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CRASHWORTHINESS: DEFECTIVE PRODUCT DESIGN— SECONDARY IMPACT LIABILITY IN TEXAS

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The purpose of this article is to place in perspective that area of case law and product litigation dealing with defective design liability or secondary impact liability—often referred to as crashworthiness in automobile design litigation. As the term is used in this article, "defective design" means a product perfectly designed, manufactured and distributed which, because of its very design, constitutes an unreasonable and dangerous risk to the user or others with the foreseeable ambit of use.

To determine what the courts of Texas will do when confronted with a crashworthiness issue, the present state of the law of products liability should be examined.

SUMMARY OF TEXAS LAW OF PRODUCTS LIABILITY

In 1967 the Texas Supreme Court in *McKisson v. Sales Affiliates, Inc.*[1] quoted the *Restatement (Second) of Torts*[2] and stated the Texas law of products liability to be:

> (1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer or to his property, if
>
> (a) the seller is engaged in the business of selling such a product, and
>
> (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.
>
> (2) The rule stated in Subsection (1) applies although
>
> (a) the seller has exercised all possible care in the preparation and sale of his product, and
>
> (b) the user or consumer has not bought the product from or entered into any contractual relation with the seller.[3]

The following extensions, modifications or explanations of product liability law in Texas have followed:

1. Contributory negligence is not a defense to an established

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1 416 S.W.2d 787 (Tex. Sup. 1967), *noted* 45 TEXAS L. REV. 790 (1967).

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

3 McKisson v. Sales Affiliates, Inc., 416 S.W.2d 787, 788 (Tex. Sup. 1967).

case of strict liability,[4] but *volenti non fit injuria*[5] and misuse of a product are.[6]

2. Strict liability may serve as a vehicle for the recovery of damages not only to persons but to property as well.[7]
3. The doctrine of strict liability is applicable to defective design cases.[8]
4. The doctrine of strict liability is not applicable to cases involving economic losses when no physical damage or injury occurs.[9]
5. The doctrine of strict liability does not apply to persons engaged in construction of a product and not its sale.[10]
6. The doctrine of strict liability cannot be invoked or established merely by showing that injury follows the use of a product.[11]
7. The doctrine of strict liability is applicable and extends to all defective products.[12]
8. The doctrine of strict liability extends its protection to bystanders who are injured by defective products, as well as ultimate consumers.[13]
9. When a product has utilitarian as well as dangerous propensities, a seller is required to give directions or warnings as to its use. When a product which is or may be dangerous is not sold with proper directions or warnings, it remains an unreasonably dangerous product. Warnings or directions placed on a dangerous product may relieve the seller of liability when injury from its use ensues.[14]

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4 Shamrock Fuel & Oil Sales Co. v. Tunks, 416 S.W.2d 779, 783 (Tex. Sup. 1967).

5 Ford Motor Co. v. Russell & Smith Ford Co., 474 S.W.2d 549, 557 (Tex. Civ. App.—Houston [14th Dist.] 1971, no writ). *But see* Comment, *Economic Coercion As Plaintiff's Defense to Volenti Non Fit Injuria in Strict Liability Actions*, 4 ST. MARY'S L.J. 379 (1972).

6 General Motors Corp. v. Muncy, 367 F.2d 493, 498 (5th Cir. 1966); Jacobs v. Technical Chem. Co., 472 S.W.2d 191, 200 (Tex. Civ. App.—Houston [14th Dist.] 1971), *rev'd*, 480 S.W.2d 602 (Tex. Sup. 1972).

7 O.M. Franklin Serum Co. v. C.A. Hoover, 410 S.W.2d 272, 274 (Tex. Civ. App.—Amarillo 1966), *writ ref'd n.r.e.*, 418 S.W.2d 482 (Tex. Sup. 1967).

8 Garcia v. Sky Climber, Inc., 470 S.W.2d 261, 268 (Tex. Civ. App.—Houston [1st Dist.] 1971, writ ref'd n.r.e.); Pizza Inn, Inc. v. Tiffany, 454 S.W.2d 420, 424 (Tex. Civ. App.—Waco 1970, no writ).

9 Thermal Supply, Inc. v. Asel, 468 S.W.2d 927, 930 (Tex. Civ. App.—Austin 1971, no writ).

10 Freitas v. Twin City Fisherman's Co-op Ass'n, 452 S.W.2d 931, 937 (Tex. Civ. App.—Corpus Christi 1970, writ ref'd n.r.e.).

11 Hebert v. Loveless, 474 S.W.2d 732, 737 (Tex. Civ. App.—Beaumont 1971, writ ref'd n.r.e.).

12 Olsen v. Royal Metals Corp., 392 F.2d 116, 117 (5th Cir. 1968); Ross v. Up-Right, Inc., 402 F.2d 943, 946 (5th Cir. 1968); Helene Curtis Indus., Inc. v. Pruitt, 385 F.2d 841, 848 (5th Cir. 1967), *cert. denied*, 391 U.S. 913 (1968).

13 Monsanto Co. v. Thrasher, 463 S.W.2d 25, 27 (Tex. Civ. App.—Amarillo 1971, writ dism'd); Darryl v. Ford Motor Co., 440 S.W.2d 630, 633 (Tex. Sup. 1969).

14 Helene Curtis Indus., Inc. v. Pruitt, 385 F.2d 841, 858 (5th Cir. 1967), *cert. denied*, 391 U.S. 913 (1968); Jacobs v. Technical Chem. Co., 472 S.W.2d 191, 197 (Tex. Civ. App.—Houston [14th Dist.] 1971), *rev'd*, 480 S.W.2d 602 (Tex. Sup. 1972); Procter & Gamble Mfg. Co. v. Langley, 422 S.W.2d 773, 778 (Tex. Civ. App.—Dallas 1967, writ dism'd).

From these decisions it appears that Texas has been progressive in giving voice to the economic and social pressures that form the common law relating to products liability.

DUTY VS. NO DUTY IN CRASHWORTHINESS

The discussion on crashworthiness will be divided into an analysis of those cases which hold there is no duty to manufacture an automobile that will protect its occupants from the effects of a collision and those cases which hold there is such a duty.[15]

THE NO DUTY CASES

In *Evans v. General Motors Corp.*[16] the plaintiff contended that the "X" frame in his decedent's vehicle had a defective design which made the vehicle unreasonably dangerous in a reasonably foreseeable impact situation. The court relied on the no duty rationale to deny recovery.

> A manufacturer is not under a duty to make his automobile accident-proof or fool-proof; nor must he render the vehicle "more" safe where the danger to be avoided is obvious to all. . . . Perhaps it would be desirable to require manufacturers to construct automobiles in which it would be safe to collide, but that would be a legislative function, not an aspect of judicial interpretation of existing law.[17]

The court further reasoned:

> The intended purpose of an automobile does not include its participation in collisions with other objects, despite the manufacturer's ability to foresee the *possibility* that such collisions may

[15] Other jurisdictions which have apparently allowed recovery in design defect cases not related to automobile design include: California, in Greenman v. Yuba Power Products, Inc., 377 P.2d 897 (Cal. 1962) (the first decision ever to impose strict liability on a manufacturer), where a piece of wood being turned in a lathe flew out of the holding tailstock and struck the operator in the forehead; Florida, in Matthews v. Lawnlite Co., 88 So. 2d 299 (Fla. 1965), where the design of the moving parts of a lounge chair amputated the fingers of the chair occupant; Minnesota, in McCormack v. Hankscraft Co., 154 N.W.2d 488 (Minn. 1967), where the design of a hot water vaporizer would allow its scalding contents to spill when tipped over; New Jersey, in Savoia v. F.W. Woolworth Co., 211 A.2d 214 (1965), where a hobby horse was held to be defectively designed for failure of the design to compensate for vibratory dissonance which would result in throwing the rider off while using the toy; New York, in Gittelson v. Gotham Pressed Steel Corp., 42 N.Y.S.2d 341 (Sup. Ct. 1943), where a spring retainer was deficient in preventing escape of the injury-causing spring; North Carolina, in Swaney v. Peden Steel Co., 131 S.E.2d 601 (N.C. 1963), where steel support trusses were not designed to withstand reasonably foreseeable "shock" loads.

[16] 359 F.2d 822 (7th Cir.), *cert. denied*, 385 U.S. 836 (1966).

[17] *Id.* at 824.

> occur. As defendant argues, the defendant also knows that its automobiles *may* be driven into bodies of water, but it is not suggested that defendant has a duty to equip them with pontoons.[18]

It may plausibly be argued that the keystone to the court's error in this case hinges on the use of the word "possibility." The court in *Evans* treats collisions as possibilities only, rather than the certainty which they are. The court equates the possibility of collisions with the possibility of vehicles being driven into bodies of water. This comparison is clearly erroneous as to the mathematical probability of actual occurrence. The law in all modes of litigation has rarely imposed liability or created a duty where only a "possibility" existed as a result of the exercise of foreseeability.

The appeal in *Evans* was from a dismissal of the plaintiff's complaint. Obviously no evidence was ever heard. The opinion sets out the contentions of the parties and apparently assumes the plaintiff's position to be as follows: (1) The side rails and a perimeter frame could have provided added protection (therefore only a possibility of lessened injury). (2) The "X" frame construction did not prevent the side of decedent's vehicle from collapsing (this means only a possibility that another design would have been better). (3) The "X" frame did not cause the impact nor prevent the decedent's car from being driven out of the path of the striking car (very elementary). (4) Nor did the plaintiff contend that the decedent could not have been killed or injured in this same collision had the 1961 Chevrolet station wagon been designed with a perimeter frame (thus, only a possibility that any design existed which could have prevented or minimized the injury or defects).[19]

If these assumptions were based on the plaintiff's case and were true, the plaintiff probably should not have been allowed to proceed, but *not* for the reasons stated. For example, let us assume that the proof and position of the plaintiff in *Evans* had been: (1) That side rails and a perimeter frame would have absolutely prevented any injury or death. (2) That "X" frame cars always collapse in side impacts even at low speeds such as 2 m.p.h. and frequently injure or kill occupants in the car. (3) That the decedent would not have been injured at all in the collision, let alone killed, had the 1961 Chevrolet station wagon been designed and equipped with a perimeter frame. With these findings, could the court possibly have arrived at the same conclusions?

18 *Id.* at 825 (emphasis added).
19 *Id.* at 825.

Judge Kiley in his dissent dissected the problem for all to see by saying:

> In my view General Motors' duty was to use such care in designing its automobiles that reasonable protection is given purchasers against death and injury from accidents which are expected and foreseeable yet unavoidable by the purchaser despite careful use.[20]

He thus recognized that foreseeability, knowledge and common sense produced a duty. Surely 3,800,000 vehicular accidents a year and 55,000 deaths resulting therefrom are of sufficient significance to at least create thoughtful design in view of the common disaster.[21]

The majority view based on "no duty" would allow the automotive industry to manufacture their automobiles from egg shells and to use such designs as would guarantee certain death in every accident, regardless of severity. This position is plainly untenable.

The same decision could have been reached in *Evans* on the basis of insufficient evidence, but the court went further than necessary and held that under no circumstances could a manufacturer be held to anticipate, and therefore guard against, collisions and their sequela. However, *Evans* is not the only decision to announce the bankruptcy of reason.

In *Schemel v. General Motors Corp.*,[22] the plaintiff sought to recover from General Motors for designing and building a vehicle capable of speeds in excess of 115 m.p.h., which was the speed at which his vehicle had been struck from the rear. The court, in affirming the dismissal of the plaintiff's action, held that the automobile in question was not dangerous for its lawful use which is the purpose for which it was supplied.[23] Judge Kiley in another dissent lighted the path again by saying:

> I would hold that General Motors had the duty to foresee that if it designed its product with a speed capacity far exceeding any legal limit and emphasized that capacity in its advertising, recklessly inclined drivers would be encouraged to put that capacity to abnormal use and expose innocent persons like Schemel to the unreasonable risk that what happened would happen.[24]

In *Willis v. Chrysler Corp.*[25] a summary judgment was granted the

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20 *Id.* at 827.

21 Accident Facts 1971—National Safety Council, Chicago, Illinois, reveals that during 1970 there were 3,800,000 automobile accidents and 55,000 deaths resulting therefrom.

22 384 F.2d 802 (7th Cir. 1967).

23 *Id.* at 804.

24 *Id.* at 810.

25 264 F. Supp. 1010 (S.D. Tex. 1967).

manufacturer where the only claim was that the manufacturer breached an implied warranty of fitness because the vehicle broke into two pieces after impact. It was admitted that the vehicle was involved in a "high speed" impact. There was apparently no evidence that the design or manufacture of the car was defective or contributed to the breaking apart in any respect. The court stated: "This court is of the opinion that the defendant had no duty to design an automobile that could withstand a high speed collision and maintain its structural integrity."[26]

It should be noted that this holding is confined to "high speed collisions." What would the decision have been if the breaking apart had occurred at an impact speed of 10 m.p.h.? It cannot be believed that the court would have held the same in the face of a low speed collision. The usefulness of the speed contrast is to demonstrate that a duty does exist even though it may be limited. This limit is probably imposed where impacts reach the degree of "high speed," wherever that is.[27]

THE DUTY CASES

Fortunately the theory that a manufacturer has no duty to design an automobile that will withstand the effects of an impact has not been universally adopted.[28] In *Larsen v. General Motors Corp.*,[29] the appellate court reversed a trial court's dismissal based on the "no duty" theory. Larsen contended that locating the steering column 2.7 inches forward of the leading surface of the tires constituted negligence by enhancing the danger to the driver in a front-end collision. The court held:

> Accepting . . . that a manufacturer's duty of design and construction extends to producing a product that is reasonably fit for its intended use . . . the issue narrows on the proper interpretation of "intended use." . . . The manufacturer should not be heard to say that it does not intend its products to be involved in any accident when it can easily foresee and when it knows that the probability over the life of its product is high, that it will be involved in some type of injury-producing accident. . . . The sole function of an

[26] *Id.* at 1012.

[27] *Cf.* Shumard v. General Motors Corp., 270 F. Supp. 311 (S.D. Ohio 1967); Walton v. Chrysler Motors Corp., 229 So. 2d 568 (Miss. 1969).

[28] It should be noted that most of the cases which have allowed recoveries for defective design have only done so where the dangerous propensities were not and could not have been known by the ultimate user. Predictably, suits involving products with dangerous propensities that are open and obvious have not generally been successful.

[29] 391 F.2d 495 (8th Cir. 1968).

> automobile is not just to provide a means of transportation, it is to provide a means of safe transportation or as safe as is reasonably possible under the present state of the art.[30]

The rationale of *Larsen* was followed in *Dyson v. General Motors Corp.*[31] in which the court found that a duty did exist to design a "hardtop" convertible roof so as not to be unnecessarily dangerous in the event of an overturn. The court said:

> [I]t is the obligation of an automobile manufacturer to provide more than merely a movable platform capable of transporting passengers from one point to another. The passengers must be provided a reasonably safe container within which to make the journey. . . . [T]he roof should provide more than merely protection against rain. For example, if the plaintiff's injuries had been sustained because the roof of the vehicle collapsed under the weight of a sack of potatoes . . . I am convinced that the defendant could properly be held liable for negligent design. . . .[32]

Larsen was also followed in *Grundmanis v. British Motor Corp.*,[33] in which the plaintiff contended that the location of the gasoline tank in an MGB automobile created an unreasonable risk to the vehicle occupants in impact situations. The court refused to dismiss the complaint and after examining the *Evans* and *Larsen* positions, said:

> I find the reasoning of the court in *Larsen* . . . most persuasive and agree that "*[w]hile all risks cannot be eliminated nor can a crash-proof vehicle be designed under the present state of the art, there are many common-sense factors in design, which are or should be well known to the manufacturer that will minimize or lessen the injurious effects of a collision. . . .*" To adopt the position of the majority in *Evans* . . . would be to ignore reality, for the foreseeability of accidents is a matter of public and common knowledge. *Thus the manufacturer must accept the duty of protecting the user from unreasonable risk of injury due to negligence in design.*[34]

Similarly in *Badorek v. General Motors Corp.*,[35] a Corvette sports car's

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30 *Id.* at 501. The same court, however, in Schneider v. Chrysler Motors Corp., 401 F.2d 549 (8th Cir. 1968), correctly ruled for the manufacturer and held that an open vent window when struck by a person's eye in the act of leaning over to peer into a non-moving car did not constitute a defective product. The court would only require the exercise of care in the face of some probability, not a mere possibility.

31 298 F. Supp. 1064 (E.D. Pa. 1969).

32 *Id.* at 1073. *See also* Passwaters v. General Motors Corp., 454 F.2d 1270 (8th Cir. 1972); Richmon v. General Motors Corp., 437 F.2d 196 (1st Cir. 1971); Gray v. General Motors Corp., 434 F.2d 110 (8th Cir. 1970).

33 308 F. Supp. 303 (E.D. Wis. 1970).

34 *Id.* at 306 (emphasis added).

35 90 Cal. Rptr. 305 (Dist. Ct. App. 1971).

gasoline tank was ruptured in a rear-end collision and produced enhanced injuries due to burns. The basis of recovery was sustained upon the theory of crashworthiness following *Larsen*.

THE FUTURE

In the unreported case of *Bratton v. Chrysler Motors Corp.*[36] a jury verdict and final judgment was entered for the plaintiff upon the issue of crashworthiness liability. The case was subsequently settled for a substantial sum. The charge of the Honorable John H. Wood, Jr., United States District Judge, is explanatory of the fact situation and correctly states the law as this writer feels it will eventually be interpreted. The names of the participants have been omitted.

> All right, ladies and gentlemen, the evidence and the arguments of the lawyers now having been concluded, I will give you a verbal charge on the law applicable to the issues of fact which are submitted to you for determination in this case:
>
> The plaintiffs contend in general that on or about December 15, 1967, A and B, minors, were riding in the back seat of a 1968 Dart automobile being driven by their father . . . . Plaintiffs further contend that they were traveling at a speed of approximately 35 to 40 miles per hour when said vehicle was suddenly struck from the rear by a vehicle being driven by D, said automobile being a 1964 Ford. Plaintiffs also contend that the Ford automobile was traveling at a speed variously estimated at from 50 to perhaps 65 miles per hour, and that the plaintiffs' vehicle in which they were riding immediately upon impact burst into flames after which an immediate explosion occurred, during which the gas tank on said vehicle was ruptured.
>
> Plaintiffs also contend that as a result of the rupturing of the fuel tank and the explosion, the minor plaintiffs received severe and disabling burns and injuries to their bodies, which injuries are made the basis of this suit. Plaintiffs further claim that the vehicle involved, insofar as the location, configuration, construction and assembly of the gas tank is concerned, in its relationship to the spare tire, bumper, differential, "kick up," side and rear frames are concerned, was defectively designed; in that it was designed, manufactured and assembled in the automobile in such a manner as to bring about a rupturing of the fuel tank under circumstances where a rear end collision occurs and forces the rear bumper, frames and spare tire into the gasoline tank in such a manner as to compress it against the differential and rupture the tank.
>
> . . . .
>
> Now, the essential issues to be determined by you in this case are these:

[36] No. SA-69-CA-369 (W.D. Tex. 1972).

(1) Do you find from a preponderance of the evidence that the Defendant manufacturers defectively designed and manufactured the Dodge Dart in any one of the above particulars as alleged and contended by the Plaintiffs?

If you have answered the above question in the negative, you will return a verdict for the Defendants.

However, if you have answered the above question in the affirmative, that the Dodge Dart was defectively designed in any one of the particulars as contended by the Plaintiffs, and that it was a producing cause of any injury to the Plaintiffs, then of course you . . . will find for the Plaintiffs unless you find for the Defendants on one of the defensive issues which I will hereinafter submit to you.

You are further instructed that the words or phrases "Defects" or "Defectively Designed or Manufactured" as used in this charge mean where the product, in this case, a Dodge Dart, exposes the user of such product to an unreasonable risk of harm.

Now, what is the definition of "Unreasonable Risk of Harm?" It means that the product is dangerous to an extent beyond that which would be contemplated or foreseen by an ordinary user who purchases the product with the ordinary common knowledge in the community as to the characteristics of the product. This unreasonable risk of harm or injury must occur when the product is subjected to or utilized in a foreseeable manner in a reasonably foreseeable environment or state.

In determining what is reasonably foreseeable by the manufacturer or seller at the time the product is placed on the market, you may consider those uses of the product which would be reasonably foreseeable by the manufacturer at the time the article was placed on the market, and such uses as a normal and reasonable knowledge of human nature and circumstances dictates that said article would be used in or subjected to in normal use of human endeavor.

A product is defective if it is "unfit for its intended use." By the term "unfit for its intended use" is meant a product sold in a defective condition, unreasonably dangerous to the consumer or user; and constituting a danger beyond that which would be contemplated by the ordinary user who purchased it with the ordinary knowledge common to the community as to the characteristics of the product. Proof of a defective condition need not be made by direct or opinion evidence only. It may also be made by circumstantial evidence as I have defined that term to you heretofore. The defective condition, if any, must exist at the time that the product left the hands of the Defendants who manufactured it and when it was placed in commerce.

If a product like the Dodge Dart in question is misused, that is, if it is improperly used, or not used in the manner contemplated by the ordinary user who purchases it with ordinary knowledge

common to the community and to the public as to the characteristics of the product, then the Defendants who manufactured it would not be liable under the law. In this connection, a manufacturer of a product is entitled to assume that the Dodge Dart would not be subjected to abnormal or improper use or handling, and of course the Defendants would not be liable if their injuries resulted from abnormal use or handling. If you find, therefore, from a preponderance of the evidence that the Dodge Dart was improperly used, then you will find for the Defendants.

You are further instructed that the Defendants do not have the duty to design, manufacture or sell the product here in question so as to absolutely prevent any and all injuries resulting from rear end collisions, but you are instructed that the Defendants do have a duty to design, manufacture and sell the product here in question in a manner so as to prevent or minimize any and all damages or injuries which result from vehicular collisions which are reasonably foreseeable from the reasonably anticipated use, in the environment in which the product will in all reasonable probability be operated or used. You are further instructed that the Defendants have a duty to design, manufacture and sell the product in such manner as to not expose the users of said product to an unreasonable risk of harm, as I have defined the term to you, and which is beyond that risk which would be contemplated by the ordinary user who purchases it with ordinary knowledge common to the community as to its characteristics. While the manufacturer of a product is not expected under the law to manufacture an automobile which is so called "completely fire-proof," the product must be designed and manufactured in a manner which would not render its use "unreasonably dangerous."

Now "unreasonably dangerous" is defined as follows: For the product to be "unreasonably dangerous," as that term is used herein, the product must be dangerous to an extent beyond that which would be contemplated by an ordinary consumer who purchases the vehicle with the ordinary knowledge common to the community as to the characteristics of a product of the type purchased.

On the other hand, as I have said, the Defendant is entitled to assume that its product will be put to a normal use for which the product is intended.

I will give you the summary of liability in this products liability case as follows:

Bearing in mind the admissibility of the evidence herein, you are instructed that if you find from a preponderance of the evidence that at the time the Dodge Dart in question left the hands of the Defendants who manufactured the product and it was at that time in a defective condition by reason of defective design or manufacture in any one or more of the particulars alleged by the Plaintiffs, rendering the product unfit for its intended

use and that such defective condition was the producing cause of any injuries, or damages to the Plaintiffs as alleged, you will find for the Plaintiffs, unless you find for the Defendants on one of the defensive issues submitted.

On the other hand, ladies and gentlemen, if the Plaintiffs have failed to prove by a preponderance of the evidence that the product left the hands of the Defendants in a defective condition, making the product unfit for its intended use, and that such defects, if any, were the producing cause of any injuries or damages to Plaintiffs, then you will find for the Defendants. Further, if you find from a preponderance of the evidence that the Dodge Dart in question was misused, as that term has been explained to you, and that such misuse, if any, was a proximate cause of the Plaintiffs' injuries and damages, if any, then you will find for the Defendants.

Also, in this connection you are instructed that the Plaintiffs have the burden of proving by a preponderance of the evidence that the acts of Defendant in striking the Plaintiffs' vehicle from the rear were not the sole proximate cause of the injuries of the Plaintiffs.

In this connection, if you find that such act of Defendant in striking the Plaintiffs' vehicle from the rear was the sole proximate cause of the injuries suffered by the Plaintiffs, then you will find for the Defendants.

Any lawyer who would urge a crashworthiness case would do well to heed the experience of the cases and include the following propositions in his contentions and offer of proof. Anyone defending such cases would probably find his time most usefully spent in proving the converse of each proposition, except as to numbers two and three.

1. Prove a defect in design, that is, a feature of design which is unreasonably dangerous.
2. Admit that the claimed design defect did not cause the initial impact or original injury, if any.
3. Admit that the product is perfectly manufactured.
4. Prove that the product was being used: (a) as specifically intended, or (b) as should have been reasonably anticipated by the manufacturer, or (c) in a reasonably foreseeable environment.
5. Prove that the design defect operates in such a manner to cause injury, and such injury is scientifically predictable when the product is in use.
6. Prove that the injuries received from the original impact are minor when compared to the injury produced by the secondary impact or defective design.
7. Prove that reasonable methods or alternatives are available to replace the defective design which would prevent or mini-

mize the effects of the defective design in a secondary impact situation.

If these criteria are met it is reasonably certain that the Texas courts will follow the *Larsen* line of cases and allow recovery.

CONCLUSION

The courts of Texas are in the forefront of the judicial advancement of the common law of products liability. This advance has not been one which could be characterized as radical or reactionary, but rather the slow measured step of progress tempered with increased experience and awareness. The day of defective design is here, secondary impact and crashworthiness are on the eastern horizon.