575-76.

¹³⁴ *See id.* at 575. The *Leichtamer* court felt that permitting a distinction between mis-manufacture and design defect cases "would only provoke needless questions of defect classification." *Id.* In this case, where the manufacturer had produced a vehicle for a certain use, it was more in line with the policy underlying strict products liability to place the primary responsibility on the manufacturer. *Id.*

¹³⁵ *Id.* It is significant that Dean Prosser was the reporter for the Restatement (Second) of Torts whose test the Ohio court intended to adopt.

¹³⁶ [1981] PROD. SAFETY & LIAB. REP. (BNA) 655 (quoting W. PROSSER, HANDBOOK OF THE LAW OF TORTS 644 (4th ed. 1971)).

¹³⁷ 424 N.E.2d at 575.

¹³⁸ *Id.* at 576-77. The *Leichtamer* court reasoned that the concept of unreasonable danger is an essential element of the strict liability claim since a product cannot be considered defective simply because it can produce injury. The core proposition behind the test adopted by the court is that "a product may be found defective in design if the plaintiff demonstrates that the product failed to perform as safely as an ordinary consumer would expect when used in an intended or reasonably foreseeable manner." *Id.* at 576 (quoting *Barker v. Lull Eng'r Co.*, 20 Cal. 3d 413, 429, 573 P.2d 443, 454, 143 Cal. Rptr. 225, 236 (1978)). The court also stated that the consumer expectation test recognizes the legitimacy of a fundamental concept in tort law—the protection of the individuality of persons. 424 N.E.2d at 577.

¹³⁹ *See, e.g.*, UPLA § 104(B), and Analysis, reprinted in 44 Fed. Reg. 62,714, 62,724 (1979) (consumer expectations test too subjective); Birnbaum, *supra* note 44, at 611-18; von

By defining "defective" in terms of the expectations of an ordinary consumer, the Ohio court adopted a pure test of consumer expectations, differing somewhat from the combined tests adopted by other courts employing the unreasonably dangerous or reasonable expectations measures of liability. For example, the Supreme Court of Washington has indicated that the determination of the reasonable expectations of the ordinary consumer involves risk-utility balancing.¹⁴⁰ The Supreme Court of New Jersey, however, formulated a standard that combines a "not reasonably suitable and safe" criterion with the notion of failure "to perform . . . to the user's reasonable expectation" of safety.¹⁴¹ In contrast, the Supreme Court of Oregon simply equates the consumer expectations test with the reasonably prudent manufacturer standard.¹⁴² Indeed, most jurisdictions combine the expectations rationale with negligence-oriented risk-utility balancing, thereby giving some negligence content to the strict liability formulation. Although the connection with negligence may not be explicit, even a pure version of the consumer expectations standard inevitably must rely upon negligence-based concepts of reasonableness. In fact, the consumer expectations rationale is merely the manner chosen by the drafters of the Restatement to explain section 402A's reference to an unreasonably dangerous product. Obviously, the notion of unreasonable danger traces its heritage to the law of negligence. This inescapable nexus with negligence apparently motivated the drafters to clarify section 402A's intent by providing that the seller may be held liable despite his exercise of all possible care, a standard which is preposterous when applied to design cases. Little wonder, then, that the Ohio court, in *Leichtamer*, was troubled by Dean Pros-

Hülsen, *supra* note 44, at 467-69 (consumer expectations test questions objectivity and poses danger of hindsight jury evaluations); Wade, *supra* note 44, at 829 (in many situations consumers would not know what to expect).

¹⁴⁰ *Seattle-First Nat'l Bank v. Tabert*, 86 Wash. 2d 145, 154, 542 P.2d 774, 779 (1975) (en banc). In determining the reasonable expectations of the ordinary consumer the Supreme Court of Washington considered the "relative cost of the product, the gravity of the potential harm from the claimed defect and the cost and feasibility of eliminating or minimizing the risk." *Id.*; see *Barker v. Lull Eng'r Co.*, 20 Cal. 3d 413, 431, 573 P.2d 443, 455, 143 Cal. Rptr. 225, 237 (1978).

¹⁴¹ See *Suter v. San Angelo Foundry & Mach. Co.*, 81 N.J. 150, 170-71, 406 A.2d 140, 150 (1979).

¹⁴² See *Phillips v. Kimwood Mach. Co.*, 269 Or. 485, 493, 525 P.2d 1033, 1036-37 (1974) (en banc) ("a manufacturer who would be negligent in marketing a given product, considering its risks, would necessarily be marketing a product which fell below the reasonable expectations of consumers who purchase it").

ser's explicit observation that design torts are essentially a matter of negligence.¹⁴³

The dissenting judges in *Leichtamer* appear to have perceived these problems, and therefore criticized strict liability as a theory for resolving crashworthiness cases. Negligence or reasonable care tests, the dissenters asserted, furnished the proper measure of liability. Indeed, it was noted that "courts have seemingly had a difficult time defining what Section 402A means."¹⁴⁴ Given the numerous variations of strict liability adopted by the courts, a major problem is "the lack of uniformity and understanding" of section 402A's descriptive term, "defective condition, unreasonably dangerous to the user." Courts, lawyers and jurors, on the other hand, "are familiar with concepts of negligence" and, such concepts are also "uniformly applied."¹⁴⁵ Another incisive point made by the dissenters is that manufacturers "cannot reasonably be required to design a car to withstand all collisions under any and all circumstances."¹⁴⁶ A reasonable care standard more clearly effectuates the principle that *reasonable* safety is what governs and better protects against the imposition of legal requirements which approach "accident-proofness."

The three cases discussed, each of which adopted strict tort liability as an applicable theory for crashworthiness design claims, clearly illustrate that strict liability has neither a common definition, nor a uniform application. Moreover, the cases indicate that negligence-oriented reasonableness criteria must be applied in crash design cases regardless of the strict liability label. It is unfortunate that much confusion and uncertainty has resulted from the judiciary's effort to retain a theory which poorly fits design cases when the perfectly sound and manageable theory of negligence exists, which would accommodate all interests.¹⁴⁷ Whether strict liability for design cases is viewed as a form of overkill¹⁴⁸ or as a form of liability which is really not so strict,¹⁴⁹ some courts seem unal-

¹⁴³ *Leichtamer v. American Motors Corp.*, 67 Ohio St. 2d 456, 424 N.E.2d 568, 575 (1981).

¹⁴⁴ 424 N.E.2d at 584 (Holmes, J., dissenting).

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at 583-84.

¹⁴⁷ See notes 94-100 and accompanying text *supra*.

¹⁴⁸ See UPLA § 104, reprinted in 44 Fed. Reg., 62,714, 62,724 (1979).

¹⁴⁹ Both the reasonably prudent manufacturer and the risk-utility balancing tests obviously involve basic negligence concepts. See notes 112-118 and accompanying text *supra*. To the extent that the consumer expectation test is combined with or defined by risk-utility

terably disposed to retain the concept. If they continue to do so, it should at least be conceded openly that the core inquiry must hinge upon reasonableness factors. Such judicial candor would alleviate the creation of "obfuscatory tests that can only confuse jurors and deny litigants a consistently fair and just result."¹⁵⁰ In any event, the courts should strongly disavow the application of any form of design strict liability that imposes crashworthiness culpability despite the seller's exercise of all possible care.¹⁵¹ Such an absolute and illogical measure of design responsibility has no place in a rational legal system premised upon fault. Indeed, it is counter-productive from a policy standpoint because it nullifies the manufacturer's incentive to exercise a high degree of care. If a manufacturer is going to be held liable under strict liability despite exercising all possible care, why make the effort? The law simply cannot penalize the highly prudent manufacturer by saddling him with multimillion dollar liabilities without making him an insurer or abandoning fault and creating a compensation system. Thus, the Restatement's formulation imposing liability notwithstanding the exercise of all possible care is absurd when literally applied to design cases. Reasonable prudence ought to be rewarded—not penalized.

Reasonableness Criteria Illustrated

Fortunately, many courts deciding crashworthiness design cases seem to be applying reasonableness criteria regardless of

weighing, it also involves negligence criteria. Moreover, the pure "consumer expectations" standard is tantamount to the reasonably prudent seller test "because a seller acting reasonably would be selling the same product which a reasonable consumer believes he is purchasing." *Phillips v. Kimwood Mach. Co.*, 269 Or. 485, 493, 525 P.2d 1033, 1037 (1974). *See also* W. PROSSER, *HANDBOOK OF THE LAW OF TORTS* 659-60 (4th ed. 1971). Thus, "a manufacturer who would be negligent in marketing a given product, considering its risks, would necessarily be marketing a product which fell below the reasonable expectations of consumers who purchase it. The foreseeable uses to which a product could be put would be the same in the minds of both the seller and the buyer unless one of the parties was not acting reasonably." 269 Or. at 493, 525 P.2d at 1037. Minimally, an expectations test obviously entails notions of reasonableness and practical limitations like state of the art. This is no doubt why the Restatement's expectations standard is expressed merely as an explanation for section 402A's term "unreasonably dangerous." *RESTATEMENT (SECOND) OF TORTS*, § 402A, Comment i (1965). Under a consumer expectations test, design guilt inevitably must focus upon such reasonableness factors as state of the art because "logically, an ordinary consumer cannot expect more safety than was technically and economically feasible at the time when the product was marketed." von Hülsen, *supra* note 44, at 468.

¹⁵⁰ Birnbaum, *supra* note 44, at 649.

¹⁵¹ *See* *RESTATEMENT (SECOND) OF TORTS* § 402A(2)(a) (1965).

whether the theory involved is negligence or strict tort liability. Several cases illustrate this desirable trend which is consistent with legal realities. In *Dreisonstok v. Volkswagenwerk, A.G.*,¹⁵² a 1968 van-type vehicle having a snub-nosed front end collided with a utility pole at 40 miles per hour. The injured passenger sued the manufacturer and importer contending that the defendants were negligent because of the "want of crashworthiness of its vehicle."¹⁵³ The trial judge concluded that the manufacturer was negligent because the vehicle's design did not provide "sufficient energy-absorbing materials or devices" or "crush space" to protect "the integrity of the passenger compartment" in front-end impacts at 40 miles per hour.¹⁵⁴

The Court of Appeals for the Fourth Circuit, however, reversed and remanded with directions to enter judgment in favor of defendants.¹⁵⁵ The Fourth Circuit commented upon the essential policy considerations in enhanced injury cases. Assuming crashworthiness claims to be actionable, the court stated that the mere frequency or feasibility of collisions is not sufficient in and of itself to create a duty on the part of a manufacturer to design its cars to withstand such collisions *under any circumstances*.¹⁵⁶ Moreover,

¹⁵² 489 F.2d 1066 (4th Cir. 1974).

¹⁵³ *Id.* at 1068. The trial court's dismissal of a claim that the allegedly negligent design of the gearshift location caused the accident was not an issue on appeal.

¹⁵⁴ *Id.* at 1068-69. The trial court found that there were injuries over and above those which the plaintiff might have incurred absent the defect. For the purposes of this discussion, the fact that *Dreisonstok* was decided under negligence theory is of no significance. The court indicated that negligence has been recognized as a "correct basis" in design cases and, in any event, "it makes little or no real difference whether liability is asserted on grounds of negligence, warranty or strict liability; the applicable principles are roughly the same in any case." *Id.* at 1068 n.2. Moreover, recognizing the universality of the court's analytical approach, many courts confronting crashworthiness issues under strict tort liability cite and quote the *Dreisonstok* opinion with approval. *E.g.*, *Curtis v. General Motors Corp.*, 649 F.2d 808, 811 (10th Cir. 1981) (construing *Dreisonstok* as a bastion against the threat that consumer choice in the market will be diminished by the exclusion of all but the safest designs); *Fox v. Ford Motor Co.*, 575 F.2d 774, 783 (10th Cir. 1978) (noting that use of a particular design to create a unique feature and attract buyers is reasonable manufacturer conduct); *Daly v. General Motors Corp.*, 20 Cal. 3d 725, 747, 575 P.2d 1162, 1175, 144 Cal. Rptr. 380, 393 (1978) (citing *Dreisonstok*'s recognition that a product must be considered as an "integrated whole").

¹⁵⁵ 489 F.2d at 1076.

¹⁵⁶ *Id.* at 1070 (emphasis in original). The *Dreisonstok* court emphasized the well-settled distinction between foreseeability and duty, *id.* at 1070 n.9, and further asserted:

Were foreseeability of collision the absolute litmus test for establishing a duty on the part of the car manufacturer, the obligation of the manufacturer to design a crash-proof car would be absolute, a result that *Larsen* itself specifically repudiates. After all, "[N]early every accident situation, [involving an automobile] no

the panel asserted that foreseeability is not to be equated with duty because the manufacturer would be required to build cars which are crashproof. The *Dreisonstok* court indicated that a primary consideration in crashworthiness cases is the element of unreasonable risk because it would be patently unreasonable to require a manufacturer to provide for every conceivable use or misuse of a vehicle. Therefore, the court concluded, liability may be imposed "only when an unreasonable danger is created."¹⁵⁷

The determination of whether a product is unreasonably dangerous, according to the court, involves a balancing of the likelihood of harm and the gravity of potential harm "against the burden of the precautions which would be effective to avoid the harm."¹⁵⁸ The Fourth Circuit noted that among the several factors involved in this test is the inverse correlation between the likelihood of harm and the obviousness of the danger. Harm, whether latent or patent, becomes more unlikely as the danger becomes more obvious to the user.¹⁵⁹ Thus, the court reasoned, when the risk is one that anyone immediately would recognize and avoid, the manufacturer's design rationally cannot be considered "unreasonably dangerous."¹⁶⁰ Also important, stated the court, is a consideration of the purposes and intended use of the article since it is well known that "utility of design and attractiveness of the style of the car are elements which car manufacturers seek after and by which buyers are influenced in their selections."¹⁶¹ Thus, the court posited that in every case "the utility and purpose of the particular type of vehicle will govern, in varying degree, the standards of safety to be observed in its design."¹⁶² Another significant factor

matter how bizarre, is 'foreseeable' if only because in the last fifty years drivers have discovered just about every conceivable way of wrecking an automobile."

Id. at 1070.

¹⁵⁷ *Id.* (quoting Noel, *Manufacturer's Negligence of Design or Directions for Use of a Product*, *supra* note 115, at 818). Whether or not an unreasonable danger has been created is determined by a risk-utility balancing approach. The *Dreisonstok* court quoted the language of general negligence principles to define the inquiry as a "balancing of the likelihood of harm, and the gravity of harm if it happens, against the burden of the precautions which would be effective to avoid the harm." 489 F.2d at 1071 (footnote omitted).

¹⁵⁸ 489 F.2d at 1071.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.* (quoting Noel, *supra* note 115, at 836).

¹⁶¹ *Id.* at 1071-72.

¹⁶² *Id.* at 1072. The court noted the express recognition of different types of vehicles in the National Traffic and Motor Vehicle Safety Act of 1966, 15 U.S.C. §§ 1381-1431 (1976). The Act directs the Secretary of Transportation, in establishing federal motor vehicle safety standards, to "consider whether any such proposed standard is reasonable, practicable and

identified by the court is the price of the vehicle. In this regard, the court observed that it would be unreasonable and impractical for courts to require the adoption of a change in design that would "take an article out of the price range of the market to which it was intended to appeal."¹⁶³ Finally, the court added that the particular circumstances of the accident must be considered. A high-speed collision with a large truck, for example, could not present a reasonable basis for liability when the smaller vehicle collapses.¹⁶⁴ Having considered all of the foregoing factors, the *Dreisonstok* court found no violation of reasonable care in the design of the vehicle. The nature of the vehicle's design was unique and utilitarian and the front end characteristics were apparent.¹⁶⁵ Moreover, the court stated that the collision at 40 miles per hour was beyond the pale of the manufacturer's duty because the dangers inherent in such high-speed collisions are not risks against which the manufacturer must protect the occupant.¹⁶⁶

In *Dyson v. General Motors Corp.*,¹⁶⁷ the plaintiff alleged that a defective roof design caused enhanced injuries when the car overturned. Although the court deemed the pleadings to state a crashworthiness cause of action, it indicated that not every such

appropriate for the particular type of motor vehicle or item of motor vehicle equipment for which it is prescribed." 15 U.S.C. § 1392(f)(3) (1976).

¹⁶³ 489 F.2d at 1072-73.

¹⁶⁴ *Id.* at 1073. The Fourth Circuit agreed with an earlier federal decision, *Dyson v. General Motors Corp.*, 298 F. Supp. 1064 (E.D. Pa. 1969). See notes 167-170 and accompanying text *infra*. In *Dyson*, the automobile in which the plaintiff was riding overturned. The plaintiff claimed enhanced injuries because the roof allegedly failed to support, even partially, the weight of the overturned car. Although it denied the defendant's motion to dismiss, the court stated unequivocally that "it could not reasonably be argued that a car manufacturer should be held liable because its vehicle collapsed when involved in a head-on collision with a large truck, at high speed." 298 F. Supp. at 1073; *cf.* *Polk v. Ford Motor Co.*, 529 F.2d 259, 269 (8th Cir.) (manufacturer not liable for car "which will not withstand a fall from a cliff"), *cert. denied*, 426 U.S. 907 (1976); *Volkswagen of America, Inc. v. Young*, 272 Md. 201, 217, 321 A.2d 737, 745 (1974) (no design liability for auto which cannot withstand high-speed, head-on collision with truck). This, however, may raise the question of what constitutes a high-speed collision. The Department of Transportation formulates a statistic known as the "equivalent barrier test speed distribution," which sets forth the mean speed at which 50% of deaths and injuries occur in frontal collisions. The mean barrier speed for fatalities is 33 miles per hour, and for serious injuries such speed is 26 miles per hour. See Hoening, *Understanding "Second Collision" Cases in New York*, 20 N.Y.L.F. 29, 66-68 (1974). See generally note 3 *supra*; see also *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1076 (4th Cir. 1974) (mean fatality velocity only 33 miles per hour).

¹⁶⁵ *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1073-74 (4th Cir. 1974).

¹⁶⁶ *Id.* at 1075-76.

¹⁶⁷ 298 F. Supp. 1064 (E.D. Pa. 1969).

claim should be submitted to a jury.¹⁶⁸ Additionally, the *Dyson* court properly recognized that in crash design cases, consideration must be accorded to the particular character of vehicle involved. Design defect claims should not be viewed in a vacuum but in the light of conditions which exist in other vehicles of *the same class or configuration*. It is imperative that a court "differentiate between various models of automobiles and recognize the inherent characteristics of each."¹⁶⁹ As stated by the *Dyson* court:

The manufacturer cannot be expected to provide a convertible which is as safe in roll-over accidents as a standard four-door sedan with center posts and full-door frames. But the manufacturer can be expected to provide a convertible which is as safe as it reasonably can be made, and which is not appreciably less safe than other convertibles. So, too, in the present case, the manufacturer was not necessarily under an obligation to provide a hardtop model which would be as resistant to roll-over damage as a four-door sedan; but the defendant was required, in my view, to provide a hardtop automobile which was a reasonably safe version of such model, and which was not substantially less safe than other hardtop models.¹⁷⁰

The court, therefore, must give full recognition to the size, weight, and other important characteristics of the vehicle involved and must judge the vehicle against *comparable* vehicles. This reasonableness factor does not depend upon the legal theory employed or the particular strict liability test adopted. It is implicit in the very nature of the crash design inquiry.

In *Seattle-First National Bank v. Tabert*,¹⁷¹ the Supreme Court of Washington observed that even under a consumer expectations theory of strict liability, the trier of fact is "to take into account the intrinsic nature of the product." Thus, for example, "[t]he purchaser of a Volkswagen cannot reasonably expect the same degree of safety as would the buyer of the much more expensive Cadillac."¹⁷² The Washington court stated that a determina-

¹⁶⁸ *Id.* at 1073.

¹⁶⁹ *Id.*

¹⁷⁰ *Id.* at 1073-74.

¹⁷¹ 86 Wash. 2d 145, 542 P.2d 774 (1975).

¹⁷² *Id.* at 154, 542 P.2d at 779. Remarkably similar is the statement by the Wisconsin Supreme Court in *Arbet v. Gussarson*, 66 Wis. 551, 225 N.W.2d 431 (1975) that "since the ordinary consumer would expect a Volkswagen to be less safe in an accident than, say, a Cadillac, the smallness of the car with the attendant danger would not *per se* render it inherently dangerous. Rather it must contain a dangerous defect whose presence an ordi-

tion of the reasonable expectations of the ordinary consumer involves consideration of a number of factors relating to risk-utility balancing. Accordingly, the following factors may be relevant: "the relative cost of the product, the gravity of the potential harm from the claimed defect, and the cost and feasibility of eliminating or minimizing the risk."¹⁷³ Additionally, the nature of the product or the nature of the claimed defect "may make other factors relevant on the issue."¹⁷⁴ It is clear, then, that numerous reasonableness considerations are very much at the core of a crashworthy design case.

In *Daly v. General Motors Corp.*,¹⁷⁵ a car driven by a person under the influence of alcohol collided with a highway fence and overturned, thereby ejecting its occupant. The car had been provided with seatbelts which were not worn and with door locks which were not used, despite exhortations to do so in the owner's manual. Although the primary issue before the Supreme Court of California was whether to adopt the doctrine of comparative negligence, it also considered a very important crashworthiness question: was it proper to instruct the jury on the plaintiff's failure to use the safety devices provided by the manufacturer? The plaintiff contended that in a strict liability case the jury should focus only upon the precise malfunctioning component claimed to be defective. The California court disagreed and upheld the instruction advising the jury to "consider all of the equipment on the vehicle including any features intended for the safety of the driver."¹⁷⁶ The court noted that the vehicle's overall design, including safety features, may make it crashworthy, thereby rendering it nondefec-

nary consumer would not reasonably expect." *Id.* at 557, 225 N.W.2d at 435 (discussing "consumer expectations" test under section 402A). Using the example of the Volkswagen, the Wisconsin court also linked the consumer expectations test with the obviousness or latency of the danger claimed. Thus, "where a plaintiff sues the manufacturer of a Volkswagen and complains that the car was designed too small to be safe . . . [s]uch a defect could hardly be said to be hidden." *Id.* Under a consumer expectations test, obvious conditions may well preclude liability. Thus, in *Vineland v. Empire Mach. Co.*, 119 Ariz. App. 502, 581 P.2d 1152 (Ct. App. 1978), the operator of an earthmoving machine could not maintain an action against the manufacturer based upon the absence of a protective rollover bar and seat belts because these conditions were not beyond the ordinary consumer's contemplation. *Id.* at 505, 581 P.2d at 1155. See also *Burkhard v. Short*, 28 Ohio App. 2d 141, 148-49, 275 N.E.2d 632, 637 (Ct. App. 1971) (no duty to passenger for obviously unpadded dashboard).

¹⁷³ *Seattle-First Nat'l Bank v. Tabert*, 86 Wash. 2d 145, 154, 542 P.2d 774, 779 (1975).

¹⁷⁴ *Id.*

¹⁷⁵ 20 Cal. 3d 725, 575 P.2d 1162, 144 Cal. Rptr. 380 (1978).

¹⁷⁶ *Id.* at 746, 575 P.2d at 1174, 144 Cal. Rptr. at 392.

tive. Thus, it was concluded, the issue of defective design is to be determined "with respect to the product as a whole."¹⁷⁷

Although strict liability rules were involved, the court stated:

Product designs do not evolve in a vacuum, but must reflect the realities of the market place, kitchen, highway, and shop. Similarly, a product's components are not developed in isolation, but as part of an integrated and interrelated whole. Recognizing that finished products must incorporate and balance safety, utility, competitive merit, and practicality under a multitude of intended and foreseeable uses, courts have struggled to evolve realistic tests for defective design which give weight to this necessary balancing. Thus, a number of California cases have recognized the need to "weigh" competing considerations in an overall product design, in order to determine whether the design was "defective."¹⁷⁸

The court emphasized the dangers of "piecemeal consideration of isolated components" and noted that "a design rendered safe in one situation may become more dangerous in others."¹⁷⁹ These factors necessarily compelled consideration of the product "as an integrated whole."¹⁸⁰ As demonstrated by the foregoing cases, a host of potential reasonableness factors should govern the resolution of crashworthiness claims. Phrased somewhat differently, "'unreasonableness' is an essential element of the plaintiff's case."¹⁸¹

¹⁷⁷ *Id.*

¹⁷⁸ *Id.* at 746, 575 P.2d at 1175, 144 Cal. Rptr. at 393.

¹⁷⁹ *Id.* at 747, 575 P.2d at 1175, 144 Cal. Rptr. at 393. In *Knippen v. Ford Motor Co.*, 546 F.2d 993, 999 n.7 (D.C. Cir. 1976), the court observed that "safety objectives themselves may be at cross purposes." For example, noted the court, occupant protection might dictate that "automobiles must have hard outer shells, but when such a vehicle collides with a pedestrian at high speed injury is unavoidable." *Id.* The *Knippen* court also observed that safety is not the exclusive consideration in designing an automobile. The designer must consider the "'utility and purpose of the particular type of vehicle'" and the "'price range of the market to which it is intended to appeal.'" *Id.* (quoting *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1072-73 (4th Cir. 1974)).

¹⁸⁰ *Daly v. General Motors Corp.*, 20 Cal. 3d 725, 747, 575 P.2d 1162, 1175, 144 Cal. Rptr. 380, 393 (1978).

¹⁸¹ *Knippen v. Ford Motor Co.*, 546 F.2d 993, 999 (D.C. Cir. 1976). In *Knippen*, the court stated:

Under the *Larsen* rule manufacturers are not held to the standard of insurers but only to a standard of reasonable care. Manufacturers are not required to eliminate all risks or to produce a crash-proof vehicle. They are required to eliminate unreasonable risks and to take reasonable steps to apply common sense factors to minimize the injurious effects of collisions. This rule is fair to manufacturers. If a manufacturer has acted reasonably it will not be liable under the duty established by *Larsen*.

The role of reasonableness is also well illustrated in *Bowman v. General Motors Corp.*¹⁸² In *Bowman*, a battle of experts ensued over the crashworthiness design of a 1966 passenger car that had burst into flames when struck in the rear by another vehicle. The jury found in favor of the manufacturer and the plaintiff filed post-trial motions for relief. At this juncture, the court had to consider whether the jury instructions on design liability were correct. This resulted in an evaluation of the role of the words "unreasonably dangerous" found in section 402A of the Restatement's version of strict liability. Did the words so "ring of negligence" that they undermined policies of strict liability?¹⁸³ The court's answer was in the negative.

In a design case, the *Bowman* court noted, the defect question "should be defined in terms of unreasonableness of danger."¹⁸⁴ The concept of defect or defective condition standing alone is inappropriate, has no independent meaning, and "is apt to prove misleading."¹⁸⁵ The unreasonably dangerous concept, properly formulated, therefore, "posits a risk-utility balancing test pursuant to which the jury makes a judgment as to the social acceptability of the conscious design choice trade-off."¹⁸⁶ After all, the jury's ultimate task is to decide whether the manufacturer provided "a reasonably safe compartment for transportation of occupants of motor vehicles; that is, one designed not to be crashproof or to provide absolute safety against all risks of the road, but to provide reasonable safety against the foreseeable risks of the road."¹⁸⁷ The *Bowman* court held that appropriate instructions will direct the jury to consider and balance a number of traditional factors inherent in risk-utility

Id.; e.g., *Volkswagen of America, Inc. v. Young*, 272 Md. 201, 219, 321 A.2d 737, 746 (1974). The same basic principles of reasonableness apply when the action is based upon an implied warranty. In such cases, liability is based upon the fact that the product is "not reasonably fit for its intended, anticipated or reasonably foreseeable use." *Elsasser v. American Motors Corp.*, 81 Mich. App. 379, 384, 265 N.W.2d 339, 342 (Ct. App. 1978). A similar analytical approach is employed under strict liability. In *Johnson v. American Motors Corp.*, 225 N.W.2d 57 (N.D. 1974), the North Dakota Supreme Court adopted strict tort liability under section 402A, but nonetheless discussed crashworthiness responsibilities under principles of "reasonableness" and "reasonable care." 225 N.W.2d at 62-66.

¹⁸² 427 F. Supp. 234 (E.D. Pa. 1977).

¹⁸³ *Id.* at 241.

¹⁸⁴ *Id.* at 242.

¹⁸⁵ *Id.*

¹⁸⁶ *Id.*

¹⁸⁷ *Id.* at 244.

weighing.¹⁸⁸ Such instructions, stressed the court, will also inform the jury that there is no duty to produce a crashproof automobile such as a car "built like a tank so that a passenger would escape injury even if the car were hit by a fast moving locomotive."¹⁸⁹ Thus, it was concluded in *Bowman* that the unreasonably dangerous concept is and "properly should remain" a part of strict liability law.¹⁹⁰

Consideration of reasonableness will often involve evidence of state of the art.¹⁹¹ *Larsen*, itself, spoke of state of the art as a reasonableness factor when describing the duty to furnish, under general negligence principles, a reasonably crashworthy vehicle.¹⁹² It is obvious that the crashworthiness design claim raises a question about the reasonableness of the defendant's design strategies¹⁹³ which, in turn, involves the issue whether, under the applicable state of the art, the car design unreasonably increased the risks of collision injury.¹⁹⁴ Indeed, state of the art is a relevant consideration under all major products liability theories.¹⁹⁵ Thus, in *Bruce v.*

¹⁸⁸ *Id.* at 243-45. The *Bowman* court stated, "[w]e concede that the *ratio decidendi* of a case thus submitted to the jury may be similar to that of the same case submitted on a negligence theory, and that it may be forcefully argued that some of the ingredients in the balancing formula are akin to considerations involved in negligence cases." *Id.* at 245 (footnote omitted). The court reasoned that although the balancing test "posited under § 402A is quite similar to the test ordinarily applied in negligence," the focus is different because the jury charge emphasizes the product rather than the manufacturer's conduct. *Id.* at 245 n.19.

¹⁸⁹ *Id.* at 243 n.16. The *Bowman* court noted that the manufacturer "had no obligation to use any particular design or the safest design which could be conceived of under the state of the art at the time, i.e., what was known." *Id.*

¹⁹⁰ *Id.* at 246. See also *Jeng v. Witters*, 452 F. Supp. 1349, 1356 (M.D. Pa. 1978), *aff'd mem.*, 591 F.2d 1335 (3d Cir. 1979).

¹⁹¹ See generally *O'Donnell*, *supra* note 25, at 630-61; *Raleigh*, *supra* note 25, at 253-68; *von Hülsen*, *supra* note 44, at 464-72.

¹⁹² *Larsen v. General Motors Corp.*, 391 F.2d 495, 502 (8th Cir. 1968). The duty of reasonable care in design "should be viewed in light of the risk." *Id.* at 503. All risks cannot be eliminated "nor can a crash-proof vehicle be designed under the present state of the art." *Id.*

¹⁹³ *E.g.*, *Roberts v. May*, 41 Colo. App. 82, 583 P.2d 305, 308 (Ct. App. 1978), *cert. denied*, 444 U.S. 918 (1979). See also *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1071 (4th Cir. 1974); *Bowman v. General Motors Corp.*, 427 F. Supp. 234, 243 n.16 (E.D. Pa. 1977).

¹⁹⁴ *Roberts v. May*, 41 Colo. App. 82, 583 P.2d 305, 308 (Ct. App. 1978), *cert. denied*, 444 U.S. 918 (1979).

¹⁹⁵ See *von Hülsen*, *supra* note 44, at 464-77. Dr. von Hülsen refers to "state of the art" as the "technical and scientific knowledge available to the manufacturer at the time of manufacture, to be applied, however, only in light of a balance between practical safety and economic considerations." *Id.* at 464 n.33. In *Balido v. Improved Mach., Inc.*, 29 Cal. App. 3d 633, 640, 105 Cal. Rptr. 890, 895 (Ct. App. 1972), the court stated that "[s]trict liability for deficient design . . . is premised on a finding that the product was unreasonably danger-

Martin-Marietta Corp.,¹⁹⁶ a grant of summary judgment to the manufacturer was affirmed by the appellate court where the plaintiffs alleged that an airplane manufacturer failed to design a crash-worthy aircraft made in 1952. The defendant made an uncontradicted showing that the claimed defect could not have been corrected within the then existing state of the art and that, when made, the plane had complied with all the applicable regulations. The court held, under the consumer expectations test, that the plaintiffs could not prove that a reasonable consumer "would expect a plane made in 1952 to have the safety features of one made in 1970."¹⁹⁷ Perhaps in recognition of the practical fact that claimed crashworthiness defects are virtually worthless at trial unless the jury is presented with substantial evidence that the product's design fell below the state of the art, claimants often try to show that vehicles made by others possessed superior features which should have mitigated the enhanced injury.¹⁹⁸ Where such evidence is weak, illogical, or unsubstantiated, the claimant may lose at trial or find his claim dismissed for want of proof of defective design.¹⁹⁹

ous for its intended use, and in turn, the unreasonableness of the danger must necessarily be derived from the state of the art at the time of design." *Id.* at 640, 105 Cal. Rptr. at 895.

¹⁹⁶ 544 F.2d 442 (10th Cir. 1976).

¹⁹⁷ *Id.* at 447.

¹⁹⁸ In claims involving the design of door latch mechanisms, plaintiffs have introduced expert testimony to show that latch designs of other manufacturers would have prevented the door from opening in the accident. *See, e.g.,* *Melia v. Ford Motor Co.*, 534 F.2d 795, 804 (8th Cir. 1976); *Bair v. American Motors Corp.*, 473 F.2d 740, 742 (3d Cir. 1973); *Walker v. International Harvester Co.*, 294 F. Supp. 1095, 1097 (W.D. Okla. 1969). Expert testimony tending to show that other manufacturers' designs were safer in a specific type of accident also has been used in side frame design cases. *See, e.g.,* *Dawson v. Chrysler Corp.*, 630 F.2d 950, 958 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981). Sometimes the plaintiff's evidence about other cars possessing superior designs focuses on noncomparable models. In these cases the evidence is flawed and may result in a judgment for the defendant. In *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066 (4th Cir. 1974), the court rejected the plaintiff's claim that a snub-nosed van should have the front structure of a passenger car sedan. *Id.* at 1075-76. Other cases have stressed that the plaintiff must employ similar models when using design comparisons to show the "state of the art." *See* *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1073-74 (E.D. Pa. 1969) (hardtop model must be compared with other hardtop models); *Ford Motor Co. v. Havlick*, 351 So. 2d 1050, 1052 (Fla. Dist. Ct. App. 1977) (Letts, J., dissenting) (plaintiffs improperly used luxury car designs to show "state of the art" although car involved was economy model).

¹⁹⁹ *E.g.,* *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1075-76 (4th Cir. 1974) (comparison of van design with passenger car design legally insufficient); *Jeng v. Witters*, 452 F. Supp. 1349, 1359 (M.D. Pa. 1978), *aff'd mem.*, 591 F.2d 1335 (3d Cir. 1979) (plaintiff failed to show that a safer alternative design was in use by others); *Olson v. Arctic Enterprises*, 349 F. Supp. 761, 765 (D.N.D. 1972) (proposed modifications for snowmobile were

State of the art criteria are reflected in the crashworthiness proof requirement that the plaintiff must show a feasible and practicable alternative design which would have avoided the injury claimed.²⁰⁰ Increasingly, the state of the art factor, like other judicially created products liability rules, is becoming a subject of statutory governance.²⁰¹ An Arizona statute, for example, precludes liability if a defendant proves that the allegedly defective design conformed to recognized design and manufacturing techniques complying with the state of the art at the time the product was sold.²⁰² Statutorily defined, state of the art is not couched solely in terms of existing "technical, mechanical, and scientific knowledge" but also in terms of what was "reasonably feasible for use at the time of manufacture."²⁰³ Thus, reasonableness is inherent in the concept of the feasibility of an alternative design.

In Nebraska, the manufacturer has available a state of the art defense measured by what was "generally recognized and prevailing" in the industry at the time the product was sold.²⁰⁴ Tennessee's²⁰⁵ and Indiana's²⁰⁶ defenses similarly relate to an industry standard. New Hampshire's defense pertains to "risks complained of by plaintiff" which were "not discoverable using prevailing research and scientific techniques under the state of the art" or using government regulatory procedures.²⁰⁷ Some states provide that conformity with the state of the art or compliance with government regulations creates a rebuttable presumption that the product was not defective. Both Colorado²⁰⁸ and Kentucky²⁰⁹ have such

unconvincing).

²⁰⁰ See, e.g., *Huddell v. Levin*, 537 F.2d 726, 737 (3d Cir. 1976); *Jeng v. Witters*, 452 F. Supp. 1349, 1359, 1361 (M.D. Pa. 1978), *aff'd mem.*, 591 F.2d 1335 (3d Cir. 1979); *Baker v. Chrysler Corp.*, 55 Cal. App. 3d 710, 716, 127 Cal. Rptr. 745, 749 (Ct. App. 1976). For a more complete discussion of the alternative design proof requirement, see notes 220-252 and accompanying text *infra*.

²⁰¹ See note 69 *supra*.

²⁰² ARIZ. REV. STAT. ANN. § 12-683(1) (Supp. 1980-1981). According to the Arizona statute, a manufacturer is not strictly liable if:

[t]he plans or designs for the product or the methods and techniques of manufacturing, inspecting, testing and labeling . . . conform with the state of the art at the time the product was first sold by the defendant.

Id.

²⁰³ ARIZ. REV. STAT. ANN. § 12-681(6) (Supp. 1980-1981).

²⁰⁴ NEB. REV. STAT. § 25-21,182 (1979).

²⁰⁵ TENN. CODE ANN. § 29-28-105 (1980).

²⁰⁶ IND. CODE ANN. § 34-4-20A-4 (Burns Supp. 1981).

²⁰⁷ N.H. REV. STAT. ANN. § 507-D:4 (Supp. 1979).

²⁰⁸ COLO. REV. STAT. § 13-21-403(1)(a)-(b) (Supp. 1980).

²⁰⁹ KY. REV. STAT. § 411.310(2) (Supp. 1980).

provisions. Tennessee law provides a presumption that a product complying with government regulations at the time of manufacture is not unreasonably dangerous.²¹⁰ Under these provisions, even if an occasional court creates so strict a form of strict liability that state of the art criteria are deemed irrelevant,²¹¹ the statute nevertheless would assure their consideration by the factfinder.

In the automobile crashworthiness area, state of the art or compliance with standards defenses will inevitably be very important factors because comprehensive federal motor vehicle safety standards affecting crash safety have been promulgated since 1968.²¹² Unless specifically exempted, automobile manufacturers must comply with the applicable national standards. Thus, a manufacturer's compliance with standards will frequently be admissible in a given case to show reasonable care or reasonable design²¹³ and, pursuant to state statutes like the ones mentioned above, such compliance might even be dispositive of the litigation.

Even without statutes, however, there is some well-reasoned precedent suggesting that a manufacturer's compliance with standards adopted by an expert governmental agency should not be easily discounted by expert testimony.²¹⁴ Indeed, there is inherent

²¹⁰ TENN. CODE ANN. § 29-28-104 (1980).

²¹¹ In *Horn v. General Motors Corp.*, 17 Cal. 3d 359, 367, 551 P.2d 398, 402, 131 Cal. Rptr. 78, 82 (1976), the court appeared to disregard the state of the art concept. It rejected the defendant's contention that the plaintiff had failed to show the product design varied from the state of the art. *Id.* One commentator, however, suggested that the court's holding was merely "luxuriant dicta" because the defense expert had conceded that the alternative design proposed by the plaintiff was feasible and would not have significantly affected the product's cost. O'Donnell, *supra* note 25, at 640.

²¹² See 49 C.F.R. § 571 (1980). The National Highway Traffic Safety Administration has issued many safety standards that are relevant factors when determining an automobile's "crashworthiness." For example, Standard No. 201 deals with occupant protection against "interior impacts." 49 C.F.R. § 571.201 (1980). Standard No. 202 specifies requirements for head restraints to reduce the frequency and severity of neck injuries. 49 C.F.R. § 571.202 (1980). Standard No. 203 provides requirements to minimize chest, neck, and facial injuries which may result from an impact with the steering control mechanism. 49 C.F.R. § 571.203 (1980). Many additional standards govern other crashworthiness features.

²¹³ See *Dawson v. Chrysler Corp.*, 630 F.2d 950, 954 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981); *Stonehocker v. General Motors Corp.*, 587 F.2d 151, 157 (4th Cir. 1978).

²¹⁴ In *McDaniel v. McNeil Laboratories, Inc.*, 196 Neb. 190, 241 N.W.2d 822 (1976), the claimant sued a drug manufacturer for injuries resulting from a drug which was claimed to be defective. *Id.* at 196, 241 N.W.2d at 824. The plaintiff's experts testified that a defect existed and that the warnings accompanying the drug were inadequate and incomplete. *Id.* at 199, 241 N.W.2d at 827. Defense experts testified to the contrary. *Id.* at 199, 241 N.W.2d at 828. The drug and warnings, however, had been approved by the Food and Drug Administration. *Id.* at 199-200, 241 N.W.2d at 828. Affirming the judgment and the trial court's

illogic in permitting expert agency decisions, reached after careful research or testing, to be neutralized in the courtroom by thin testimony of glib experts focusing on a particular accident.²¹⁵ One commentator succinctly states the dilemma:

It is patently absurd that the machinery of governmental standard setting should be observed through vigorous procedures, and that designers should be required to meet the mark of that standard, only to have their designs second guessed and their responsibility expanded case by case, perhaps inconsistently, in courtrooms by jurors with little or no expertise and in emotional settings affected too often by pitiful injuries and heartrending human suffering.²¹⁶

One partial solution, as suggested by a Nebraska case,²¹⁷ is to preclude an action in strict liability where there is compliance with

refusal to submit the case to the jury on a strict liability theory, the *McDaniel* court stated:

While approval by the Food and Drug Administration is not necessarily conclusive, its determinations, based upon the opinions and judgment of its own experts, should not be subject to challenge in a product liability case simply because some other experts may differ in their opinions as to whether a particular drug is reasonably safe, unless there is some proof of fraud or nondisclosure of relevant information by the manufacturer at the time of obtaining or retaining such federal approval.

Id. at 200, 241 N.W.2d at 828. Moreover, the court noted that the "issue was presented to the Food and Drug Administration in 1968. Its determination is persuasive and controlling in the absence of evidence that the determination was based upon inaccurate, incomplete, misleading or fraudulent information." *Id.* at 201, 241 N.W.2d at 828. In *Jones v. Hittle Serv., Inc.*, 219 Kan. 627, 549 P.2d 1383 (1976), the court asserted that the personal opinion of an expert, "qualified though he might be in the general field, cannot be considered 'substantial' evidence of a deficiency in the standard" where there is compliance with a substantial legislative standard. *Id.* at 633, 549 P.2d at 1391. See also *Bruce v. Martin-Marietta Corp.*, 544 F.2d 442, 446 (10th Cir. 1976) (plaintiffs' expert testimony conflicted with CAA regulations which were relied on by the court to affirm summary judgment in favor of airplane manufacturer).

One commentator illustrated the same principles in the automobile area regarding the airbag. Raleigh, *supra* note 25, at 261. He noted that if the airbag is not required:

[P]laintiffs may be expected to claim that manufacturers should have made it standard equipment anyway, and if the airbag is mandated, they may be expected to attempt to prove that manufacturers should have provided them last year, or last week, or five minutes before their client purchased his car.

Id.

²¹⁵ See, e.g., *Stonehocker v. General Motors Corp.*, 587 F.2d 151, 158-59 (4th Cir. 1978). See also note 35 *supra*.

²¹⁶ Raleigh, *supra* note 25, at 261 (footnote omitted). See also Henderson, *Judicial Review of Manufacturers' Conscious Design Choices: The Limits of Adjudication*, *supra* note 40, at 1531-34; text accompanying notes 50-64 *supra*.

²¹⁷ *McDaniel v. McNeil Laboratories, Inc.*, 196 Neb. 190, 200-01, 241 N.W.2d 822, 828 (1976). For a discussion of *McDaniel*, see note 214 *supra*.

mandatory government standards. If the claim is that, notwithstanding compliance with the government standard, something more should have been done, the claimant, in effect, calls into question the manufacturer's conduct. Thus, the allegation is actually that it was *negligent* not to do more. When the agency standard is challenged, the claimant is really impugning the decisions or conduct not only of the defendant-manufacturer but also the government, the expert agency, and perhaps the entire industry. Under these circumstances, the essence of the claim is the failure to exercise reasonable care. Thus, strict liability counts should be dismissed.²¹⁸

It should be apparent from the preceding cases that the same reasonableness factors normally found in negligence cases also appear in many strict liability cases. Strict liability, however, lacks uniformity, confuses trial judges, attorneys, litigants, and jurors, and possibly impresses upon the public the belief that negligence criteria are improper in a design claim based upon strict liability.²¹⁹ In reality, negligence criteria are quite good for design con-

²¹⁸ See Hoenig, *Compliance With Government Standards*, N.Y.L.J., Nov. 30, 1977, at 2, col. 3. The preclusion of strict liability when there is compliance with a standard does not conflict with the venerable pronouncement of Judge Learned Hand that "a whole calling may have unduly lagged in the adoption of new and available devices." The T.J. Hooper, 60 F.2d 737, 740 (2d Cir. 1932). This statement, made in a negligence case, simply means that a finding that a defendant has been negligent is not precluded by the fact that others in the industry also may have violated the standard of reasonable care. A claimant nevertheless might be permitted to prove that the defendant, as well as the industry, was negligent because reasonable care required greater precautions than were taken.

²¹⁹ An example of a court's aversion to negligence criteria in strict liability cases can be found in *Azzarello v. Black Bros. Co.*, 480 Pa. 547, 559-60 n.12, 391 A.2d 1020, 1027 n.12 (1978). In *Azzarello*, the court suggested that the jury should be instructed that the supplier of a product "is the guarantor of its safety." Moreover, the court posited that the product should "be provided with every element necessary to make it safe" and "without any condition that makes it unsafe." *Id.* The *Azzarello* court has been sharply criticized because it took the "unreasonably dangerous" determination away from the jury. See, e.g., Birnbaum, *supra* note 44, at 636-39 (decision is troubling because it precludes consideration by the jury of reasonableness); Henderson, *Products Liability*, 2 CORP. L. REV. 246, 248 (1979) (test proposed is absurd and unworkable). Another example of a court's reluctance to apply general negligence principles is *Barker v. Lull Eng'r Co.*, 20 Cal. 3d 413, 573 P.2d 443, 143 Cal. Rptr. 225 (1978), where the court held that once a plaintiff shows that the design, not the defect, caused the injury, the burden of proof shifts to the defendant to show that the design's advantages outweighed the disadvantages. *Id.* at 431, 573 P.2d at 440, 143 Cal. Rptr. at 238. *Barker* has been criticized because it did not require the plaintiff to prove an alternative design which could meet the "risk-utility" test. In addition, it has been said that the court violated the canon that a party should not have the burden of proving a negative. See Schwartz, *Foreward: Understanding Products Liability*, 67 CALIF. L. REV. 435, 468 (1979). Another commentator suggests that *Barker* represents all that is unwise in design defect

troveries because they allow the factfinder to consider all relevant circumstances under a test familiar to all. They also provide the manufacturer with an incentive to exercise reasonable care. If courts remain unwilling to shed strict liability for design cases, they should at least strengthen the role of reasonableness criteria under the strict liability label they prefer. Fortunately, there are some signs that this is happening in crashworthiness cases.

ESSENTIAL REQUIREMENTS OF PROOF
IN THE CRASHWORTHINESS SUIT

Proof of a "Safer" Practicable Alternative Design

To keep the defective design inquiry from becoming a mere "roll of the dice" or "coin-flipping" exercise, the courts increasingly are imposing meaningful requirements of proof regarding the defect and enhancement issues. A claim of "defect" which lacks dignified evidentiary content should not be submitted to a jury. Therefore, the rule has emerged that plaintiffs must present qualitative evidence of a safer alternative design. The proposed alternative must not only be possible but practicably feasible or reasonably achievable. A major crashworthiness case, *Huddell v. Levin*,²²⁰ illustrates this point.

In *Huddell*, an action was instituted against a manufacturer on behalf of a driver who was killed when his vehicle was struck in the rear at high speed. The plaintiff claimed that the decedent suffered a fractured skull due to impact against the seat's head restraint. At trial, the plaintiff's experts testified that the head restraint was defective because its unyielding metal edge concentrated excessive force against the rear of the skull. Specifically, it was contended that a flat surface would have distributed the forces of the impact more evenly than the thin metal contained within the headrest.²²¹ The defendant's expert witnesses contested this theory by emphasizing the violent, high-speed nature of the colli-

litigation, because it makes all product-related accidents presumptively actionable. Epstein, *supra* note 44, at 650-52.

²²⁰ 537 F.2d 726 (3d Cir. 1976).

²²¹ *Id.* at 735. In *Huddell*, the expert witness, a doctor, testified that the design of the headrest would allow for an excessive concentration of force on the head. In his opinion, therefore, the headrest was defective. Additionally, the expert proposed a curved structure which would contour to the head and distribute the force. *Id.* Recognizing the limitations of opinion evidence, the *Huddell* court nevertheless concluded that when the issue involved is the product's design, only an expert could establish defectiveness. *Id.* at 735-36.

sion. A second key factor stressed by the defense was that the head restraint metal was not deformed. There was, however, deformation near the rear window header of the accident vehicle that corresponded to a dummy's skull imprint achieved in rear crash tests. The defendant suggested that this deformation indicated that the decedent received his fatal blow *not* on the head restraint, as claimed, but by contact with the rear portion of the vehicle. Although the Third Circuit was troubled by the plaintiff's inability to explain this point,²²² it viewed the conflicting theories as sufficient to present a factual dispute.

The court then analyzed the nature of the crashworthiness or second collision case and observed that, unlike "orthodox" products liability litigation, a crashworthiness claim impugns the design of an automobile and requires a "highly refined" and almost invariably difficult presentation of three elements of proof. First, "in establishing that the design in question was defective, the plaintiff must offer proof of an alternative, safer design, practicable under the circumstances."²²³ Second, the claimant in an enhanced injury case must prove that the defective design caused injuries over and above those which otherwise would have been sustained, must demonstrate the degree of "enhancement," and "must offer proof of what injuries, if any, would have resulted had the alternative, safer design been used."²²⁴ Third, the plaintiff must offer "some method of establishing the extent of enhanced injuries attributable to the defective design."²²⁵ By way of explanation, the Third Circuit noted that the first aspect of proof relates directly to the design issue while the second and third items relate, respectively, to proximate cause and to the extent of the enhanced injuries. The *Huddell* court found that the plaintiff satisfied the first requirement, proof of an alternative design, because the claimant's expert witness not only explained how the restraint in question could have been made safer but also introduced into evidence head restraints manufactured by others which he asserted were "better

²²² 537 F.2d at 737.

²²³ *Id.* at 737.

²²⁴ *Id.* In *Jeng v. Witters*, 452 F. Supp. 1349, 1361-62 (M.D. Pa. 1978), *aff'd mem.*, 591 F.2d 1335 (3d Cir. 1979), the court adopted the three-part test enunciated in *Huddell*. In *Jeng*, a lower court holding for the defendant automobile manufacturer was upheld because the plaintiff failed to submit adequate evidence on which a jury could have decided what injuries would have resulted had a safer design been used. *Id.* at 1362.

²²⁵ *Huddell v. Levin*, 537 F.2d 726, 738 (3d Cir. 1976).

designed.”²²⁶ The court, however, reversed the judgment because there was insufficient evidence of the second and third required elements of proof.

Not all alternative designs will pass muster, however. For example, in *Dreisonstok*,²²⁷ the proof of an alternative design totally “missed the mark.” In *Dreisonstok*, the claimant’s expert witness compared the “crash space” of a van with that of a “standard American passenger car.” The experts had measured the car and concluded that the passenger car’s front compartment would not have been invaded in a 40-mile-per-hour impact. The appellate court discounted this methodology because no tests had been made by the experts to confirm their conclusions.²²⁸ Moreover, the court observed that the experts neglected to consider the “special purpose and character of the particular type of vehicle [involved],” noting that “a microbus is no more to be compared with a standard 1966 passenger type car than the convertible instanced in *Dyson* is to be compared with a standard hard-top passenger car.”²²⁹ In short, the court found that the plaintiff’s proof of a safer alternative design was neither realistic nor practicable and, therefore, was legally insufficient.

The alternative design requirement also was considered in *Baker v. Chrysler Corp.*²³⁰ In *Baker*, the plaintiff was struck by a car travelling at 20 to 25 miles per hour. It was claimed that the plaintiff’s leg injury was enhanced by an allegedly uncrashworthy exterior design. The appellate court affirmed a jury verdict in favor of the manufacturer. Notwithstanding that the question presented to the jury was “whether an alternative design of the front end of the . . . automobile would have mitigated or eliminated the inju-

²²⁶ *Id.* at 732. Similar proof of an alternative design was presented in *Dawson v. Chrysler Corp.*, 630 F.2d 950, 958 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981). In *Dawson*, the claimants’ experts testified that the side frame used in the accident vehicle could have been replaced by an alternative side structure which was “known in the industry well before the accident and had been tested by a number of independent testing centers.” *Id.* The experts also introduced test reports on side collisions of cars having frame improvements similar to those proposed. The study concluded that the improvements demonstrated a “dramatic increase in occupant protection.” *Id.* This evidence was deemed sufficient.

²²⁷ See notes 152-166 and accompanying text *supra*.

²²⁸ *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1075 (4th Cir. 1974).

²²⁹ *Id.* at 1076. The requirement to consider a particular vehicle’s class or intrinsic characteristics is also reflected in the Safety Act. See note 162 *supra*. In large measure this requirement stems from logic and considerations of reasonableness or practicability.

²³⁰ 55 Cal. App. 3d 710, 716, 127 Cal. Rptr. 745, 749 (Ct. App. 1976).

ries suffered by appellant,"²³¹ the court emphasized that the mere possibility of an alternative design was not the governing test. The reasonableness of an alternative design depends upon several factors, such as whether the design can be produced, the availability of materials,²³² and the cost of implementing that design. The court noted that these factors must be considered in determining whether a design "can be characterized as defective."²³³ Clearly, however, requiring evidence of practicable alternative designs does not enlarge the plaintiff's burden of proof. Indeed, "an injured plaintiff has always had the burden to prove the existence of the defect. The reasonableness of alternative designs . . . is part of that burden."²³⁴

The requirement of proving a practical alternative design sometimes is linked to the utility or functional characteristics of the product. Thus, if the alternative proposal would impair the product's functional characteristics or impart a new danger to users, the required proof of defective design has not been presented.²³⁵ In *Hagans v. Oliver Machinery Co.*,²³⁶ for example, the claimant alleged that an industrial saw equipped with a removable safety device was defective in design because permanently attached guards were safer and were available at the time the saw was made. The appellate court, however, ruled that a directed ver-

²³¹ *Id.* at 716, 127 Cal. Rptr. at 748-49.

²³² *Id.* at 716, 127 Cal. Rptr. at 749. See note 229 *supra*.

²³³ 55 Cal. App. 3d at 716, 127 Cal. Rptr. at 749.

²³⁴ *Id.* But see *Barker v. Lull Eng'r Co.*, 20 Cal. 3d 413, 431-32, 573 P.2d 443, 455, 143 Cal. Rptr. 225, 237 (1978); note 22 *supra*. The *Barker* court determined that because of evidentiary matters relevant to the determination of alternative designs, the burden of proof that the product was not defective should shift to the defendant once the plaintiff makes a prima facie showing of proximate cause. 20 Cal. 3d at 431, 573 P.2d at 455, 143 Cal. Rptr. at 237. This result has justifiably been criticized. See note 219 *supra*.

²³⁵ See *Olson v. Arctic Enterprises, Inc.*, 349 F. Supp. 761, 764-66 (D.N.D. 1972). The plaintiff in *Olson* alleged that a snowmobile was defective because it failed to provide adequate shielding from the track and sprocket. Additionally, no handholds were provided for passengers. *Id.* at 763. Evidence produced by the defendant demonstrated that more shielding around the track would make the machine sink in snow, thereby preventing the expulsion of foreign objects that might enter the track. *Id.* at 765. The defendant's expert testified that flexible handholds were not available when the snowmobile was designed and rigid handholds would increase the risk that the rider would become entangled. *Id.* at 766. The evidence tended to show, therefore, that the manufacturer had attempted to make the snowmobile safe. *Id.* at 765; cf. *Maxted v. Pacific Car & Foundry Co.*, 527 P.2d 832, 836 (Wyo. 1974) (counts of negligent design dismissed against distributor and manufacturers of tractor and trailer because additional safety device was not available at the time the unit was manufactured and there was no evidence of feasibility).

²³⁶ 576 F.2d 97 (5th Cir. 1978).

dict should have been granted the manufacturer because the proposed design would have impaired the functionality of the saw. The court stated that “[t]he evidence is overwhelming that permanent attachment of the blade guard assembly would seriously impair the usefulness of the defendant’s product. Texas law does not require a manufacturer to destroy the utility of his product in order to make it safe.”²³⁷ The court noted that safety concerns about a particular product must be balanced against “the realities of a competitive market place.”²³⁸

Occasionally, even the existence of a feasible alternative safer design will be insufficient to justify liability. One such case arises when a consumer is aware of the particular condition but is intent upon purchasing the less safe product. In *Curtis v. General Motors Corp.*,²³⁹ the plaintiff had purchased a four-wheel drive vehicle that was equipped with a removable fiberglass top. Other body styles of the same vehicle were available, including one with a steel top. While in operation, the vehicle rolled over and skidded, cracking and separating the fiberglass roof. The plaintiff claimed that his injuries were enhanced by an inadequate roof design and could have been avoided by the installation of a rollbar or other roof supports. The manufacturer conceded that the fiberglass roof was not expected to withstand a severe rollover and that a rollbar would have been a feasible alternative or accessory.²⁴⁰ These concessions, however, were not held to compel liability. Indeed, the court stated that the plaintiff could not recover “merely because a feasible alternative would have rendered the product safer” since he had deliberately chosen a product which was not “as safe as others on the market.”²⁴¹ Observing that the vehicle had been purchased as a convertible, the court felt that the plaintiff could not subsequently assert that his vehicle should have contained the rollover protection available in a standard car.²⁴² Moreover, the court remarked that since the product was a “special purpose vehicle” and was to be marketed with different tops, design compromise was necessary. The court reasoned that “[i]f there be no compromise and only the

²³⁷ *Id.* at 101.

²³⁸ *Id.* Market realities may also include the factor of price. See Note, *Liability for Negligent Automobile Design*, 52 IOWA L. REV. 953, 972 (1967).

²³⁹ 649 F.2d 808 (10th Cir. 1981).

²⁴⁰ *Id.* at 810.

²⁴¹ *Id.* at 811.

²⁴² *Id.* (citing *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d at 1075).

very safest can be marketed, there obviously would be no choice for the buyer as the less safe options would be eliminated."²⁴³ The court stated, therefore, that the concept of reasonableness includes the relative ability of the user to participate in decisions concerning how much safety he is willing to purchase and thereby places limits on the manufacturer's liability. The court stressed that because all choices cannot provide the same degree of safety, the application of the reasonableness standard must entail consideration of the special purpose of the vehicle. Since the jury in *Curtis* had not been properly instructed regarding this element, the verdict for plaintiff was set aside.²⁴⁴

The need to prove a practicable alternative design was advanced forcefully by the Oregon Supreme Court in *Wilson v. Piper Aircraft Corp.*,²⁴⁵ a suit involving the crash of a small airplane equipped with a carbureted engine. The plaintiffs' theory was that the carburetor was susceptible to ice formation, a condition which could cause engine failure. A fuel-injected engine, however, does not have this vulnerability. The plaintiffs offered evidence that the probable cause of the crash was an engine failure caused by carburetor icing. The defense retorted by emphasizing the plane's compliance with FAA safety standards and that agency's issuance of an airworthiness certificate. The defense also introduced evidence demonstrating that eighty to ninety percent of comparable aircraft were manufactured with carbureted rather than fuel-injected engines. The jury, however, found a defect and awarded the plaintiffs a substantial verdict.

On appeal, the Supreme Court of Oregon focused upon the showing required of a plaintiff in a design defect case. A prima facie case, the court noted, requires a claimant to prove the availability of an "alternative, safer design, practicable under the circumstances."²⁴⁶ According to the court, the burden of proving practicable feasibility involves a showing that "in terms of cost, practicality and technological possibility, the alternative design

²⁴³ 649 F.2d at 811.

²⁴⁴ *Id.* at 812-13. When a buyer elects to purchase an inexpensive used car lacking modern safety features found in newer but more costly models, he, like the plaintiff in *Curtis*, makes a decision about how much safety he is willing to purchase and, thereby places limits on the manufacturer's liability.

²⁴⁵ 282 Or. 61, 67-68, 577 P.2d 1322, 1327 (1978).

²⁴⁶ *Id.* at 67, 577 P.2d at 1326 (citing *Huddell v. Levin*, 537 F.2d 726, 737 (3d Cir. 1976)).

was feasible—mere ‘technical possibility’ is insufficient.”²⁴⁷ The court, therefore, must determine whether risk-utility balancing shows the alternative design to be practicable.²⁴⁸ The court noted that in complex cases, the question of practicability cannot properly be weighed by jurors “solely on the basis of inference and common knowledge.”²⁴⁹ Rather, the court must be “satisfied” that there is evidence from which the jury could find the proposed alternatives are not only feasible “but also practicable in terms of cost and the over-all design and operation of the product.”²⁵⁰ Since the *Wilson* plaintiffs only showed possible feasibility of the alternative fuel injection engine, the court felt that they did not prove the actual practicability of an alternative design. Indeed, there was no evidence “about what effect the substitution of a fuel injected engine in this airplane’s design would have had upon the airplane’s cost, economy of operation, maintenance requirements, over-all performance, or safety in respects other than susceptibility to icing.”²⁵¹ Because the requisite proof of practicability of an alternative design was insufficient, the court reversed the verdict.²⁵²

²⁴⁷ 282 Or. at 67, 577 P.2d at 1326 (citing *Lolie v. Ohio Brass Co.*, 502 F.2d 741, 744 (7th Cir. 1974)). The *Lolie* court stated that the plaintiff must demonstrate: “1) the product as designed is incapable of preventing the injury complained of; 2) there existed an alternative design which would have prevented the injury; and 3) in terms of cost, practicality and technological possibility, the alternative design was feasible.” *Id.*

²⁴⁸ *Wilson v. Piper Aircraft Corp.*, 282 Or. 61, 577 P.2d 1322, 1326 (1978).

²⁴⁹ 577 P.2d at 1327.

²⁵⁰ *Id.*

²⁵¹ *Id.* The plaintiff’s own expert testified that the carbureted engine was highly satisfactory and dependable except for its susceptibility to icing. *Id.*

²⁵² Significantly, the *Wilson* court noted the influence of the airplane’s compliance with FAA standards:

We also think it is significant that both in 1966, when this airplane was manufactured, and at the present time the FAA safety standards disclose that the agency was aware of the carburetor icing problems and provided for them in its regulations and yet determined that the use of carbureted engines was not unduly dangerous. Although we have held that compliance . . . does not preclude the possibility of liability for a design defect, we nevertheless believe that in a field as closely regulated as aircraft design and manufacture, it is proper to take into consideration, in determining whether plaintiffs have produced sufficient evidence of defect to go to the jury, the fact that the regulatory agency has approved the very design of which they complain after considering the dangers involved.

Id. at 70-71, 577 P.2d at 1327-28 (footnote omitted). See also notes 221-225 and accompanying text *supra*. The position of the concurring judge on the effect of compliance with the FAA standards was perhaps more deferential to the standards. When the design of a product is subject to prescribed performance standards as well as government supervised testing and safety approval, “no further balance whether the product design is ‘unreasonably dangerous’ . . . needs to be struck by a court or a jury unless” the safety standard is less inclu-

The cases discussed above do not impose new burdens upon litigants. They simply require that claimants offer sufficient proof of a defective design. Given the vagaries and shifting interpretations of strict tort liability, the emerging requirement to place "flesh on the strict liability skeleton" before a case may be submitted to a jury is a healthy step in the right direction.

Proof of Injury "Enhancement"

Another element to be proved in a crashworthiness case is whether the alleged design defect proximately caused the plaintiff's enhanced injuries, since crashworthiness liability encompasses only those injuries sustained over and above what would have occurred absent a defective design.²⁵³ In other words, there must be a nexus between the design defect and injuries incurred.²⁵⁴ Generally, the existence of such a nexus is proved through a showing that if a different design had been used, enhanced injuries would not have occurred.²⁵⁵

A number of significant cases demonstrate this proposition. In *Huddell*,²⁵⁶ for instance, it was alleged that a defectively designed

sive than products law or the agency did not address the allegedly defective element. 577 P.2d at 1334-35 (Linde, J., concurring) (emphasis in original). In *Wilson*, the FAA regulations and approval seemed likely to be equivalent to the demands of the common law.

²⁵³ *Larsen v. General Motors Corp.*, 391 F.2d 495, 503 (8th Cir. 1968). See notes 1-3 *supra*. Because the "normal risk of driving must be accepted by the user," enhanced injury liability refers only to the "unreasonable risk of injury due to negligence in design." *Id.* at 505.

²⁵⁴ See note 3 *supra*.

²⁵⁵ See notes 220-223 and accompanying text *supra*.

²⁵⁶ *Huddell v. Levin*, 537 F.2d 726, 737 (3d Cir. 1976). *Huddell* states that a manufacturer will be liable only for those injuries which are over and above what would have occurred absent the defective design. This premise necessarily contemplates a showing of (1) the proposed, safer alternative, and (2) the damages that would have been eliminated by the design alternative. Thus, the *Huddell* formulation imposes neither a rigorous addition to normal proof burdens nor a mechanical approach to proof at trial. On the contrary, the requirements of proof postulated by the *Huddell* court merely describe in logical terms the practical showing that must be made in any design case scaled down proportionally to fit the peculiar nature of this liability. To illustrate, if a claimant alleged that a seatbelt design was defective he must show sufficiently how and why that was so. This entails a showing of what alternative restraint design or device should have been employed in place of the criticized seatbelt. For example, it might be proposed that airbags should have been used in the place of conventional restraints. Assuming a sufficient showing of practicable feasibility of this alternative, thereby warranting submission of the defective design issue to the jury, the claimant must still prove the elements of proximate causation and damages. How does he prove the causation of injuries over and above those occurring absent the design defect and the extent of such increase? Obviously, the claimant must show what actually did occur as well as what would have occurred using the airbag alternative. With a sufficient showing on

head restraint failed to provide sufficient protection in a rear end collision. Although the court decided that sufficient evidence of a practical, safer alternative design had been proffered,²⁵⁷ it nevertheless held that the plaintiff's proof on the "enhancement causation" issue was legally insufficient²⁵⁸ because of a failure to establish "what injuries, if any, would have resulted had the alternative, safer design been used."²⁵⁹ The court noted that the plaintiff's expert witnesses had testified merely that the accident would have been survivable without indicating the specific meaning of the term and without offering testimony "as to the extent of injuries, if any, which would have resulted in a survivable crash."²⁶⁰ As the court stated, "[i]t was not established whether the hypothetical victim of the survivable crash would have sustained no injuries, temporary injuries, permanent but insignificant injuries, extensive and permanent injuries, or, possibly, paraplegia or quadriplegia."²⁶¹ The court concluded that the plaintiff, by failing to establish what injuries would have resulted had a *nondefective* head restraint been used, "could not and did not establish what [additional] injuries resulted from the alleged defect in the head restraint."²⁶²

The requirement of proving enhancement also is discussed in *Yetter v. Rajeski*.²⁶³ In *Yetter*, a 1965 subcompact driven by the plaintiff's decedent crashed at high speed into the rear of a 1964 luxury car. The plaintiff's experts theorized that the front end of the subcompact should have had different dimensions, different

these points the factfinder would then have some rational basis on which to decide the enhancement claim. Thus, the *Huddell* court's formulation of three elements of proof, *id.* at 737-38, cogently describes, in understandable language, the basic elements of the cause of action. The three requirements do not burden the plaintiff, but do advise him how to prove his case beyond speculation. *Id.*

²⁵⁷ *Huddell v. Levin*, 537 F.2d 726, 737 (3d Cir. 1976); see note 233 and accompanying text *supra*.

²⁵⁸ 537 F.2d at 737.

²⁵⁹ *Id.*

²⁶⁰ *Id.* at 738. Some authority exists for distinguishing the enhancement burden in death cases to allow mere proof of general enhancement plus "survivability" with the alternative design. Such rationales, however, appear to erroneously confuse the difficulty of apportionment of injury causation in death cases among tortfeasors—between the first collision and the second collision—with the more appropriate concept of enhancement, which simply involves a determination of the injuries over and above what would have occurred without the defect. See note 292 *infra*.

²⁶¹ *Huddell v. Levin*, 537 F.2d 726, 738 (3d Cir. 1976).

²⁶² *Id.*

²⁶³ 364 F. Supp. 105, 109 (D.N.J. 1973).

structures, a different engine location, and a "collapsible steering column."²⁶⁴ Although no 1965 car had such a steering mechanism, the experts testified that the device was known in the industry. The court considered both duty and proximate causation issues and granted the defendant's motion for a directed verdict. Regarding the question of enhancement the court observed:

[I]t is absolutely necessary that the jury be presented with some evidence as to the extent of injuries, if any, which would have been suffered by [the decedent] had the plaintiff's hypothetical design been installed in the [vehicle]. The jury, without such testimony, is left only to speculate as to the injuries [the decedent] would have suffered if the energy-absorbing steering column had, in fact, been installed, and this could only have been established by competent medical testimony as to the forces which the human body could withstand without injury, or without injury to the extent suffered by [the decedent].²⁶⁵

Because the plaintiff's evidence, even assuming defective design, was insufficient to prove how and to what extent the alternative design would have mitigated the injury, consideration of the issue by the jury would have been speculative. The result reached by the court is neither surprising nor illogical. Since the unreasonableness of the design was in issue, it was both logical and fair to require the plaintiff to offer sufficient proof regarding how and to what extent his injuries would have been minimized without the allegedly unreasonable feature. This element of proof inheres in the cause of action itself.

In *Jeng v. Witters*,²⁶⁶ passengers were thrown from an automobile which had collided with another car. The plaintiffs alleged that, due to a defective door latch design, the latch plate broke and allowed occupant ejection. The defense contended that the breakage of the latch plate did not reflect a defect because of the over-

²⁶⁴ *Id.* at 108. In *Yetter*, the subcompact's driver was taken to a hospital where he was treated for several days. The treating physician testified in his deposition that there was no clinical indication of crushing or lacerating injuries. After several days of treatment, however, the driver suddenly expired in the hospital. The post-mortem examination revealed fractured ribs and hemothorax but confirmed that no vital organs were crushed or lacerated. *Id.* at 107.

²⁶⁵ *Id.* at 109. The failure in proof went to the essence of the claim. There was "no testimony from a medical standpoint that, given the installation of the plaintiff's hypothetical steering wheel design," the decedent's chest "would have been able to withstand the injuries actually sustained, or that the injuries would have been substantially reduced." *Id.*

²⁶⁶ 452 F. Supp. 1349 (M.D. Pa. 1978), *aff'd mem.*, 591 F.2d 1335 (3d Cir. 1979).

whelming forces exerted in the accident.²⁶⁷ The severity of an accident, observed the court, is an important factor in defining liability in crashworthiness cases. The court noted, for example, that if a car door opens "due to a *violent* collision" then the proximate cause of the injury is not the door latch.²⁶⁸ Indeed, the court remarked that when the degree of accident severity is close enough to warrant jury consideration, the need to prove enhancement becomes especially important. The court felt that without such proof, a jury conclusion that enhancement actually occurred would be unjustified because the injuries sustained might have been attributable to the severity of the impact. Upon stating these evidentiary principles the court in *Jeng* scrutinized the proof respecting enhancement and found it to be "negligible."²⁶⁹ The court stressed that the plaintiffs' engineering expert testified merely about the general dangers of ejection while their medical expert "could not say for sure whether the same or similar injuries would have occurred had the occupants remained in the car."²⁷⁰ Under these circumstances, the court concluded that there was no basis upon which the jury could find enhancement.

A similar failure of proof occurred in *Curtis v. General Motors Corp.*²⁷¹ In *Curtis*, the cause of the plaintiff's back injury was not shown. The plaintiff's medical witness "could not ascertain the cause of the disc injury with any degree of medical certainty" and conceded that "you could be killed, you know, turning a car over with a good roll bar."²⁷² Reasoning that "[t]he jury could not express a lay opinion as to the cause of the injury when the medical witness was unable to express an expert opinion,"²⁷³ the Tenth Circuit held that the evidence was legally insufficient. Expert medical testimony consisting of opinions such as "might have," "may have," or "could have" is not sufficient to submit the case to the

²⁶⁷ 452 F. Supp. at 1357-58.

²⁶⁸ *Id.* at 1358 (citing *Melia v. Ford Motor Co.*, 534 F.2d 795, 799 (8th Cir. 1976) (emphasis in original)).

²⁶⁹ 452 F. Supp. at 1361.

²⁷⁰ *Id.* at 1361-62.

²⁷¹ 649 F.2d 808 (10th Cir. 1971); see notes 238-244 and accompanying text *supra*.

²⁷² *Curtis v. General Motors Corp.*, 649 F.2d 808, 812 (10th Cir. 1971). The trial judge in *Curtis* stated, during post-trial hearings, that "[n]obody knows from this record, from any expert as to what caused which injury." *Id.* at 813. Indeed, the circuit court elaborated further that "[t]he jury was thus left to decide a question which the expert said he could not answer." *Id.*

²⁷³ *Id.*

jury because "such testimony leaves the issue in the field of conjecture and permits the jury to speculate or guess."²⁷⁴ Definitive expert opinion is an absolute requirement.

In some instances, allegations of multiple crashworthiness defects complicate the complainant's burden of proof on the enhancement issue. The overall picture also may become more complex if the claimant had failed to wear a seat belt since the device mitigates second collision injuries.²⁷⁵ Both of these factors are illustrated in *Caiazza v. Volkswagenwerk, A.G.*²⁷⁶ In *Caiazza*, the Second Circuit reversed the plaintiffs' judgment due to insufficient proof and ordered a new trial on the issue of enhancement. The plaintiffs were the driver and passenger of a van struck in the rear by another car at high speed. The impact caused the van to turn over and eject the occupants. They sued the manufacturer for uncrashworthy seat design, alleging that this condition severely aggravated the driver's injuries. The plaintiffs also alleged that a defective door latch assembly caused the ejection-related enhanced injuries. The jury found no defect in the seat design but rendered a substantial enhancement verdict on the door latch issue, reducing the award by twenty-five percent because the occupants failed to wear seatbelts.²⁷⁷

On appeal, the Second Circuit recognized that the plaintiffs' failure to wear seat belts was highly significant because both parties' experts agreed that ejection would not have occurred if the belts had been used.²⁷⁸ The court observed, therefore, that if the enhanced injuries resulted from ejection, prevention of the ejection

²⁷⁴ *Id.* (quoting *Bearman v. Prudential Ins. Co.*, 186 F.2d 662, 665 (10th Cir. 1951)).

²⁷⁵ Evidence of failure to wear a seatbelt is admissible to show the availability of compensating safety devices and the nondefectiveness of the vehicle as an integrated whole. See *Binion v. General Motors Corp.*, No. 80-1998 (5th Cir. April 8, 1981); *Wilson v. Volkswagen of America, Inc.*, 445 F. Supp. 1368, 1371 (E.D. Va. 1978); *Daly v. General Motors Corp.*, 20 Cal. 3d 725, 746, 575 P.2d 1162, 1174-75, 144 Cal. Rptr. 380, 392-93 (1978). Failure to wear a seatbelt also is admissible evidence with respect to mitigation of second collision injuries, see *Caiazza v. Volkswagenwerk A.G.*, 647 F.2d 241, 252 (2d Cir. 1981); *Wilson v. Volkswagen of America, Inc.*, 445 F. Supp. 1368, 1373 (E.D. Va. 1978), misuse and assumption of risk, see *Melia v. Ford Motor Co.*, 534 F.2d 795, 799-800 (8th Cir. 1976); *General Motors Corp. v. Walden*, 406 F.2d 606, 609 (10th Cir. 1969); *Roberts v. May*, 41 Colo. App. 82, 583 P.2d 305, 309 (1978), and proximate cause, see *Dawson v. Chrysler Corp.*, 630 F.2d 950, 955 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981). For a recent discussion of legal issues affecting seatbelts, see *Werber, A Multi-Disciplinary Approach to Seat Belt Issues*, 29 CLEV. ST. L. REV. 217, 246-73 (1980).

²⁷⁶ 647 F.2d 241 (2d Cir. 1981).

²⁷⁷ *Id.* at 244.

²⁷⁸ *Id.* at 248-49.

itself would have averted the enhancement. Under these circumstances, the court reasoned, the jury's finding that nonuse of the seatbelts merited only a twenty-five percent reduction in damages simply did "not make sense."²⁷⁹ Moreover, the Second Circuit noted that because the most serious of the driver's injuries were proven to have occurred *inside* the van, the verdict for ejection-related enhancement was too laden with inconsistencies to be upheld.²⁸⁰ The court stated that "the plaintiff should be required to prove the extent of the enhanced injuries attributable to the defective design" and that such evidence "will generally, perhaps even necessarily, be in the form of expert testimony."²⁸¹ The court declared that it is legally insufficient to establish merely a general "fact of enhancement" without showing the actual nature and extent of the injuries aggravated. Indeed, the court commented that such a vague showing would permit jurors "to engage in undue speculation as to the causes of various injuries" and gives the jury "dangerous latitude in assigning responsibility to the defendant who appears most able to pay a plaintiff's award."²⁸² The court recognized that the claimant's burden to offer evidence "of what injuries would have resulted absent the alleged defect" would sometimes be "heavy" and occasionally "impossible."²⁸³ Nonetheless, the court felt that "the theoretical underpinnings of the second collision doctrine" require this burden to avoid speculation,²⁸⁴ since a failure of proof simply accentuates the probability that the

²⁷⁹ *Id.* at 249.

²⁸⁰ *Id.* The plaintiff-driver contended that the most serious of her injuries was caused by a seat design defect. *Id.* at 244 n.5. Thus, when the jury rejected the seat design claim, it had no rational basis for awarding damages since those injuries could not be attributed to the ejection. Moreover, the plaintiff's claims based on her ejection-related injuries were vulnerable because her own experts conceded that the seatbelts would have prevented ejection. *Id.* at 248-49. These factors were viewed as creating fundamental "inconsistencies in the jury verdict" which could not stand. *Id.* at 249. For the breakdown of damages awarded and reduced, see *id.* at 244.

²⁸¹ *Id.* at 250. The Second Circuit's requirement that a claimant prove the extent to which second collision injuries are attributable to defective design seems particularly appropriate in *Caiazza*, since the use of seatbelts "would have eliminated most, if not all, of the enhanced injuries." *Id.*

²⁸² *Id.* at 250-51. The *Caiazza* court illustrated the problem with an analysis of the "thin" evidence on enhancement which barely survived a directed verdict. *Id.* at 251. "Without evidence as to what injuries would have resulted had the *Caiazzos* not been ejected, the jury had to speculate and hypothesize as to which injuries resulted from the defective door design. The disharmony between the jury's verdict and the evidence . . . exemplifies the problem with this approach." *Id.*

²⁸³ *Id.* at 251.

²⁸⁴ *Id.* at 246.

design 'did not cause the enhancement:

Where [proof] is impossible, however, the plaintiff has merely failed to establish his prima facie case, *i.e.*, that it is more probable than not that the alleged defect aggravated or enhanced the injuries resulting from the initial collision. Moreover, in those instances in which the plaintiff cannot offer any evidence as to what would have occurred but for the alleged defect, the plaintiff has not established the fact of enhancement at all.²⁸⁵

In some cases, expert medical testimony may sufficiently prove the nature of the injuries incurred, but contradict the plaintiff's theory regarding the causal relationships between the defect and the alleged enhancement. Under such circumstances, because the claimant has not proved causation, a directed verdict is in order. In *Soileau v. Ford Motor Co.*,²⁸⁶ the Fifth Circuit, affirming a jury's verdict for the defendant, noted that a directed verdict would have been appropriate because of the plaintiff's failure to offer sufficient proof of causation. In *Soileau*, the plaintiff's car went out of control, spun around and crashed rearwards at high speed into a concrete culvert. The plaintiff alleged that because of a design defect, his seat collapsed upon impact and he was thrust into the back seat of the car. The plaintiff testified that he had struck his head after being thrown into the back seat, and suffered a broken neck and damaged spinal cord. The plaintiff's description of the occurrence was consistent with a "hyperflexation injury" mechanism wherein the head is pushed down to the chest. The plaintiff's treating neurosurgeon, however, testified that the claimant suffered a hyperextension injury in which the head is pushed backwards toward the spinal column. The plaintiff's expert conceded that such an injury "could have resulted simply from the impact of a car travelling backwards and colliding with a fixed object."²⁸⁷ The defense medical expert testified that the injury was an axial loading fracture caused by a blow to the top of the head that forces the head downwards on the spine. This supported the defense theory that the plaintiff struck his head on the roof of the car. Thus, the testimony of both physicians "contradicted plaintiff's recollection of how his injury occurred."²⁸⁸ After an adverse jury verdict,

²⁸⁵ *Id.* at 251.

²⁸⁶ 639 F.2d 214 (5th Cir. 1981).

²⁸⁷ *Id.* at 216.

²⁸⁸ *Id.*

the plaintiff appealed, contending that various rulings by the trial court were erroneous. The Fifth Circuit, however, found no need to address these issues because it had "little doubt about the insufficiency of [the plaintiff's] proof that the alleged defect caused his injuries."²⁸⁹ The evidence on causation was so insufficient, the court noted, that the trial judge should have directed a verdict for the defendant.²⁹⁰

The False Burden of Proof Issue

Despite the overwhelming weight of authority that the burden

²⁸⁹ *Id.* at 215. Similar skepticism about the claimant's theory is reflected in the *Huddell* case. In *Huddell*, the court expressed uneasiness about the plaintiff's inability to explain the lack of deformation on the metal of the head restraint and the existence of a head imprint mark in the rear window compartment area. See notes 214 & 215 and accompanying text *supra*.

²⁹⁰ 639 F.2d at 216. The degree of enhancement proof necessary to show evidentiary sufficiency varies with the facts and the circumstances of a given case. In fire upon impact cases, where the damages sought are only for burn injuries, the relationship between the alleged defect (fuel system) and the plaintiff's enhanced injuries (burns) is apparent. *E.g.*, *Polk v. Ford Motor Co.*, 529 F.2d 259, 267 (8th Cir.), *cert. denied*, 426 U.S. 907 (1976) (the court found substantial evidence that all proven injuries occurred as a result of fire); *Buehler v. Whalen*, 70 Ill. 2d 51, 54, 374 N.E.2d 460, 462 (1978) (parties stipulated plaintiff's injuries caused entirely by burns); *Oberman v. Alexander's Rent-A-Car*, 56 App. Div. 2d 814, 814, 392 N.Y.S.2d 662, 663 (1st Dep't 1977). The plaintiff ordinarily claims that the burn injuries would not have occurred absent the fuel system defect. Even in burn injury cases, however, enhancement issues play a key role because the severity of burn injuries may have resulted, for example, from a claimant's failure to wear a seatbelt. Indeed, a car occupant who fails to wear a seatbelt may sustain "second collision" trauma rendering him unconscious. This will cause him to fail to exit the vehicle or make efforts to extricate him more difficult. In such cases, although the fire resulting from fuel system leakage may be responsible for burn injuries, the proximate cause of the enhanced injuries is the failure to use the seatbelt.

When the plaintiff's expert evidence demonstrates that there would have been little or no injury absent the defect, the claimant's evidentiary burden is ameliorated. This is because the plaintiff, in effect, is claiming that all the injuries were caused by the defect. See *Lahocki v. Contes Sand & Gravel Co.*, 41 Md. App. 579, 589-90, 398 A.2d 490, 498-99, 501 (1979), *rev'd on other grounds*, 286 Md. 714, 410 A.2d 1039 (1980) (plaintiff's expert testified that, absent the defect, plaintiff would not have suffered any injuries and court treated plaintiff's evidence as "all or nothing" effort); *Engberg v. Ford Motor Co.*, 87 S.D. 196, 199-200, 205 N.W.2d 104, 106 (1973) (plaintiff's expert testified that if seatbelt webbing remained intact and decedent would not have been ejected, the injuries in the rollover would have been minor). A major and practical hurdle in alleging that, absent the defect, no other injury would have occurred is the incredibility of such a position. Indeed, most jurors will discern that serious injuries are likely to be incurred in any relatively severe collision. Additionally, when it is shown that the plaintiff had not been wearing a seatbelt, it should be relatively easy for the defendant to prove that the plaintiff could not have escaped injury. Thus, a claimant jeopardizes the credibility of his claim when he offers expert testimony that no other injury would have occurred.

of sufficiently proving enhancement is upon the plaintiff,²⁹¹ claimants occasionally argue that the burden should be upon the defendant to prove that an injury was not enhanced. These arguments justifiably have been rejected.²⁹² In *Endicott v. Nissan Motor*

²⁹¹ *Curtis v. General Motors Corp.*, 649 F.2d 808, 813 (10th Cir. 1981); *Seese v. Volkswagenwerk A.G.*, 648 F.2d 833, 844, 849 (3d Cir. 1981); *Caiazza v. Volkswagenwerk, A.G.*, 647 F.2d 241, 250 (2d Cir. 1981); *Dawson v. Chrysler Corp.*, 630 F.2d 950, 960 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981); *Smith v. Ford Motor Co.*, 626 F.2d 784, 798 (10th Cir. 1980), *cert. denied*, 101 S. Ct. 1363 (1981); *Stonehocker v. General Motors Corp.*, 587 F.2d 151, 158 (4th Cir. 1978) (burden on plaintiff to establish the extent of the injury he would have suffered had the vehicle been properly designed); *Higginbotham v. Ford Motor Co.*, 540 F.2d 762, 773-74 (5th Cir. 1976); *Huddell v. Levin*, 537 F.2d 726, 737-38 (3d Cir. 1976); *Polk v. Ford Motor Co.*, 529 F.2d 256, 267 (8th Cir.), *cert. denied*, 426 U.S. 907 (1976) (plaintiffs must prove that the defects caused them to sustain damages that they would not otherwise have sustained); *Turcotte v. Ford Motor Co.*, 494 F.2d 173, 182 (1st Cir. 1974) (plaintiff must prove that defect was "the actual and proximate cause of injuries beyond those caused by the collision itself"); *Dreisonstok v. Volkswagenwerk, A.G.*, 489 F.2d 1066, 1076 (4th Cir. 1974); *Jeng v. Witters*, 452 F. Supp. 1349, 1361-62 (M.D. Pa. 1978), *aff'd mem.*, 591 F.2d 1335 (3d Cir. 1979); *Anton v. Ford Motor Co.*, 400 F. Supp. 1270, 1281 (S.D. Ohio 1975) (plaintiff's burden to prove that a defect caused enhanced injuries); *Yetter v. Rajeski*, 364 F. Supp. 105, 109 (D.N.J. 1973); *Dyson v. General Motors Corp.*, 298 F. Supp. 1064, 1074 (E.D. Pa. 1969); *Horn v. General Motors Corp.*, 17 Cal. 3d 359, 366-67, 551 P.2d 398, 401, 131 Cal. Rptr. 78, 81 (1976); *Endicott v. Nissan Motor Corp.*, 73 Cal. App. 3d 917, 926-28, 141 Cal. Rptr. 95, 100-01 (1977); *Buccery v. General Motors Corp.*, 60 Cal. App. 3d 533, 547, 132 Cal. Rptr. 605, 614 (1976); *Leichtamer v. American Motors Corp.*, 67 Ohio St. 2d 456, 424 N.E.2d 568, 576 (1981) (plaintiff must prove that enhancement of injuries was proximately caused by an unreasonably dangerous defective product); *Engberg v. Ford Motor Co.*, 87 S.D. 196, 201, 205 N.W.2d 104, 106 (1973); *Baumgardner v. American Motors Corp.*, 83 Wash. 2d 751, 758, 522 P.2d 829, 833 (1974) ("plaintiff has usual burdens of proof . . . including proof of the nature and extent of the injuries proximately caused or enhanced").

²⁹² *E.g.*, *Caiazza v. Volkswagenwerk, A.G.*, 647 F.2d 241, 250 (2d Cir. 1981); *Huddell v. Levin*, 537 F.2d 726, 738 (3d Cir. 1976); *Endicott v. Nissan Motor Corp.*, 73 Cal. App. 3d 917, 926-28, 141 Cal. Rptr. 95, 100-02 (1977). *See generally* Foland, *supra* note 4, at 613-16; note 291 *supra*.

In *Fox v. Ford Motor Co.*, 575 F.2d 774 (10th Cir. 1978), the court, with one judge dissenting, recognized a responsibility on the part of the plaintiff to prove enhanced damages. *Id.* at 787. This duty, part of the plaintiff's general obligation to prove proximate cause, serves to limit the manufacturer's liability to those injuries proximately caused by a design defect. The court, however, proceeded to distinguish cases involving death, a nondivisible injury. *Id.* While the Tenth Circuit in *Fox* accepted the principle that the plaintiff must prove enhancement, a majority of the panel deemed evidence of survivability sufficient in a death claim. This approach is similar to that taken by the concurring judge in *Huddell v. Levin*, 537 F.2d 726, 745 (3d Cir. 1976) (Rosenn, J., concurring), who also was influenced by the "indivisibility" of death. If the judges in *Fox* and the concurring judge in *Huddell* had reasoned that death cases are different because death is, in effect, the "ultimate" enhanced injury, they might have been on stronger ground. Instead, they appear to have used the indivisibility of death rationale to reason that a jury could not apportion the injuries between the first collision and the second collision. This is simply not the issue. The premise of apportionment is a basic conceptual error inasmuch as there is no apportionment between the tortfeasors' responsibility for injuries between the first and second collisions.

Corp.,²⁹³ for example, a car went out of control on an icy road, struck an embankment in a violent head-on impact and rolled over. The plaintiff claimed that he suffered enhanced injuries because his allegedly defective seatbelt ruptured upon impact. Although the plaintiff testified that he had been involved in a previous crash in which the belt had held, permitting him to walk away uninjured, he could not produce any expert testimony proving that his present injury would not have occurred absent the seatbelt rupture. After a trial in which the plaintiff's allegations were contested vigorously, the jury returned a verdict for the defense. On appeal, it was contended that the trial court erred in instructing the jury that the plaintiff was required to prove enhancement. The plaintiff asserted that the burden was upon the defendant to prove that the seatbelt rupture did not enhance his injuries. The appellate court rejected this position:

No witness, including plaintiff's medical experts, could say with any degree of certainty that plaintiff would not have sustained severe and disabling injuries if the belt had not ruptured, and plaintiff's medical expert even conceded the possibility that the very back injury that plaintiff suffered could have so occurred. What is more, the experts had great difficulty in reconstructing the probable sequence of events in the accident, particularly with reference to the exact point at which the belt ruptured. These facts wholly preclude any demonstration of substantial probability of causal link between design of seat belt, and enhancement of plaintiff's injuries. Accordingly the circumstances sufficient to justify a shift in the burden of proof never arose.²⁹⁴

Moreover, the court stated that "no general rule exists in the field of products liability requiring the manufacturer to prove a nega-

The tortfeasor who caused the crash is responsible for *all* the injuries and the manufacturer is responsible *only* for the *enhanced* injuries. The conceptual underpinning in this area is enhancement, viz., the extent to which injuries were aggravated over and above what would have occurred absent the claimed defect. This requires a showing and finding of what would have occurred in the way of injury mitigation if the plaintiff's proposed design alternative had been used. It has absolutely nothing to do with apportioning liability between a negligent tortfeasor and a manufacturer. See text accompanying notes 295-314 *infra*. Thus, even in a death case, a showing of enhancement is no more taxing than in other cases. It is understandable that the judges found apportionment of death between the first and second collision difficult since such apportionment was never in issue in the first place. Evidence of enhancement remains the key inquiry and has nothing to do with apportionment or divisibility of the injury.

²⁹³ 73 Cal. App. 3d 917, 141 Cal. Rptr. 95 (1977).

²⁹⁴ *Id.* at 927, 141 Cal. Rptr. at 101.

tive—his non-causation of plaintiff's injuries."²⁹⁵

In *Huddell v. Levin*,²⁹⁶ the appellate court observed that the essence of enhancement liability precludes a shifting of the burden of proof to the manufacturer. The court explained that without proving the injuries that would have resulted if a nondefective head restraint had been used, a plaintiff cannot establish the enhanced injuries which actually resulted from the use of a defective restraint. The Third Circuit deduced that without such proof a jury cannot accurately assess the manufacturer's responsibility for the injury over and above what would have occurred without the claimed defect.²⁹⁷ In a cautionary statement the court stressed that the "theoretical underpinnings" of crashworthiness liability make the manufacturer liable *only* for "enhanced injuries," and that the tortfeasor who caused the accident may be held liable for *all* injuries, irrespective of the plaintiff's failure to prove enhancement. Indeed, the court noted, tortfeasors and manufacturers are not traditional joint or concurrent tortfeasors.²⁹⁸ According to the court, each has a separately cognizable responsibility flowing to the claimant. Thus, the court remarked that should a plaintiff fail to prove enhancement injuries, "the brute fact is that the negligent driver would *not* escape liability on the same ground" because the defendant-driver is liable for all the injuries sustained in the accident.²⁹⁹ Moreover, the Third Circuit commented that limited second collision enhanced injury liability may not be converted into "plenary liability for the entire consequences of an accident which the automobile manufacturer played no part in precipitating."³⁰⁰

In addition to the foregoing doctrinal considerations, some

²⁹⁵ *Id.* at 928, 141 Cal. Rptr. at 101. The court also noted that the evidence was so weak that the plaintiff had failed to show the product to be defective. *Id.*

²⁹⁶ 537 F.2d 726, 738 (3d Cir. 1976).

²⁹⁷ *Id.*

²⁹⁸ *Id.* at 738-39.

²⁹⁹ *Id.* The concurring judge in *Huddell* favored a shifting of the burden in death cases even though he recognized that the negligent driver and the manufacturer "are not joint tortfeasors." *Id.* at 744 (Rosenn, J., concurring). Death, according to this view, precluded apportionment of the injuries among the tortfeasors. The conceptual error implicit in this approach is discussed in note 292 *supra* & notes 300-314 and accompanying text *infra*.

If mere proof of survivability were sufficient in a death case to establish the manufacturer's liability for the death, then presumably the negligent defendants causing the accident in the first place "may be in a position to contend that they are not liable at all because, by plaintiff's own proof," their negligence "was survivable." 537 F.2d at 739. This argument, commented the *Huddell* majority, "boggles the mind." *Id.*

³⁰⁰ 537 F.2d at 739.

very practical reasons exist which militate against shifting the burden of proof from plaintiffs to defective design manufacturers. These were forcefully advanced by the Second Circuit in *Caiazza*,³⁰¹ wherein the court asserted that a burden upon the manufacturer to prove nonenhancement is "too heavy a burden" and "contradicts the theoretical underpinnings of the second collision doctrine." The court noted that such a shift in burdens would force the manufacturer to prove part of the plaintiff's case.³⁰² Moreover, the court reasoned that allowing claimants to prove only the general "fact of enhancement" without requiring sufficient proof about the nature and extent of the enhanced injuries would permit "undue jury speculation" and "dangerous latitude" in fixing responsibility on the basis of ability to pay an award.³⁰³

Actually, the arguments in favor of imposing the enhancement burden of proof upon the manufacturer rely upon conceptually flawed notions of dividing up indivisible injuries and upon principles of apportionment applicable only to joint or concurrent tortfeasors.³⁰⁴ Proponents of a burden shift typically note that when two or more tortfeasors combine to injure a plaintiff the burden of proving apportionment is upon the defendant seeking such an allocation.³⁰⁵ This rule is embodied in section 433B(2) of the Restatement (Second) of Torts.³⁰⁶ It is, however, inapplicable to the crashworthiness "enhancement" situation.

In the enhanced injury case, the claimant does *not* apportion

³⁰¹ 647 F.2d 241, 246, 250-51 (2d Cir. 1981).

³⁰² *Id.* at 246.

³⁰³ *Id.* at 250-51. The court acknowledged that requiring the plaintiff to prove general enhancement and to offer evidence of what injuries would have resulted absent the alleged defect sometimes may be a heavy or perhaps impossible burden. *Id.* at 251.

³⁰⁴ *E.g.*, *Smith v. Fiat-Roosevelt Motors, Inc.*, 556 F.2d 728, 729 (5th Cir. 1977); *Huddell v. Levin*, 537 F.2d 726, 745-46 (3d Cir. 1976) (Rosenn, J., concurring).

³⁰⁵ 537 F.2d at 745 (Rosenn, J., concurring).

³⁰⁶ Section 433B provides:

(1) Except as stated in Subsections (2) and (3), the burden of proof that the tortious conduct of the defendant has caused the harm to the plaintiff is upon the plaintiff.

(2) Where the tortious conduct of two or more actors has combined to bring about harm to the plaintiff, and one or more of the actors seeks to limit his liability on the ground that the harm is capable of apportionment among them, the burden of proof as to the apportionment is upon each actor.

(3) Where the conduct of two or more actors is tortious, and it is proved that harm has been caused to the plaintiff by only one of them, but there is uncertainty as to which one has caused it, the burden is upon each such actor to prove that he has not caused the harm.

RESTATEMENT (SECOND) OF TORTS § 433(B) (1965).

the total injuries sustained in the collision between the negligent driver causing the accident and the manufacturer whose design aggravated the injury. Similarly, the plaintiff is not required to divide up an indivisible injury whether by percentages or otherwise. The plain fact is that the tortfeasor who precipitated the accident is liable for *all* of the plaintiff's injuries.³⁰⁷ Principles of apportionment, therefore, are inapposite. Indeed, the claim against the manufacturer is not based upon apportionment of responsibility for the plaintiff's injuries but upon the theory that the injuries incurred were greater than those that would have been sustained had there been no defect.³⁰⁸ The claimant proves this aspect of damages by showing what probably would have occurred had a safer alternative design been used. This required showing against the manufacturer has absolutely nothing to do with apportionment between tortfeasors, apportionment between the so-called first collision and second collision, or "dividing" up an "indivisible" injury. Rather, it involves proof of what probably would have occurred had the manufacturer used an alternative design.³⁰⁹

When viewed in this elemental form, the plaintiff's enhancement burden of proof is nothing more than a requirement to prove that which he is claiming: that "fewer" or "lesser" injuries would have occurred with a different design. The plaintiff's burden, therefore, is not one of apportioning harms or dividing up injuries, a burden which section 433B(2) of the Restatement might shift to the defendant.³¹⁰ The Restatement merely speaks of a battle

³⁰⁷ *Huddell v. Levin*, 537 F.2d 726, 738-39 (3d Cir. 1976); *Polk v. Ford Motor Co.*, 529 F.2d 259, 268 (8th Cir.), *cert. denied*, 426 U.S. 907 (1976).

³⁰⁸ *E.g.*, *Melia v. Ford Motor Co.*, 534 F.2d 795, 799 (8th Cir. 1976); *Polk v. Ford Motor Co.*, 529 F.2d 259, 268 (8th Cir.), *cert. denied*, 426 U.S. 907 (1976); *Larsen v. General Motors Corp.*, 391 F.2d 495, 503 (8th Cir. 1968); *Ellithorpe v. Ford Motor Co.*, 503 S.W.2d 516, 522-23 (Tenn. 1973); *Baumgardner v. American Motors Corp.*, 83 Wash. 751, 758, 522 P.2d 829, 833 (1974).

³⁰⁹ See note 291 *supra*.

³¹⁰ Section 433B(1) of the Restatement (Second) of Torts provides that "[e]xcept as stated in Subsections (2) and (3), the burden of proof that the tortious conduct of the defendant has caused the harm to the plaintiff is upon the plaintiff." Subsections (2) and (3) are inapplicable to the defendant manufacturer because it, like the plaintiff, does not apportion the injuries between itself and the tortfeasor causing the accident. See note 291 *supra*. Similarly, the manufacturer does not divide up indivisible injuries. Since the essence of the claim against the manufacturer is only the injury over and above what would have occurred with a nondefective design, enhancement is not ascertained by apportionment of actual injuries but by evidence of what would otherwise have occurred. See note 302 and accompanying text *supra*. Since the negligent driver causing the accident is responsible for *all* the injuries, the manufacturer does *not* "seek to limit his liability on the ground the harm is capable of

among multiple tortfeasors to apportion the total harm *among themselves*.³¹¹ It does not relate to the plaintiff's burden of proving enhanced injuries. If such proof cannot be set forth, the plaintiff merely has failed to show that the defect aggravated or enhanced the injuries.³¹² When the claimant cannot offer any evidence as to what would have occurred but for the defect, "the plaintiff has not established the fact of enhancement at all."³¹³

If, indeed, any burden of proof respecting enhanced injury liability were to be shifted to the manufacturer, presumably, it would be the burden of proving that the plaintiff's alternative design would *not* have reduced his injuries. Such a burden, however, is illogical and cannot practicably be discharged. To impose liability, the jury needs definitive proof that enhancement occurred as well as the extent and the degree thereof. The defendant's proof of the negative obviously cannot supply such evidence. Since the manufacturer takes the position that there was no defect, it does not offer proof of a safer alternative design. Therefore, the manufac-

apportionment among them." RESTATEMENT (SECOND) OF TORTS § 433B(2) (1965). The manufacturer defends against the proof of enhancement by refuting the claimed defect or the injury-minimizing qualities of the plaintiff's hypothetical design alternative or by showing that the accident was so violent or severe that a different design would have made no difference. The latter defense is equivalent to asserting that there was no defect. The actual injuries, however, are not divided or apportioned. Thus, subsection 2 is inapplicable. Subsection 3 similarly is of no influence in the enhancement claim because it deals with a harm caused by only one of the tortfeasors while the identity of the culpable defendant is uncertain. The negligent driver who causes the accident and who is responsible for all the injuries is readily identifiable. The manufacturer, on the other hand, is not responsible for all the injuries but only for those injuries over and above those that would have occurred without the defect. The manufacturer, therefore, cannot be the "only one" who caused the entire harm, as referred to in subsection 3, unless the plaintiff claimed that the alternative design would have caused no injuries. In such a case, the plaintiff is not claiming enhanced or aggravated injuries and, therefore, does not have to prove enhancement. He does, however, still have to prove the proximate cause of all injuries. What then remains of section 433B? The answer is subsection 1, which imposes nothing more or less than the traditional burden of proof upon a claimant to prove that the tortious conduct caused the harm.

³¹¹ One commentator refers to a court's use of section 433B(2) to shift the burden to the manufacturer as a mistaken abdication of responsibility. See Foland, *supra* note 4, at 615. The author states that:

[t]he *Restatement* requires a defendant to go forward with proof of apportionment because he is the one who seeks to rely on it to relieve himself of liability for all or a portion of the damages. However, in a second collision-crashworthy case, the defendant has no liability absent proof of enhanced injury. Therefore the plaintiff is the one who relies on proof of apportionment to establish his cause of action.

Id. at 615.

³¹² *Caiazza v. Volkswagenwerk, A.G.*, 647 F.2d 241, 251 (2d Cir. 1981).

³¹³ *Id.*

turer cannot and does not show what would have occurred with the "safer" alternative. Moreover, the defendant's legal interest in proving that the actual design did not enhance injuries only becomes manifest *after* the claimant cogently shows the extent of injury reduction attributable to his proposed design. Until that point, there is no enhancement to disprove. The liability theory is wholly the plaintiff's and the manufacturer cannot possibly supply the missing ingredient in the plaintiff's case: that absent the defect less serious injuries would have been sustained. Any proposal to shift the enhancement burden must be recognized as an attempt to force manufacturers to go forward with an inconsistent and highly prejudicial defense. Accordingly, the burden of proving enhancement is placed logically and fairly upon the plaintiff, the only litigant who has the motive, inclination, and ability to prove a defect that unreasonably enhanced his injuries. Thus, the manufacturer is not required to prove a negative—his noncausation of the plaintiff's injuries.³¹⁴

In summary, the burden of proof controversy is a false issue. The language of apportionment found in some decisions is both unfortunate and misleading. Confusion can be avoided if the conceptual premise behind enhancement liability is kept clearly in mind. The plaintiff must prove that his injuries were enhanced over and above those injuries that would have been sustained if a safer, practicable alternative design had been used. Viewed in this light, it is apparent that the burden of proving enhancement rests exactly where it must: upon the plaintiff in whose case proof of enhancement is an essential element for recovery.

LINGERING CONSTITUTIONAL ISSUES

In *Dawson*,³¹⁵ the Third Circuit highlighted tensions of constitutional dimension when it perceived a "troubling public policy dilemma" in permitting individual juries "to establish national automobile safety standards"³¹⁶ and to impose upon manufacturers "the responsibility of insuring vast numbers of persons involved in automobile accidents."³¹⁷ The constitutional implications, however,

³¹⁴ See note 295 and accompanying text *supra*. See also *Caiazza v. Volkswagenwerk, A.G.*, 647 F.2d 241, 246 (2d Cir. 1981); *Huddell v. Levin*, 537 F.2d 726, 740 (3d Cir. 1976).

³¹⁵ *Dawson v. Chrysler Corp.*, 630 F.2d 950 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981). For a discussion of the *Dawson* case, see text accompanying notes 50-64 *supra*.

³¹⁶ 630 F.2d at 953, 962; see text accompanying notes 55-56 *supra*.

³¹⁷ 630 F.2d at 962.

were not addressed by the panel.³¹⁸ Surprisingly, no court appears to have addressed the lingering constitutional issues inherent in jury-formulated crash safety standards via ad hoc adjudications. Ultimately, however, the potential constitutional impediments to jury-establishment of crash design standards must be confronted by the courts. They certainly deserve scrutiny. The following discussion deals with three such issues: preemption, burden upon interstate commerce, and due process.³¹⁹

Preemption

The National Traffic and Motor Vehicle Safety Act of 1966 explicitly provides that states are proscribed from adopting safety standards "not identical" to the federal standards regulating the "same aspect of performance."³²⁰ Thus, a major and novel preemption question is posed by the potential for conflict between official state activity through ad hoc adjudications and federally mandated safety standards. Moreover, jury-formulated design criteria may adversely affect nationally desirable or mandated safety and energy objectives.³²¹

The doctrine of federal preemption is rooted in the supremacy

³¹⁸ *Id.* at 953; see note 62 *supra*.

³¹⁹ An exhaustive discussion analyzing each of these complex constitutional subjects is beyond the scope of this article. The purpose of this section is to identify the significant themes which may pose potential constitutional impediments to the present system and to suggest avenues of possible correction. Because varying cases may present different factual settings in which one constitutional issue may be more significant than others, it would be difficult to analyze incisively all aspects bearing upon a particular problem. For a discussion of some constitutional questions in the crashworthiness area, see Hoenig & Goetz, *supra* note 2, at 59-65.

³²⁰ 15 U.S.C. § 1392(d) (1976). Section 1392(d) of the National Traffic and Motor Vehicle Safety Act of 1966 (Safety Act) provides, in pertinent part:

Whenever a Federal motor vehicle safety standard established under this subchapter is in effect, no State or political subdivision of a State shall have any authority either to establish, or to continue in effect, with respect to any motor vehicle or item of motor vehicle equipment any safety standard applicable to the same aspect of performance of such vehicle or item of equipment which is not identical to the Federal standard.

Id. This section, however, does permit federal and state governments to establish higher standards of performance for vehicles or equipment procured for their own use. 15 U.S.C. § 1392(d) (1976). In other words, the prohibition against establishing standards inconsistent with the federal standards does not apply to vehicles purchased by the states for government use.

³²¹ *Dawson v. Chrysler Corp.*, 630 F.2d 950, 953, 962-63 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981).

clause of article VI of the United States Constitution.³²² Once it is determined that the federal government has power to regulate in a given area, the primary preemption question is whether Congress has exercised its legislative power in such a manner as to exclude the states from asserting concurrent jurisdiction over the same subject matter.³²³ The Supreme Court has indicated that the legal precedents do not provide a "rigid formula" or "exclusive constitutional yardstick" for deciding preemption cases.³²⁴ Rather, the Court has observed that the determination "turns upon the peculiarities and special features of the federal regulatory scheme in question"³²⁵ and the extent to which the challenged state action "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."³²⁶

State activity raising federal preemption questions most often takes the form of traditional lawmaking—state statutes, regulations, or municipal ordinances.³²⁷ Nevertheless, state activity in the form of the imposition of tort or common law liability may also violate the Constitution. For example, in *San Diego Building Trades Council v. Garmon*,³²⁸ the Supreme Court clearly indicated that an award of damages may "conflict with the active assertion of federal authority in the same way as a statute, injunction or regulation".³²⁹

Our concern is with delimiting areas of conduct which must be free from state regulation if national policy is to be left un-

³²² U.S. CONST. art. VI, cl. 2. The supremacy clause provides:

This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

Id.

³²³ *E.g.*, *Northern States Power Co. v. Minnesota*, 447 F.2d 1143, 1146 (8th Cir. 1971), *aff'd*, 405 U.S. 1035 (1972).

³²⁴ *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941).

³²⁵ *Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 638 (1973).

³²⁶ *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941); see L. TRIBE, *AMERICAN CONSTITUTIONAL LAW* § 6-23, at 376-77 (1978).

³²⁷ *E.g.*, *Ray v. Atlantic Richfield Co.*, 435 U.S. 151, 158 (1978) (Washington statutes and regulations regarding the design, size and movement of oil tankers in waterway); *Jones v. Rath Packing Co.*, 430 U.S. 519, 540-41 (1977) (California weight labeling statute and regulations); *Burbank v. Lockheed Air Terminal, Inc.*, 411 U.S. 624, 640 (1973) (City ordinance forbidding jet aircraft from taking off during night hours).

³²⁸ 359 U.S. 236 (1959).

³²⁹ *Id.* at 247.

hampered. Such regulation can be as effectively exerted through an award of damages as through some form of preventive relief. The obligation to pay compensation can be, indeed is designed to be, a potent method of governing conduct and controlling policy. Even the States' salutary effort to redress private wrongs or grant compensation for past harm cannot be exerted to regulate activities that are potentially subject to the exclusive federal regulatory scheme.³³⁰

Thus, the *Garmon* Court held that since Congress had entrusted the administration of national labor policy to the National Labor Relations Board, preemption precluded a state tort action for damages occasioned by a union's organizational picketing.

Despite the relative infrequency of preemption challenges to a state's imposition of tort or common-law liability, it is clear that the imposition of such liability by the state involves the exercise of law-making authority. *Garmon* teaches not only that damage awards may be a "potent method of governing conduct and controlling policy," but also that the means used to express the state remedy is not the determining factor.³³¹

In *Sears, Roebuck & Co. v. Stiffel Co.*, the Court held impermissible a state's "use of its law of unfair competition to prevent the copying of an article . . . which federal law has said belongs to the public."³³² The Court noted that Congress implemented the patent system "to promote invention while at the same time preserving free competition."³³³ Thus, it concluded that a state may

³³⁰ *Id.* at 246-47 (citation omitted).

³³¹ *Id.* at 247.

³³² 376 U.S. 225, 231 (1964). See *Hoehling v. Universal City Studios*, 618 F.2d 972, 980 (2d Cir. 1980), *cert. denied*, 101 S.Ct. 121 (1981); *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 501 F. Supp. 848, 850 (S.D.N.Y. 1980). Cf. *Compco Corp. v. Day Brite Lighting, Inc.*, 376 U.S. 234, 237 (1964) (copyright laws preclude state common-law copyrights).

³³³ *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 230-31 (1964). Just as a uniform scheme was envisioned with respect to patents, a declared congressional purpose of the Safety Act is uniformity of national safety standards: "the centralized, mass production, high volume character of the motor vehicle manufacturing industry in the United States requires that motor vehicle safety standards be not only strong and adequately enforced, but that they be uniform throughout the country." S. REP. NO. 1301, 89th Cong., 2d Sess. 12, reprinted in [1966] U.S. CODE CONG. & AD. NEWS 2709, 2720; see H.R. REP. NO. 1776, 89th Cong., 2d Sess. 17 (1966) ("uniformity of standards" intended so that public and industry are guided "by one set of criteria rather than a multiplicity of diverse standards"). Similarly, Congress intended that the Safety Act should preserve free competition in the industry and should encourage individual research to make safer vehicles: "[t]his legislation reflects the faith that the restrained and responsible exercise of Federal authority can channel the creative energies and vast technology of the automobile industry into a vigorous and

not interfere with the delicate balance achieved by Congress by extending the life of a patent beyond its expiration, either directly by legislation or indirectly by common-law remedies.³³⁴ Similarly, in *Linn v. United Plant Guard Workers*,³³⁵ the Court considered the clash between a civil action for libel under state law and the National Labor Relations Act, which vests exclusive jurisdiction in the NLRB over labor disputes. After analyzing the regulatory intent and balancing the state's "overriding" interest in protecting its citizens from malicious libels, the Court concluded that a total bar of defamation claims was not necessary because the potential for interference with the federal scheme was insufficient to counterbalance the state's legitimate interest. Thus, the state's tort remedies were only partially curtailed. Although the Court held that an action could be maintained for malicious defamation,³³⁶ it further asserted that punitive damages were not available to successful plaintiffs.³³⁷ Moreover, the Court reserved the power, under preemption principles, to limit or exclude the state's damage remedies altogether:

[I]f experience shows that a greater curtailment, even a total one, should be necessary to prevent impairment of that policy, the Court will be free to reconsider today's holding. We deal here not with a constitutional issue but solely with the degree to which state remedies have been pre-empted by the Act.³³⁸

It is evident, therefore, that a supremacy clause clash between a state's strict tort liability remedies and federal policy expressed in the National Traffic and Motor Vehicle Safety Act may be presented even though the state activity is manifested through adjudications rather than statutes, regulations or ordinances.

competitive effort to improve the safety of vehicles." S. REP. No. 1301, 89th Cong., 2d Sess. 1, reprinted in [1966] U.S. CODE CONG. & AD. NEWS 2709. See also *id.* at 2712 ("[v]igorous competition in the development and marketing of safety improvements must be maintained").

³³⁴ *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 231 (1964). The *Stiffel* Court stated: "[j]ust as a State cannot encroach upon the federal patent laws directly, it cannot under some other law, such as that forbidding unfair competition, give protection of a kind that clashes with the objectives of the federal patent laws." *Id.*

³³⁵ 383 U.S. 53 (1966).

³³⁶ *Id.* at 65-67. The Court adopted the standards enunciated in *New York Times Co. v. Sullivan*, 376 U.S. 254, 279-80 (1964), to effectuate the statutory design concerning preemption. 383 U.S. at 65.

³³⁷ 383 U.S. at 65-66.

³³⁸ *Id.* at 66-67. The *Linn* Court also prescribed the requirements of proof in these cases and declared that the trial judge has a duty to reduce excessive awards. *Id.* at 65-66.

Moreover, federal exclusion of state law is mandated when jury-established standards create a "physical impossibility" of compliance with the Federal Motor Vehicle Safety Standards (FMVSS) promulgated under the Safety Act.³³⁹ In *Gray v. General Motors Corp.*,³⁴⁰ for example, the plaintiff, claiming that her collision-related injuries were aggravated when she was thrust into the window of a vehicle, sued the manufacturer for failing to install a "pop out" windshield. Under FMVSS 212, however, the windshield mounting is required to be *retained* in a 30 miles per hour forward crash into a rigid concrete barrier.³⁴¹ If the theory in *Gray* were accepted, it would be physically impossible to comply with both the federal directive and the jury's ad hoc standard for that claim. A further complication is posed by a recent adjudication representing still another jury-formulated view. In *Seese v. Volkswagenwerk, A.G.*, the jury decided that a vehicle's windows should *not* be dislodged during a high-speed rollover, even when the occupants are unrestrained by seatbelts.³⁴² In implementing design choices with respect to windows, therefore, the automobile manufacturer is faced with irreconcilable conflict. The plaintiff in *Gray* wanted the windshield to "pop out"; the unrestrained claimant in the violent rollover case wanted windshields and windows to be unyielding even at high speeds; and the federal safety standard requires windshields to be retained, but only up to a certain point under seatbelted-occupant conditions. Moreover, if the manufacturer complies with the federal standard but chooses to make the windows incapable of dislodgement well above the crash performance speed prescribed in the standard, might he not then be *increasing the danger* to unrestrained occupants in other accidents who strike the windows at high speed? Under these conditions, it is a physical impossibility to comply with the federal requirement and with the ad hoc crash standards advanced by all potential claimants in all accidents.³⁴³

³³⁹ *Florida Lime & Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 142-43 (1963) (federal exclusion of state law is, "inescapable and requires no inquiry into congressional design where compliance with both federal and state regulations is a physical impossibility for one engaged in interstate commerce"). For the text of the elaborate Federal Motor Vehicle Safety Standards ("FMVSS") that have been promulgated, see 49 C.F.R. § 571 (1980).

³⁴⁰ 434 F.2d 110, 111 (8th Cir. 1970).

³⁴¹ *Id.* at 111; see Federal Motor Vehicle Safety Standards, 49 C.F.R. § 571.212 (1980).

³⁴² See *Seese v. Volkswagenwerk, A.G.*, 648 F.2d 833, 844 (3d Cir. 1981).

³⁴³ Similar problems, of course, may be presented in other contexts. For example, a claimant in one case might allege that a door latch mechanism should not give way when

Physical impossibility also can exist because of the intrinsic design characteristics of particular automobiles or their component parts. For example in *Dreisonstok v. Volkswagenwerk, A.G.*,³⁴⁴ the plaintiff's experts claimed that a snub-nosed, multipurpose van with rear cargo capacity should have been built like a passenger sedan with a protruding engine in the front. Of course, adoption of such a standard would influence manufacturers to eliminate novel and utilitarian vehicle designs, leaving few choices for the purchasing public. Notably, Congress intended that this should *not* result from standards set by the agency.³⁴⁵ Thus, it seems that the legis-

subjected to severe collision forces. See notes 266-270 and accompanying text *supra*. The federal safety standards dealing with door latch resistance require latches to withstand a certain load under specified test conditions. See 49 C.F.R. § 571.206 (1980). If the manufacturer complied with the regulations and incorporated such "anti-burst" or "anti-opening" features into the latch so that it did not open even under violent collision forces, would the manufacturer be liable to a claimant who cannot exit or be extricated from a burning vehicle? Another illustration is suggested by *Hurt v. General Motors Corp.*, 553 F.2d 1181, 1183 (8th Cir. 1977), wherein the claimants' experts testified that the seatbelt angle should have been 90°. The federal standard, however, specified an allowable range between 20° and 75°. *Id.*; see notes 84-87 and accompanying text *supra*.

³⁴⁴ 489 F.2d 1066 (4th Cir. 1974).

³⁴⁵ S. REP. No. 1301, 89th Cong., 2d Sess. 6, reprinted in [1966] U.S. CODE CONG. & AD. NEWS 2709, 2714:

In determining whether any proposed standard is 'appropriate' . . . the committee intends that the Secretary will consider the desirability of affording consumers continued wide range of choices in the selection of motor vehicles. Thus it is not intended that standards will be set which will eliminate or necessarily be the same for small cars or such widely accepted models as convertibles and sports cars, so long as all motor vehicles meet basic minimum standards.

Id. Similarly, physical impossibility might arise from conflicting jury-established standards as to the same subject matter. Indeed, in *Seattle-First Nat'l Bank v. Talbert*, [1970-1973] PROD. LIAB. REP. (CCH) ¶ 6550 (Wash. 1970) and *Baumgardner v. American Motors Corp.*, 83 Wash. 2d 751, 752, 522 P.2d 829, 830 (1974), vehicles were claimed to be uncrashworthy because, among other things, the seats remained rigidly anchored during the collision and failed to yield. On the other hand, in *Volkswagenwerk of America, Inc. v. Young*, 272 Md. 201, 321 A.2d 737, 739 (1974) and *Walton v. Chrysler Corp.*, 229 So. 2d 568, 570 (Miss. 1969), the claim was that the design was uncrashworthy because the seats gave way in the collision. Under FMVSS 207, seats must withstand a certain force under prescribed test conditions. 49 C.F.R. § 571.207 (1980). Thus, it is evident that it is a physical impossibility to meet one claimant's preferred standard that the seat give way and another claimant's standard that it should not as well as the federal standard.

If the solution to this problem is that there must be a design compromise between the extremes, why not use the federal safety standard as such a judgmental compromise? Why should it not receive deference? Whenever it is contended that a state's products liability rules *require* more than the federal standard itself requires, there is a danger that the safety agency's decision to set a limit upon the required level of performance in the interests of an overall safety compromise will be thwarted. For example, the federal standard's allowance of seat yielding, after a prescribed force load requirement is exceeded, may represent a safety judgment that other, more serious injuries might be sustained if the seat were made not to

lature could not have intended this situation to result from ad hoc adjudications of tort claims.

Additionally, physical impossibility or its functional equivalent, prohibitive cost, might arise when compliance with a jury-imposed standard conflicts with a FMVSS or increases the damages likely to be sustained by persons involved in other kinds of accidents.³⁴⁶ To illustrate, although rigid bumpers may offer some protection against intrusion, they are dangerous to pedestrians. High seatback head restraints may offer some protection against "whiplash," but may compromise rearward visibility. Brighter or higher intensity lamps may improve visibility at night, but may also blind oncoming drivers. Rigid seats may prevent an occupant from moving rearwards in a rear-end crash, but may increase the injuries of rear seat occupants who strike them during a frontal collision. These and many other engineering conflicts may make it physically impossible to comply with both a federal standard and a jury-imposed standard.

Even if physical impossibility is not present, the federal scheme of regulation may create a preemptive effect. Indeed, if Congress has manifested an intent "to displace coincident state regulation in a given area," the state activity may be excluded.³⁴⁷ In section 1392(d) of the Safety Act, Congress stated that no state may establish "any safety standard applicable to the same aspect of performance of such vehicle or item of equipment which is not identical to the Federal standard."³⁴⁸ If a state proceeded to violate section 1392(d) by creating standards not "identical" to the federal standards, there would be no question that the state re-

yield to forces exceeding the prescribed level.

³⁴⁶ See, e.g., text accompanying notes 340-342 *supra* (pop-out windshields). A plaintiff may claim, for example, that a fuel tank could have been better positioned to provide greater safety in a particular kind of accident, although such design choice would make it difficult to comply with the FMVSS that requires fuel tank integrity to be maintained in multiple test collisions from the front, rear, and side. See 49 C.F.R. § 571.301 (1980). Similarly, a jury standard that a seat belt angle should be 90° would violate the FMVSS requiring an angle between 20° and 75°. See the discussion of *Hurt v. General Motors Corp.* in note 343 *supra*. In addition, a claim that the body structure of a vehicle should be made more rigid to prevent intrusion into the passenger compartment necessarily disregards the possibility that added rigidity would increase accelerations upon the body, decrease energy absorption, and create an automobile more hostile to other vehicles. Such an issue was presented in *Dawson v. Chrysler Corp.*, 630 F.2d 950, 959 (3rd Cir. 1980), *cert. denied*, 450 U.S. 959 (1981).

³⁴⁷ *Northern States Power Co. v. Minnesota*, 447 F.2d 1143, 1146 (8th Cir. 1971), *aff'd*, 405 U.S. 1035 (1972).

³⁴⁸ 15 U.S.C. § 1392(d) (1976); see note 320 *supra*.

quirement could not stand. Surely, the state may not accomplish indirectly through adjudication of tort claims that which it may not accomplish directly by legislation. A state's judicial activities are subject to the same constitutional scrutiny and limitations as are its traditional legislative enactments.³⁴⁹

When Congress has not expressly prohibited dual regulation or unequivocally declared its exclusive authority over a particular subject, federal preemption nevertheless may be implied. Key factors in such a determination are said to be (1) the aim and intent of Congress as revealed by the statute and legislative history; (2) the pervasiveness of the federal regulatory scheme as reflected in the legislation and as carried into effect by the agency; (3) the nature of the subject matter regulated and whether it demands "exclusive federal regulation in order to achieve uniformity vital to national interests;" and (4) whether state law "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."³⁵⁰ Even if the congressional intent in the Safety Act were not as clear as section 1392(d) manifests, a good case can be made to justify a conclusion of implied preemption on the basis of the four key factors enumerated above. First, both the statute and legislative history make it clear that *uniform*, national safety standards were Congress' goal.³⁵¹ Second, the pervasiveness of the federal regulatory scheme is reflected in the scope and breadth of the Safety Act and the safety standards promulgated thereunder.³⁵² Moreover, the agency carrying out the regulatory scheme spends millions of dollars annually to conduct research, testing, compliance, enforcement, and recall activities.³⁵³ Third, the subject matter is certainly one which demands "exclusive federal regulation in order to achieve the uniformity vital to national interests."³⁵⁴ Finally, if jury-established standards vary from case

³⁴⁹ See, e.g., *Linn v. United Plant Guard Workers*, 383 U.S. 53, 60 (1966); *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 231 (1964); *San Diego Bldg. Trades Council v. Garmon*, 359 U.S. 236, 247 (1959).

³⁵⁰ *Northern States Power Co. v. Minnesota*, 447 F.2d 1143, 1146-47 (8th Cir. 1971), *aff'd*, 405 U.S. 1035 (1972).

³⁵¹ See note 333 *supra*.

³⁵² See 49 C.F.R. § 571.101-80 (1980) (federal motor vehicle standards).

³⁵³ For fiscal year 1981, the National Highway Traffic & Safety Administration requested over \$355 million from Congress of which \$52.3 million was for traffic and motor vehicle safety programs. See [1980] PROD. SAFETY & LIAB. REP. (BNA) ¶ 110 (Feb. 1, 1980).

³⁵⁴ *Florida Lime & Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 143-44 (1963); *San Diego Bldg. Trades Council v. Garmon*, 359 U.S. 236, 241-44 (1959); see S. REP. NO. 1301, 89th Cong., 2d Sess. 12, reprinted in [1966] U.S. CONG. & AD. NEWS 2709, 2712, 2720.

to case and conflict with national safety and energy policies or federal safety requirements,³⁵⁵ then the state laws stand as obstacles to the accomplishment of the full purposes and objectives of Congress.³⁵⁶ Thus, regardless of whether the preemptive effect is deemed express or manifest under section 1392(d) or implied under established constitutional analysis, the result would appear to be the same—the proscribed state activity should be curtailed either in whole or in part.

The conclusion that the Safety Act and its FMVSS preempt inconsistent jury-established standards is not impeded by section 1397(c) of the Act which provides: “[c]ompliance with any Federal motor vehicle safety standard issued under this subchapter does not exempt any person from any liability under common law.”³⁵⁷ The plain reach of this provision is simply to declare that common-law liability is not excused merely because of compliance with a safety standard. Stated simply, compliance is not a defense vitiating liability as a matter of law. This subsection, however, does *not* mean that states can act unconstitutionally, via common-law doctrines, to frustrate the national policy promoting uniform performance standards. To reason otherwise would require a conclusion that the legislature’s express prohibition in section 1392(d) could be undone by section 1397(c). Moreover, the prohibition in section 1392(d) is a fundamental rule vital to the very purpose of the Safety Act itself while section 1397(c) is merely a general statement of no *per se* defense. Any conflict between the two arguably would have to be resolved in favor of the fundamental rule which effectuates the purpose of the Safety Act.

The legislative history of the Safety Act does not reveal any sanctity attached to common-law remedies sufficiently strong to either question or nullify an express congressional intent to have uniform federal standards preempt non-identical state standards. On the contrary, the legislative history reveals section 1397(c)’s limited breadth. The Senate Report states that the federal safety standards “need *not* be interpreted as restricting State common law standards of care. Compliance with such standards would thus *not necessarily* shield any person from product liability at com-

³⁵⁵ See *Dawson v. Chrysler Corp.*, 630 F.2d at 962-63; notes 50-71 and accompanying text *supra*.

³⁵⁶ See *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941).

³⁵⁷ 15 U.S.C. § 1397(c) (1976).

mon law."³⁵⁸ The House Report states that compliance "is not to be a defense or otherwise to affect the rights of parties under common law particularly those relating to warranty, contract, and tort liability."³⁵⁹ The tenor of these pronouncements is that section 1397(c) was intended solely to preclude an automatic defense³⁶⁰ and not to sanction unconstitutional state activity in the form of judgments. Moreover, when the Safety Act was enacted in 1966, Congress could not have intended section 1397(c) to allow common-law crashworthiness liability based upon nonidentical jury crash standards since such actions had not at that time been permitted by the courts.³⁶¹ Therefore, Congress obviously was intent upon preserving the common-law remedies which then existed, not upon creating new legal theories of liability.³⁶² In any event, subsections 1392(d) and 1397(c) are not mutually exclusive and do not cancel each other out; rather, they must be construed *in pari*

³⁵⁸ S. REP. No. 1301, 89th Cong., 2d Sess. 12, reprinted in [1966] U.S. CODE CONG. & AD. NEWS 2709, 2720 (emphasis added).

³⁵⁹ H.R. REP. No. 1776, 89th Cong., 2d Sess. 24 (1966).

³⁶⁰ See *Stonehocker v. General Motors Corp.*, 587 F.2d 151, 156-57 (4th Cir. 1978) (section 1397(c) prevents exemption from negligence because of compliance with standards); *Roberts v. May*, 41 Colo. App. 82, 583 P.2d 305, 308 (1978) (standards are "statutory minima" and not conclusive as to manufacturer's liability). Cases considering the threshold question whether there is a common-law duty to provide a crashworthy vehicle have referred to 15 U.S.C. § 1397(c) as an indication that regulation under the Safety Act was intended to supplement the common law of products liability and that courts, therefore, were not powerless to act or impose such a legal duty upon manufacturers. *E.g.*, *Knippen v. Ford Motor Co.*, 546 F.2d 993, 999-1000 (D.C. Cir. 1976); *Volkswagen of America, Inc. v. Young*, 272 Md. 201, 218, 321 A.2d 737, 746 (1974); *Arbet v. Gussarson*, 66 Wis. 2d 551, 562, 225 N.W.2d 431, 438 (1975). These pronouncements simply state that courts may declare legal doctrines notwithstanding legislative activity under the Safety Act. They do not stand for the proposition that courts or juries may adopt, establish, or impose performance standards which are not identical to the federal standards. State court activity to that effect would fare no better than state legislative activity because of the prohibition contained in 15 U.S.C. § 1392(d).

³⁶¹ *Knippen v. Ford Motor Co.*, 546 F.2d 993, 999 (D.C. Cir. 1976); see *Evans v. General Motors Corp.*, 359 F.2d 822, 825 (7th Cir. 1966), cert. denied, 385 U.S. 836 (1967). *Evans* was overruled by *Huff v. White Motor Corp.*, 565 F.2d 104 (7th Cir. 1977). The Safety Act was passed just a few months after the *Evans* case was decided and well before the *Larsen* case.

³⁶² Consider the statement of Rep. Dingell on the Floor of the House of Representatives:

Second, we have preserved every single common-law remedy that exists against a manufacturer for the benefit of a motor vehicle purchaser. This means that all of the warranties and all of the other devices of common law which are afforded to the purchaser, remain in the buyer, and they can be exercised against the manufacturer.

112 CONG. REC. 19663 (1966) (remarks of Rep. Dingell)(emphasis added).

materia.

Although sufficient precedent exists to justify a total curtailment of state tort awards because of federal preemption,³⁶³ courts scrutinizing the constitutional issues might also consider the option of imposing a "partial" curtailment in order to effectuate federal policy.³⁶⁴ One approach to harmonizing Safety Act objectives with the maintenance of products liability suits would be to limit crashworthiness claims to those based upon negligence as opposed to strict tort liability.³⁶⁵ Another form of partial curtailment would involve a requirement that courts give effective weight to a manufacturer's compliance with federal standards.³⁶⁶ This recognition

³⁶³ See, e.g., *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 229-33 (1964); *San Diego Bldg. Trades Council v. Garmon*, 359 U.S. 236, 245-48 (1959).

³⁶⁴ *Linn v. United Plant Guard Workers*, 383 U.S. 53, 67 (1966). A majority of the *Linn* Court held that partial curtailment could limit libel suits to those based upon malice. *Id.* at 61-62. Four dissenting justices, however, urged total curtailment of state-allowed lawsuits. *Id.* at 67-74. Thus, the dividing line between total and partial curtailment may indeed be fine.

³⁶⁵ For a discussion of the desirability of negligence theory over strict liability in the crashworthiness design area, see notes 92-118 and accompanying text *supra*. An argument favoring partial curtailment or preemption of strict liability might proceed as follows. In negligence cases, the jury's inquiry is focused upon the *conduct* of the manufacturer—was there an exercise of reasonable care? In strict liability, however, the jury's focus is upon the product itself and not upon the manufacturer's conduct. See Keeton, *supra* note 44, at 33. Indeed, under doctrinal strict liability theory, the manufacturer may be held liable even if he "has exercised all possible care in the preparation and sale of his product." RESTATEMENT (SECOND) OF TORTS § 402A (1965). Such an instruction to juries invites them to look beyond the federal standard regarding the same aspect of performance and to establish their own non-identical standard, thereby directly conflicting with 15 U.S.C. § 1392(d). Under the Safety Act, the safety standards are "performance standards," specifying the required performance of the vehicle and not the manner in which the manufacturer achieves the specified performance. S. REP. NO. 1301, 89th Cong., 2d Sess. 6, reprinted in [1966] U.S. CODE CONG. & AD. NEWS 2709, 2713-14. The Senate Report illustrates: "[t]he Secretary would thus be concerned with the measurable performance of a braking system, but not its design details." *Id.* at 2714; see 15 U.S.C. § 1391(2) (1976) (defining "motor vehicle safety standard" in terms of performance). Strict tort liability, focusing as it does upon the *end performance of the product* and not upon the manufacturer's conduct, can more easily offend the prohibition of 15 U.S.C. § 1392(d) if a performance standard is established that is not identical to the federal standard in the particular aspect of performance. In negligence theory, however, where the focus of the inquiry is upon the manufacturer's *conduct*, the question does not necessarily involve "the same aspect of performance." In a negligence case, a jury's consideration of a non-identical standard would not as easily amount to the imposition of a performance criterion but merely would constitute an evidentiary factor in the overall question of the manufacturer's *conduct* rather than the product's *performance*. Such an approach would arguably implement the appropriate preemptive effect and, at the same time, permit negligence suits which allege a lack of crashworthiness.

³⁶⁶ See notes 191-218 and accompanying text *supra*. While 15 U.S.C. § 1397(c) precludes compliance as an automatic defense, such compliance is a relevant factor for con-

would encourage compliance with federal standards and better implement, at the state court level, the congressional goal of uniformity. Still another form of partial curtailment would be a prohibition against punitive damage awards when compliance with the federal standard is shown. Since the Safety Act mandates the promulgation of standards designed to eliminate or minimize unreasonable risk of injury and death,³⁶⁷ compliance with such a standard should preclude submission of a punitive damage claim regarding the subject matter or aspect of the performance regulated. Moreover, one case strongly reflects the view that partial curtailment of tort remedies through the denial of punitive damages may be necessary.³⁶⁸

It is evident from the foregoing discussion that the preemption question, whether it involves total or partial curtailment, is a viable constitutional issue of considerable importance. Surprisingly, it has not been addressed or developed by courts in the crashworthiness area. Given the continued proliferation of crashworthiness cases, however, it may not be long before the preemption question is considered.

Burden on Commerce

As indicated in the preceding section, state authority, whether

sideration by the court and jury in ascertaining whether reasonable care was exercised. See *Stonehocker v. General Motors Corp.*, 587 F.2d at 156-57.

³⁶⁷ See 15 U.S.C. § 1391(1) (1976).

³⁶⁸ *Linn v. United Plant Guard Workers*, 383 U.S. at 66. In a recent crashworthiness case, a Fifth Circuit panel seems to have applied a functionally analogous approach regarding the imposition of punitive damages when there has been compliance with federal standards. Although the court stated that compliance was not a defense, it upheld the punitive award primarily on aspects of performance *not* covered by the standards. *Dorsey v. Honda Motor Co.*, [1981] PROD. & SAFETY LIAB. REP. (BNA) ¶ 723 (Sept. 18, 1981). In *Dorsey* a subcompact automobile was struck by a full size car. The occupant of the smaller vehicle sustained serious injuries, sued the manufacturer and prevailed. The jury awarded compensatory damages as well as \$5,000,000 in punitive damages. On appeal, one major issue was the viability of the punitive award in the face of the subject vehicle's compliance with the Federal Motor Vehicle Safety Standards. In justifying the award of punitive damages, the appellate court observed that the standards complied with "are unrelated to several of the design deficiencies developed by plaintiff's evidence." *Id.* at 728. While the regulations governing seat belts were relevant, "none of the regulations . . . governed the strength of the A pillar or the overall ability of the passenger compartment to protect occupants in a crash." Thus, for the issues in this case, the applicable regulations were deemed "far from comprehensive." *Id.* The court's approach seems somewhat strict in light of FMVSS 208 which governs occupant crash protection. The court explains, however, that standard 208 did not apply to the subject vehicle. *Id.* at 728 n.7.

manifested through the legislature or the courts, is subject to the limits which the United States Constitution places upon state action. Indeed, a state cannot exceed its power through an award of damages.³⁶⁹ Thus, strict tort liability remedies based on ad hoc, non-uniform standards may substantially burden interstate commerce in violation of article I, section 8, clause 3 of the Constitution.³⁷⁰ The burden imposed upon commerce may be twofold: first, foreign and interstate commerce may be materially affected in an area where uniformity is indispensable; second, an undue financial burden may be placed upon interstate commerce.

It is well settled that states have no authority to regulate those phases of national commerce which, because of a need for national uniformity, demand that their regulation be prescribed by a single authority.³⁷¹ Indeed, Professor Tribe has noted that “[state regulatory schemes] that individually seem only local in impact can collectively burden multistate enterprises to such a degree that all will be barred by the negative implications of the commerce clause.”³⁷² Thus, the Supreme Court has held that even when the state acts in the interests of safety, the commerce clause may proscribe the state regulatory activity.³⁷³

³⁶⁹ See text accompanying notes 325-338 *supra*. In *Morgan v. Virginia*, 328 U.S. 373, 379 (1945), the Court acknowledged that a final court order may be an invalid burden on interstate commerce. In *Georgia v. Chattanooga*, 406 F.2d 830, 833 (6th Cir. 1969), the court observed that a writ of attachment may be an invalid burden upon commerce.

³⁷⁰ U.S. CONST. art. I, § 8, cl. 3. Imposition of state liability by an invalid regulation of interstate commerce is constitutionally impermissible. See *Michigan Pub. Utils. Comm'n v. Duke*, 266 U.S. 570, 577 (1925) (statute imposing strict liability of common carrier upon private carrier burdened commerce); *Western Union Tel. Co. v. Brown*, 234 U.S. 542, 547 (1914) (statute authorizing suits for mental anguish for failure to deliver telegraph messages is invalid).

³⁷¹ See, e.g., *Raymond Motor Transp., Inc. v. Rice*, 434 U.S. 429, 447 (1978) (state regulations restricting lengths of trailer trucks operating on state highways are invalid); *Bibb v. Navajo Freight Lines, Inc.*, 359 U.S. 520, 530 (1959) (state requirement that trucks be equipped with contour mudguards held invalid); *Southern Pac. Co. v. Arizona*, 325 U.S. 761, 767 (1945) (length of a train not subject to state regulation). See generally L. TRIBE, *supra* note 326, § 6-11, at 338.

³⁷² L. TRIBE, *supra* note 326, § 6-11, at 338.

³⁷³ A challenge to state regulations which were enacted to promote highway safety must overcome the “strong presumption of [the] validity” of such state regulations. *Bibb v. Navajo Freight Lines, Inc.*, 359 U.S. 520, 524 (1959). In *Raymond Motor Transp., Inc. v. Rice*, 434 U.S. 429, 444 (1978), the Court held that the appellants overcame this strong presumption by producing “a massive array of evidence to disprove the State’s assertion that the regulations make some contribution to highway safety.” *Id.* Clearly, since ad hoc crashworthiness adjudications are compensatory in nature, they do not carry the same presumption of validity.

In reports accompanying the Safety Act, Congress unequivocally declared national uniformity to be indispensable.³⁷⁴ As promulgated, federal standards are to apply nationally, thereby forbidding non-identical state standards in the same aspect of performance.³⁷⁵ Indeed, unlike those situations in which a need for uniformity must be implied from circumstances, in the crashworthiness area one encounters the *explicit* recognition that uniformity is indispensable.

As to the financial burden factor, if the fiscal restraint on commerce is "clearly excessive in relation to the putative local benefits," it is an undue burden and, therefore, invalid.³⁷⁶ The primary local benefit derived from the application of a state's tort remedies is compensation for injuries wrongfully sustained. Although this state benefit is not inherently inconsistent with Congress' intent to provide uniform standards and to prohibit "non-identical" standards in the "same aspect of performance," the manner in which crashworthiness cases are resolved demonstrates the possibility of an impermissible financial burden on commerce.

The federal standards are statutorily required to "meet the need for motor vehicle safety."³⁷⁷ Motor vehicle safety is statutorily defined as that performance of the vehicle or equipment which provides the public with protection against the "*unreasonable risk of accidents*" and, in the event of accidents, against the "*unreasonable risk of death or injury*."³⁷⁸ Thus, compliance with federal standards in a particular aspect of performance satisfies at least the minimally-prescribed requisites of protecting against unreasonable risk. When a jury is instructed, however, that it may virtually "establish" its own standard as to the same aspect of performance by imposing liability despite the manufacturer's "exercise of all possible care,"³⁷⁹ the burden placed upon the manufacturer reaches a level that cannot be discharged practicably regardless of the expenditure.

The financial burden of satisfying every conceivable jury-established standard that differs from a federal standard on a partic-

³⁷⁴ S. REP. No. 1301, 89th Cong., 2d Sess. 12, reprinted in [1966] U.S. CODE CONG. & AD. NEWS 2709, 2720; H.R. REP. No. 1776, 89th Cong., 2d Sess. 17 (1966). For textual excerpts, see note 351 *supra*.

³⁷⁵ 15 U.S.C. § 1392(d) (1976).

³⁷⁶ *Pike v. Bruce Church, Inc.*, 397 U.S. 137, 142 (1970).

³⁷⁷ 15 U.S.C. § 1392(a) (1976).

³⁷⁸ 15 U.S.C. § 1391(1) (1976).

³⁷⁹ RESTATEMENT (SECOND) OF TORTS § 402A (1965).

ular aspect of performance is prohibitive, if not impossible. It is, for example, impossible to satisfy two different standards when a jury says a windshield should "pop out" and a federal standard says it should not "pop out" upon a collision.³⁸⁰ The manufacturer bears the financial and legal burden of complying with one performance criterion, only to be penalized by a huge verdict when he cannot comply with the other. Thus, strict liability based solely upon a jury's view of what the performance standard should be will destroy the uniformity deemed so indispensable by Congress. At the same time, the "incoherence in the safety requirements set by disparate juries"³⁸¹ imposes an intolerable burden upon interstate commerce in financial terms and conflicts with other national policies.³⁸² Thus, the local benefit of compensating a wrongfully injured party is clearly exceeded by the burden of liability imposed upon the manufacturer despite his exercise of all possible care.

The Third Circuit in *Dawson* recognized that the responsibility imposed upon automobile manufacturers was one "of insuring vast numbers of persons involved in automobile accidents" because it "would be difficult for members of the industry to alter their design and production behavior in response to jury verdicts in such cases," especially when a particular response "might well be at variance with what some other jury decides is a defective design."³⁸³ When verdicts for crashworthiness liability soar into the multimillion dollar range,³⁸⁴ a clear signal is emitted which demonstrates that the cumulative financial burden is potentially enormous. Such individual verdicts, coupled with the frequency of injurious accidents potentially giving rise to crashworthiness claims, present an exposure that is astronomical. The cost of this potential liability, whether borne through insurance premiums, the price mechanism, or directly from a company's funds, is an economic consequence of

³⁸⁰ Compare *Gray v. General Motors Corp.*, 434 F.2d 110, 111 (8th Cir. 1970) with 49 C.F.R. § 571.212 (1980).

³⁸¹ *Dawson v. Chrysler Corp.*, 630 F.2d 950, 953 (3d Cir. 1980), cert. denied, 450 U.S. 959 (1981).

³⁸² 630 F.2d at 953.

³⁸³ *Id.* at 962.

³⁸⁴ See note 5 *supra*. In *Dorsey v. Honda Motor Co.*, [1981] PROD. & SAFETY LIAB. REP. (BNA) 723 (Sept. 18, 1981), the court affirmed an award of compensatory damages and reinstated a punitive damage award so that the total liability in one accident was \$5,825,000. In *Grimshaw v. Ford Motor Co.*, 119 Cal. App. 3d 757, 174 Cal. Rptr. 348, 349 (1981), the court upheld a judgment exceeding \$6,000,000.

such magnitude that commerce clause scrutiny is justified.³⁸⁵ Therefore, the twin pillars of undue commerce clause burdens—commerce materially affected where uniformity is indispensable and an undue financial burden—might well justify some constitutional interdiction in the area of crashworthiness litigation, especially that based upon strict liability.

Due Process

Procedural due process requires that "deprivation of life, liberty or property by adjudication be preceded by notice and an opportunity for a hearing appropriate to the nature of the cases."³⁸⁶ Moreover, due process obviously contemplates that the right to notice and a hearing be granted at a time "when the deprivation can still be prevented."³⁸⁷

In the congressional scheme of promulgating FMVSS under the Safety Act, procedural due process is safeguarded very carefully. Indeed, standards may be established only to "meet the need for motor vehicle safety." The standards must be "practicable" and "stated in objective terms."³⁸⁸ Moreover, the agency is explicitly directed to consider a number of enumerated factors including the reasonableness and appropriateness of the proposed standard, its effect upon preexisting interrelated standards, and the practicability of the prescribed standard for the particular vehicle.³⁸⁹ Significantly, the industry, the public, and interested persons are permitted input in the standard-setting process. Finally, the agency is required to specify an effective date for orders³⁹⁰ establishing safety standards so that meaningful judicial review may be ob-

³⁸⁵ Liability costs attributable to jury-established non-identical standards are only one form of an undue financial burden. Each year, manufacturers must conduct expensive research, development, testing, and quality control to meet or exceed federal performance standards. If manufacturers are required to comply with newly-minted jury standards, the costs of compliance would be unpredictably and substantially magnified. *See Dawson v. Chrysler Corp.*, 630 F.2d 950, 962 (3d Cir. 1980), *cert. denied*, 450 U.S. 959 (1981).

³⁸⁶ *Mullane v. Central Hanover Bank & Trust Co.*, 339 U.S. 306, 313 (1950).

³⁸⁷ *Fuentes v. Shevin*, 407 U.S. 67, 81-82 (1972).

³⁸⁸ 15 U.S.C. § 1392(a) (1976).

³⁸⁹ *Id.* § 1392(f)(3). The Secretary must "consider relevant available motor vehicle safety data," *id.* § 1392(f)(1), "consult with the Vehicle Equipment Safety Commission, and . . . state or interstate agencies . . . he deems appropriate," *id.* § 1392(f)(2), and "consider the extent to which such standards will contribute to carrying out the purposes of this chapter," *id.* § 1392(f)(4).

³⁹⁰ *Id.* § 1394.

tained.³⁹¹ Thus, it is evident that the congressional scheme, besides assuring procedural due process, proceeds in an orderly and rational fashion.³⁹²

The Safety Act's legislative history indicates that the requirement of a practicable standard "would require consideration of all relevant factors, including technological ability to achieve the goal of a particular standard as well as consideration of economic factors."³⁹³ The requirement of objectivity³⁹⁴ was prescribed "[i]n order to insure that the question of whether there is compliance with the standard can be answered by objective measurements and without recourse to any subjective determination."³⁹⁵ Test procedures must be adequately specified and performance goals must be clearly delineated.³⁹⁶ Study of a particular technological problem like the need for "airbags" and the pertinent advantages and disadvantages of such devices must be thorough.³⁹⁷

It is obvious that if automobile manufacturers are to be charged with an obligation to design cars from the standpoint of collision performance, they need to know *in advance of manufacture* just what must be built into such vehicles. To become legally responsible for compliance with a particular safety standard, the manufacturer must first be advised as to what that standard requires. In the federal standard-setting process involving crashworthiness of automobiles,³⁹⁸ the manufacturer receives adequate

³⁹¹ *Id.* § 1392(c) (1976).

³⁹² *See, e.g.,* Chrysler Corp. v. Department of Transp., 472 F.2d 659, 676 (6th Cir. 1972).

³⁹³ H.R. REP. No. 1776, 89th Cong., 2d Sess. 16 (1976).

³⁹⁴ 15 U.S.C. §§ 1391(2), 1392(a) (1976).

³⁹⁵ H.R. REP. No. 1776, *supra* note 393, at 16.

³⁹⁶ Chrysler Corp. v. Department of Transp., 472 F.2d 659, 678 (6th Cir. 1972).

³⁹⁷ *E.g.,* Pacific Legal Foundation v. Department of Transp., 593 F.2d 1338, 1344-46 (D.C. Cir.), *cert. denied*, 444 U.S. 830 (1979); Chrysler Corp. v. Department of Transp., 472 F.2d 659, 678-80 (6th Cir. 1972). *See* Raleigh, *supra* note 25, at 258-61.

³⁹⁸ The high quality of the standard-setting process and the standards promulgated thereunder are unique to automobile regulation. In the Safety Act, Congress set forth definitive requirements regarding what standards manufacturers must achieve, how they must be developed, the criteria by which they are to be measured and judged, and how they are to be implemented, enforced, and reviewed by the courts. Congress did not simply charge the agency with a task to make standards. It directed that "safety shall be the overriding consideration in the issuance of standards." S. REP. No. 1301, 89th Cong., 2d Sess. 6, *reprinted in* [1966] U.S. CODE CONG. & AD. NEWS 2709, 2714. Standards must be "strong and adequately enforced." *Id.* at 2720. The manufacturer is forbidden, under penalty, to sell non-complying vehicles or equipment. 15 U.S.C. §§ 1397, 1398 (1976). If a vehicle fails to comply, the manufacturer must take immediate remedial steps. *Id.* § 1400 (1976). Vehicles containing defects related to motor vehicle safety must be recalled. *Id.* §§ 1411, 1414 (1976). More importantly, the standards governing the safety performance of automobiles are stated in

notice of what is required of him and an opportunity to be heard on the subject, either through administrative procedures or judicial review. More importantly, perhaps, he has a definitive and objective criterion by which his legal responsibilities are to be measured.

No such due process factors govern when a jury establishes and imposes, through hindsight, a newly minted standard not identical to the federal standard. Instead, the jury is given wide latitude to decide what it feels is appropriate under the particular circumstances. A retrospective, case-by-case jury approach cannot be truly objective, from the standpoint of national interests, because the jury is specifically charged to focus only upon the facts in the case before it. The broader design picture cannot be fully appreciated because of the very nature of the proceeding. Moreover, the sympathy factor, the concept of a target defendant, the suspicion of insurance lurking in the background, and jurors' emotions are all factors which militate against a jury's truly objective consideration of crash design standards. An administrative agency, on the other hand, can research and evaluate an aspect of crash design for months and perhaps years in order to assess "the tradeoffs between the expected benefits and the potential dangers" of a particular safety device.³⁹⁹

It is not surprising, therefore, that the Third Circuit in *Dawson* expressed uneasiness and concern about the fairness and efficiency of the present arrangement which permits jury-imposed standards in a given case to militate against national safety standards and policy goals. It simply may be unfair to require a manufacturer, under threat of penalty,⁴⁰⁰ to comply at great expense with carefully evolved standards and later to subject him to sub-

objective terms and capable of measurement to ascertain compliance. Such standards, when referred to in litigation, provide a specific frame of reference for the jury. When unpredictable, jury-imposed standards become the predicate for liability, however, due process is implicated because there has been no notice of or opportunity to be heard on the promulgation of such ad hoc standards.

³⁹⁹ See *Pacific Legal Foundation v. Department of Transp.*, 593 F.2d 1338, 1347 (D.C. Cir.), cert. denied, 444 U.S. 830 (1979). The situation involving airbags is illustrative. This controversy involved years of intensive and comprehensive review at the agency level and even in Congress itself. Rulemaking activities began in 1969 and the Safety Agency conducted more than 2,000 crash tests of airbags. *Id.* at 1344. Ultimately, the proposed standard was submitted to Congress. *Id.* at 1342. Despite this intensive study, juries nonetheless may establish their own airbag standards by imposing liability upon manufacturers who failed to retrofit their older cars. It is indeed questionable whether such a form of standard setting complies with due process requirements.

⁴⁰⁰ 15 U.S.C. § 1397 (1976).

stantial liability for failure to comply with a different jury-imposed standard. Such unfairness is magnified in light of the express prohibition against non-"identical" state standards contained in the Safety Act.⁴⁰¹

Although the *Dawson* court did not express its uneasiness in constitutional terms, the court's instinctive references to fairness and efficiency of the current litigation system appear to signal the kind of considerations inherent in due process criteria.⁴⁰²

The various constitutional tensions discussed above should be evaluated thoroughly by the courts to ascertain whether, and to what extent, conflicting federal and state policies can be harmonized within the present system. It may be that such scrutiny will serve as the vehicle or catalyst by which reasonable changes are made or, at least, suggested. If the courts fail to act, it may be that Congress will have to do so. In any event, these constitutional issues should not be ignored.

CONCLUSION

Crashworthiness design claims represent a significant expansion of products liability frontiers. In such cases, the focus shifts from design defects that allegedly cause accidents to those that purportedly fail to minimize injuries. This shift in focus magnifies the already complex question, "how much design safety is enough?," and creates a far more open-ended scheme of design claim resolution with very serious policy implications. In determining such cases, courts and juries are thrust into the role of formulating crash safety standards on the basis of ad hoc adjudications which may result in incoherent safety requirements which conflict with important national policies.

The problem is further exacerbated by the preference of many courts to allow resolution of crashworthiness design claims under the theory of strict tort liability, a doctrine which promotes uncer-

⁴⁰¹ *Id.* § 1392(d) (1976). See notes 350-367 and accompanying text *supra*.

⁴⁰² In considering the clash between federal and state policies, it is interesting to note that the first judicial opinions to favor a common-law crashworthiness liability did so prior to the implementation of extensive federal standards. See *Larsen v. General Motors Corp.*, 391 F.2d 495, 506 (8th Cir. 1968) (common-law standard of reasonable care can serve society's needs "until the legislature imposes higher standards"); *Evans v. General Motors Corp.*, 359 F.2d 822, 828 (7th Cir. 1966) (Kiley, J., dissenting) (the "possibility of future adequate legislative standards" did not remove the present necessity of a common-law action). Arguably, the vigorously enforced federal standards effective today obviate the need for expanded common-law remedies which encourage conflicting jury requirements.

tainty and obscures the fact that reasonableness criteria must inevitably govern such design claims. Nevertheless, negligence criteria are discernible in many decisions based on strict liability. In any event, if courts are to continue to employ strict liability in the crashworthiness design area, they must recognize that reasonableness is the basic standard of responsibility and they must reject that form of strict liability which holds a manufacturer liable despite his exercise of all possible care. Use of such a legal standard would improperly impose upon the automobile industry the obligations of an insurer. In addition, such a strict form of liability would operate to destroy a manufacturer's incentive to exercise reasonable care, a result that is patently undesirable. In short, it is unwise to penalize reasonableness.

Perhaps in recognition of the serious policy problems posed by crashworthiness design litigation, courts recently have developed several essential requirements of proof. One requisite is the claimant's obligation to prove an alternative safer design which was practicable under the circumstances. "Practicability," however, does not mean mere technical possibility. Therefore, to forestall a dismissal of his claim, a plaintiff must offer sufficient and probative evidence of practicability. A second element to be proved in a crashworthiness case is the nexus between an alleged design defect and the plaintiff's enhanced injuries. To discharge this burden, the plaintiff must prove, without speculation or conjecture, the injuries, if any, which would have resulted had the proposed alternative design been used. A failure to prove the nature and extent of enhancement justifies dismissal of the claim.

Crashworthiness design litigation also creates tensions of constitutional dimension. The open-ended ability of juries to establish crash design standards appears to conflict with the National Traffic and Motor Vehicle Safety Act, which forbids the states from establishing safety standards that are not identical to the federal standards. Because a state's award of damages pursuant to common-law tort remedies is a form of state activity that must comply with constitutional requirements, the conflict between ad hoc jury-created standards and uniform federal safety standards presents classical questions of preemption, burden upon commerce, and due process. These lingering constitutional problems are significant and eventually must be addressed by the courts.

The significant increase in crashworthiness design litigation, with its attendant multimillion dollar exposure for individual acci-

dents, has created enormous policy pressures that the courts no longer can ignore. If the courts are to continue to play a constructive role in the resolution of crashworthiness claims, they must relieve the mounting pressures by halting the trend towards establishment of yet another compensation scheme and must harmonize conflicting federal and state policies. If the courts fail to act definitively, legislative relief will be necessary.