ILLINOIS OFFICIAL REPORTS

Supreme Court

***Jablonski v. Ford Motor Co.*, 2011 IL 110096**

Caption in Supreme Court:	DORA MAE JABLONSKI *et al.*, Appellees, v. FORD MOTOR COMPANY *et al.* (Ford Motor Company, Appellant).
Docket No.	110096
Filed	September 22, 2011
Held (*Note: This syllabus constitutes no part of the opinion of the court but has been prepared by the Reporter of Decisions for the convenience of the reader.*)	The duty analysis in a negligent-product-design case encompasses a risk-utility balancing test, and while compliance with industry standards is a relevant factor in that analysis, it is not dispositive.
Decision Under Review	Appeal from the Appellate Court for the Fifth District; heard in that court on appeal from the Circuit Court of Madison County, the Hon. A.A. Matoesian, Judge, presiding.
Judgment	Judgments reversed.

Counsel on Appeal

Philip J. Rarick, of Troy, Gary Feinerman, Justin B. Weiner and Constantine L. Trela, Jr., of Sidley Austin LLP, of Chicago, and Alan J. Dixon, Dan H. Ball and Peter W. Herzog III, of Bryan Cave LLP, of St. Louis, Missouri, for appellant.

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Bruce R. Braun and Linda T. Coberly, of Chicago, and Geoffrey P. Eaton, of Washington, D.C., all of Winston & Strawn LLP, for *amicus curiae* The Alliance of Automobile Manufacturers.

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Bruce R. Pfaff, of Chicago, for *amicus curiae* Illinois Trial Lawyers Association.

Justices

JUSTICE THEIS delivered the judgment of the court, with opinion.

Justices Freeman, Garman, Karmeier, and Burke concurred in the judgment and opinion.

Chief Justice Kilbride and Justice Thomas took no part in the decision.

OPINION

¶ 1 In this appeal, we are asked to clarify the duty analysis in a negligent-product-design case. Plaintiffs, Dora Mae and John L. Jablonski, Jr., as the special administrator and personal representative of the estate of John L. Jablonski, Sr., brought this action in the circuit court of Madison County against Ford Motor Company, alleging, *inter alia*, negligent design of the 1993 Lincoln Town Car's fuel tank and willful and wanton conduct, seeking punitive damages. The jury returned a general verdict in the Jablonskis' favor and awarded a total of $28 million in compensatory damages and $15 million in punitive damages. The appellate court affirmed the circuit court judgment. 398 Ill. App. 3d 222. This court allowed Ford's petition for leave to appeal. Ill. S. Ct. R. 315(a) (eff. Feb. 26, 2010). For the reasons that follow, we reverse the judgments below.

¶ 2 BACKGROUND

¶ 3 On July 7, 2003, John and Dora Jablonski were traveling home in their 1993 Lincoln Town Car on I-270 in Madison County, Illinois, when they came to a complete stop in a construction zone. A Chevrolet Lumina driven by Natalie Ingram slammed into the Jablonskis' Town Car at a high rate of speed with no evidence of braking. According to experts, the Lumina struck the Town Car at between 55 and 65 miles per hour. As a result of the crash, a large pipe wrench in the trunk of the Town Car penetrated the trunk and punctured the back of the vehicle's fuel tank. The vehicle burst into flames, causing John's death and Dora's severe burns and permanent disfigurement.

¶ 4 Plaintiffs filed their original nine-count complaint against Ford and Ingram. After settling with Ingram, the case proceeded against Ford. Throughout the litigation, plaintiffs' theories of recovery continually evolved. By the time of trial, in their third amended complaint, plaintiffs alleged that at the time the 1993 Lincoln Town Car was designed and manufactured and "thereafter," Ford was under a legal duty to use ordinary care to ensure the 1993 Lincoln Town Car was not unreasonably dangerous and defective. Plaintiffs further alleged that at the time that Ford designed and manufactured the 1993 Lincoln Town Car, it was negligent and strictly liable in one or more of the following ways: (1) equipping the 1993 Lincoln Town Car with a vertical-behind-the-axle fuel tank; (2) failing to shield the vertical-behind-the-axle tank; and (3) failing to warn consumers of the risk of trunk contents puncturing the fuel tank.

¶ 5 Plaintiffs additionally alleged that these negligent acts constituted willful and wanton conduct. Plaintiffs specifically pleaded that at the time the 1993 Town Car was designed and manufactured Ford had knowledge of multiple deaths and/or serious injuries that were the result of its placement of its fuel tank behind the axle on certain of its vehicles, namely the Crown Victoria, the Mercury Grand Marquis and the Lincoln Town Car. Further, plaintiffs pleaded that Ford had knowledge that these particular models had an increased danger of fire-related injuries and that shielding and other devices were necessary to protect against fuel leakage and ignition.

¶ 6 The 11-day trial in this complex product design case included testimony from numerous lay and expert witnesses, encompassing over 3,000 pages of transcripts and hundreds of exhibits. After the close of the evidence, plaintiffs ultimately abandoned their strict liability claims, and the case was presented to the jury on several theories of negligent design and willful and wanton conduct: (1) failing to locate the fuel tank over the axle or forward of the rear axle; (2) failing to shield the fuel tank to prevent punctures by contents in the trunk; and (3) failing to warn of the risk of trunk contents puncturing the fuel tank. The jury was additionally instructed on a fourth theory never before pleaded, which was failing to inform the Jablonskis of certain remedial measures taken by Ford after the manufacture of the vehicle, but prior to the Jablonskis' accident. The following evidence was introduced to support those four theories.

¶ 7 Historically, in the sixties and seventies, most fuel tanks in passenger vehicles were located behind the rear axle, or "aft of axle," situated horizontally under the trunk of the vehicle, inches from the rear bumper. Research in 1968 indicated that this particular under-

the-trunk location was susceptible to fuel-fed fires in rear-end collisions. At that time, a safer alternative location was proposed to place the fuel tank over the rear axle.

¶ 8 In 1979, Ford introduced the "Panther platform" design, which ultimately served as the basis for several large civilian and law enforcement four-door sedan models, including the Mercury Grand Marquis, the Ford Crown Victoria, the Ford Crown Victoria Police Interceptor, and the Lincoln Town Car. In these models, including the 1993 Lincoln Town Car, Ford chose a different fuel tank configuration, referred to at trial as a "vertical-behind-the-axle" tank. The tank was located aft of the axle, but between the two rear wheels, about 40 inches from the rear bumper and in front of the trunk.

¶ 9 Much of the trial centered around whether this location was a reasonably safe location for the fuel tank. By 1981, Ford began designing various new passenger car models with front-wheel drive and the fuel tank located forward of the axle. By 1991, the majority of new Ford models were being manufactured with fuel tanks forward of the axle. The Panther platform and the Mustang were the only two types of vehicles Ford still manufactured with an aft-of-axle fuel tank. Other manufacturers, including Audi, BMW, Chrysler, General Motors, and Volvo, continued to manufacture vehicles with an aft-of-axle fuel tank.

¶ 10 I. Plaintiffs' Evidence

¶ 11 A. Negligent Fuel Tank Location

¶ 12 Plaintiffs' expert Mark Arndt was critical of the fuel system in all aft-of-axle tanks, including both the "under the trunk" and "vertical-behind-the-axle" locations because they failed to maintain fuel system integrity during a crash. Specifically, he stated that the aft-of-axle tank was defective because it was located in the "crush zone" in rear-impact collisions and was vulnerable to being punctured by trunk contents and vulnerable to being pushed into sharp objects in front of the tank. It was his opinion that trunk contents puncturing the tank was a well-recognized problem. He testified that the safest location for the fuel tank "for a fair amount of time" was forward of the axle. Alternatively, locating the tank over the axle would significantly reduce the crush from a rear-end collision.

¶ 13 In forming his opinions, Arndt relied on several factors including basic engineering design concepts with regard to designing products generally. He testified that design safety involves considerations to design-out a problem by eliminating the hazard. If the hazard cannot be completely eliminated, then the product should be shielded to minimize the hazard, and if shielding or guarding is not effective, then warnings should be provided about the nature of the danger or potential harm that could occur. Ford taught these basic engineering principles in its own class on fuel systems engineering and these principles were outlined in its class manual beginning in 1991.

¶ 14 1. *The Severy Research*

¶ 15 Arndt maintained that Ford had long been aware of the dangers associated with aft-of-axle fuel tanks, including the danger of objects in the trunk puncturing the fuel tank in a rear-end collision. In support of this opinion, Arndt relied upon research done by Derwyn Severy,

a researcher at UCLA, who conducted a series of automobile crash tests, partly funded by Ford. The Severy research was published as an article in 1968 in a publication of the Society of Automotive Engineers, a peer-reviewed journal. The article was introduced into evidence at trial. With respect to fuel tank integrity and suggested design revisions, the article provided that:

> "Several factors operate to determine the degree of attention given to an automobile safety oriented design problem. Prominent among these are the frequency with which the problem manifests itself, the degree of seriousness of the consequence when such problems arise, and the complexity or cost of solution of the problem."

¶ 16 After evaluating crash tests of vehicles with fuel tanks located under the trunk inches from the rear bumper, the article provided the following conclusions:

> "1. *** Initial findings indicate that much progress can be made in reducing the possibility of crash fires by incorporation of relatively inexpensive design considerations relating to fuel tanks and related fuel systems.
>
> 2. Design revisions that provide for better containment of fuel *** which position the tank in locations least likely to sustain significant structural collapse, and which reduce the likelihood of fuel tank rupture, even when moderately crushed, typify improvements that would greatly curtail crash-released fuel.
>
> 3. Fuel tanks should not be located directly adjacent to the rear bumper or behind the rear wheels directly adjacent to the fender sheet-metal as this location exposes them to rupture at very low speeds of impact ***.
>
> 4. Preliminary studies suggest that the area cradled by the rear wheels, above the rear axle and below the rear window represents an improved location for the fuel tank ***."

The article further explained as follows:

> "This location is least often compromised from collisions of all types. The rear wheels, axle, and suspension provide an excellent structure to resist collapse; it is sufficiently remote from the rear end to be relatively free from rear-end collapse forces and can be protected from the passenger compartment by a fire wall, which has already been shown to be required behind the rear seat back for other reasons."

In conclusion, the article indicated that "[c]ollision studies to date tend to support relocation of fuel tanks to the [over-the-axle] area, but further research is needed before this location can be recommended."

¶ 17 None of the vehicles tested in the Severy research had a tank located vertical-behind-the-axle and none involved testing for trunk contents puncturing the fuel tank. With respect to the under-the-trunk tanks Severy had researched, Arndt explained that "if the tank is under the trunk, given that the force is usually moving forward, very, very unlikely that you're going to get an object in the trunk puncturing [the tank]."

¶ 18 In 1969, Ford's engineers investigated the proposed new over-the-axle tank location in relation to the under-the-trunk location. Roger Daniel, a Ford safety engineer, drafted a handwritten memo to his superiors at Ford regarding "Future Gas Tank Location." In the

memo, he stated his understanding that the future direction with respect to fuel tank location was to "hang the tank under the trunk."

¶ 19 Although he indicated that there were advantages and disadvantages to this location, he stated that the under-the-trunk location was vulnerable to rear-end impacts. He recommended that "for all vehicles except wagons and convertibles, the best tank location by far appears to be [over] the axle." The advantage of this design, according to Daniel, was that it would be "[a]lmost impossible to crush the tank from the rear."

¶ 20 Thereafter, in 1970, the engineering staff at Ford prepared a typewritten memo which provided the following analysis:

> "We have examined possible fuel tank locations and determined that the safest place for a fuel tank is [over] the rear axle and below the package tray. In rear[-]end accidents, the tank is above and forward of vehicle components likely to crush during the collision or deform it, while in lateral accidents, the tires, axle, and wheel-house structure provide extensive protection against rupture or even excessive deformation."

The memo indicated that in the proposed over-the-axle tank location, the tank would be "high enough in the trunk to essentially preclude rupture from in-trunk articles during an accident. However, should such an unlikely rupture occur, the gasoline would be confined to the trunk."

¶ 21 The concern about rupture from in-trunk articles did not refer to the vertical-behind-the-axle tank location later chosen by Ford.

¶ 22 Thereafter, in a "Cost Engineering Report" to determine the potential cost of moving the fuel tank to the over-the-axle location, Ford's engineers concluded that the cost of that design change would have been $9.95 per vehicle. Ford chose not to incorporate that design change into the 1979 Panther platform vehicle.

¶ 23 2. *Other Accidents*

¶ 24 As additional support for its theory that the location of the tank was dangerous and that Ford knew of the risk of danger, plaintiffs introduced a list of 44 rear-end collisions between 1981 and 2003 (exhibit 1). The list revealed seven accidents that occurred prior to the sale of the 1993 Lincoln Town Car involving Panther platform vehicles with vertical-behind-the-axle tanks where there was a fuel-fed fire due to tank rupture. None of those accidents involved trunk contents puncturing the tank.

¶ 25 In conjunction with that list, plaintiffs additionally introduced, and Arndt relied upon, over objection, a list of 50 accidents involving fuel-fed fires in Panther platform vehicles, which specifically described the cause of each fire (exhibit 96). Exhibit 96 has no dates listed on it. However, when cross-referenced with exhibit 1, it reveals that after the sale of the 1993 Town Car, between 1997 and 2003, there were 11 incidents prior to the Jablonski accident where Crown Victoria Police Interceptors had trunk contents puncture the tank in high-speed rear-end collisions involving police officers.

¶ 26 Arndt additionally prepared and relied upon, over objection, a separate list of 416

incidents involving a very diverse set of Ford model vehicles manufactured over a wide range of years, from the mid-sixties to the early nineties, prior to the manufacture of the 1993 Lincoln Town Car. The list was compiled by Arndt from a larger list of incidents Ford had disclosed in answers to an interrogatory in another case from 1992 which also included some forward-of-the-axle tanks.

¶ 27 All of the 416 vehicles on the edited list had aft-of-axle tanks. A few were vehicles with a vertical-behind-the-axle tank, but none were Lincoln Town Cars or other Panther platform models and most were vehicles with tanks located under the trunk inches from the bumper. All of the 416 incidents involved either a puncture, split, or tear of the fuel tank, resulting in 364 burn injuries and 378 deaths. However, there was no evidence that any of these accidents were caused by trunk contents puncturing the tank.

¶ 28 On cross-examination, Arndt acknowledged that he did not know the speed of any of the 416 incidents and could not say how a 1993 Lincoln Town Car would have reacted under the same conditions of those incidents. He also agreed that the vast majority of the cars on the list were designed in the sixties and seventies and were not tested under the 1993 federal government standards for fuel system integrity. He acknowledged that some of the vehicles he removed from the accident list had forward-of-the-axle fuel tanks, but he could not say how many.

¶ 29 Arndt also agreed that as of 1991, most cars on the road had an aft-of-axle fuel tank. Therefore, it would be reasonable to believe that if asked about fires involving products on the road as of that date, most manufacturers would identify vehicles with aft-of-axle fuel tank fires because that is how most vehicles were designed. Arndt also acknowledged that he could not tell how the 416 incidents compared to any other manufacturer during the same time period. He also could not tell how the 416 compared to the total number of accidents actually reported and collected during that time period.

¶ 30 Plaintiffs also introduced an exhibit entitled "Fire Risk in Fatal Rear Collision Accidents." This list was compiled by Ford in 2002. The statistics indicate that between 1985 and 1997, the Lincoln Town Car had a fatal collision with fire rate per 100,000 registered vehicle years of 0.107, which Arndt agreed meant that there was one fatal collision with fire for every one million registered vehicle years of driving. Between 1985 and 1990 the Ford Escort, a small front-wheel-drive car with a forward-of-the-axle tank had a fatal collision with fire rate of 0.030 which meant that there was only a 0.3 fatal collision with fire for every one million registered vehicle years of driving. There was no evidence of the cause of any of these fires or evidence of what the rate would have been in 1993 at the time the Lincoln Town Car was manufactured.

¶ 31 3. *Alternative Feasible Design*

¶ 32 Arndt testified that at the time Ford manufactured the Lincoln Town Car, a safer, more practical location for the fuel tank would have been forward of the axle. As evidence of an alternative feasible location for the fuel tank, Arndt performed two different crash tests in 2004 on a 1992 Ford Thunderbird with a forward-of-the-axle tank at 54 and 75 miles per hour. The trunk was packed with various items to simulate those items located in the

Jablonski trunk at the time of the accident. The crash tests revealed no punctures to the fuel tank and no indication that any components punctured the tank.

¶ 33 On cross-examination, Arndt acknowledged that an automobile designer cannot merely design for rear impacts, but must also consider impacts from other angles. Arndt did not crash test the Thunderbird in a side-impact scenario and did not compare how the Lincoln Town Car would do in a side-impact or front-impact crash. He agreed that a Town Car has advantages in a side-impact collision because the tank is protected between the two rear wheels and the rear frame. Arndt also acknowledged that the Thunderbird and the Town Car are distinct vehicles. The Thunderbird is a two-door coupe and the Town Car is a four-door sedan. The Town Car is also considerably larger and weighs more. Arndt acknowledged that locating the tank forward of the axle would require Ford to completely redesign the vehicle and that cost would be a consideration in evaluating that decision.

¶ 34 As additional evidence of an alternative feasible design, Arndt explained that in the 1957 Skyliner, a rear-wheel drive, large vehicle, Ford placed the fuel tank in an over-the-axle location to accommodate space for a hard-top convertible.

¶ 35 4. *Other Evidence Regarding Industry Standards*

¶ 36 Arndt also testified that by 1991 all manufacturers were designing their new model vehicles with fuel tanks located forward of the axle and Ford's global architectural plan as of 1989 indicated that all new models would have fuel tanks located forward of the axle. In 1981, Ford began moving the fuel tank in various models to a forward-of-the-axle location. By 1991, the only vehicles still designed by Ford with a fuel tank located aft-of-axle were the Mustang and the Panther platform vehicles.

¶ 37 Arndt agreed that a manufacturer cannot prevent every postcollision fire from occurring in a vehicle and that a fuel tank cannot be designed to be completely fireproof. Rather, the manufacturer is responsible for a design that "holds the fuel integrity of the vehicle." He acknowledged that the 1993 Lincoln Town Car satisfied the federal motor vehicle safety standards for fuel integrity applicable to 1993 model vehicles and that Ford exceeded that standard with its own heightened 50-miles-per-hour crash testing.

¶ 38 B. Failure to Shield to Prevent Punctures by Trunk Contents

¶ 39 It was Arndt's further opinion that if Ford chose not to relocate the tank, it should have provided shielding either inside the trunk or between the trunk and the tank that would have protected the trunk from contents puncturing the back of the fuel tank. Additionally, Ford should have provided a device in the trunk that would force trunk contents to be aligned laterally in the trunk. Plaintiffs introduced testimony that Ford had used shielding on its fuel tanks in some vehicles since the 1970s and that shielding generally was technically and economically feasible to use. However, when asked about shielding that would have specifically protected the tank from puncture from trunk contents, Arndt stated that he did not have a design that was "proven out by crash testing or some sort of design process."

¶ 40 C. Failure to Warn of the Risk of Trunk Contents Puncturing the Tank

¶ 41 With respect to the failure to warn, Arndt testified that at the time of manufacture, Ford should have provided the consumer with a warning of the risk that objects in the trunk could puncture the fuel tank, along with directions on how to align trunk contents laterally to avoid puncture to the tank because the danger was "clearly known." Arndt acknowledged that between 1979 and 1993 there were millions of Panther platform vehicles sold and, as of 1993, there were zero incidents of trunk contents puncturing the tank. As of 1993, he was not aware of any incident with other Ford model vehicles or any other manufacturer's vehicles where trunk contents had punctured the tank. Additionally, Arndt conceded that as of 1993, there were no other manufacturers warning customers on how to pack their trunks.

¶ 42 D. Failure to Inform About Postsale Remedial Measures

¶ 43 Plaintiffs also introduced evidence at trial, over Ford's repeated objection, regarding Ford's failure to inform the Jablonskis of certain postsale remedial measures taken in 2002. Plaintiffs' theory was that because Ford became aware of certain problems and voluntarily undertook certain measures with respect to the Crown Victoria Police Interceptor, it should have also informed its civilian customers about those measures. Subsequent to the sale of the Town Car, but prior to the Jablonski accident, law enforcement agencies became aware of high-speed rear-end collisions in which police officers were injured or killed in postcrash fires in Crown Victoria Police Interceptors. As a result of these incidents, police agencies complained to Ford and the National Highway Transportation Safety Administration (NHTSA).

¶ 44 In October 2001, the NHTSA opened an investigation into postcrash fires in Ford's Panther platform vehicles. After completing its investigation in 2002, the NHTSA found that Crown Victoria Police Interceptors, compared to civilian Panther platform vehicles, "have a much greater exposure to high-energy rear impacts due to the nature of their use as blocker vehicles at crash scenes or during routine traffic stops along high-speed public roads." The NHTSA required no action by Ford nor did it prohibit the "aft-of-axle" fuel tank design.

¶ 45 When asked to comment on the NHTSA's findings, Arndt agreed that "it would not be a good idea to dictate a fuel tank location because you can *** make a bad fuel tank in a good location *** and I suppose *** you could probably make a good fuel tank in any location." The NHTSA additionally found that "the structural and component design is a more critical factor than fuel tank location in maintaining fuel system integrity." Arndt agreed with this statement in part, but continued to identify fuel tank location as an important consideration.

¶ 46 During 2002, government officials in various jurisdictions had opened investigations as a result of police officer deaths. In June of 2002, Ford announced the formation of a "Crown Victoria Police Interceptor Blue Ribbon Panel." This panel consisted of Ford and law enforcement representatives committing to a 90-day program to evaluate fuel system upgrades and police procedures as a part of a "Police Officer Safety Action Plan." In September of 2002, the Blue Ribbon Panel announced certain remedial measures, including

the creation of an "Upgrade Kit," which consisted of shields designed to protect the fuel tank from puncture by component parts in high-speed rear-end collisions. All experts agreed that the Upgrade Kit would not have prevented the Jablonski accident.

¶ 47 The panel also announced the creation of a "Trunk Pack," for the Police Interceptor consisting of a drop-in trunk liner made of high-density polyethylene, which ensures the user places objects in the trunk laterally rather than longitudinally. Arndt acknowledged that the "Trunk Pack" was designed for the Police Interceptor and he was not recommending that particular design for civilian use or in the Lincoln Town Car. A sticker located on the "Trunk Pack" instructed the user to "align hard or sharp police equipment laterally."

¶ 48 The panel also announced recommendations for police safety procedures, including "Trunk Packing Considerations for Police Vehicles." These Trunk Packing Considerations advised officers on items not to carry in the trunk and advised them regarding the placement of other items in the trunk to reduce the potential for fuel tank rupture by trunk contents. Finally, Ford announced the development of a website where the law enforcement community and the general public could find information about the upgrades to the Police Interceptor.

¶ 49 In October of 2002, Ford informed by mail all the registered owners of Police Interceptors and all the Ford, Lincoln, and Mercury dealers in the United States about the availability of the upgrade kit. In March of 2003, Ford also notified its 32,000 governmental fleet customers regarding the upgrade kit. In May 2003, the police and Police Interceptor customers were notified by mail that the Trunk Pack could be ordered through a Ford dealer. According to the website, a direct mailing to fleet customers informing them of the availability of the Trunk Pack was to take place in June 2003, and shipments of the product to dealers were to begin on June 16, 2003, about three weeks before the Jablonski accident. The Trunk Packing Considerations were available only through the website and with the purchase of the Interceptor Trunk Pack. Civilian owners of Panther platform vehicles, including the Jablonskis, received no notice of the availability of the Trunk Pack or the Trunk Packing Considerations.

¶ 50 Sue Cischke, a vice president of Ford and the highest ranking Ford employee responsible for vehicle safety, made the decision not to notify civilian users of these measures because it was Ford's opinion that the risk of fuel-fed, postcrash fires in high-speed rear-impact collisions is unique to police users because police officers have significantly greater exposure in severe highway collisions. However, with respect to the Trunk Packing Considerations, she admitted at trial that of the articles Ford warned police that carrying in the trunk was not recommended, some could potentially be present in civilian cars.

¶ 51 II. Ford's Evidence

¶ 52 After the circuit court denied its motion for a directed verdict on all grounds of negligence, strict liability, and punitive damages, Ford presented countering documentary evidence and testimony. Ford's primary theory was that its conduct in locating the fuel tank vertically behind the axle was not unreasonable, as it was in the best location for that vehicle considering the overall design of the vehicle and that changing the location would reduce the

effectiveness of other desirable attributes of the vehicle.

¶ 53 In support of its theory, Ford introduced evidence that it met all relevant safety standards with regard to fuel integrity, that it did not violate the standard of care in the industry, and that the fuel tank puncture by the pipe wrench was such a rare, unique, and unforeseeable occurrence that no manufacturer could anticipate or design against such an occurrence. Ford presented evidence that prior to the time of sale, no Panther platform vehicle was ever subject to punctures from trunk contents. Further, prior to the Jablonski accident, no civilian vehicle was ever subject to a fuel tank puncture. Millions of Ford Panther platform vehicles had been driven for years with a small incidence of postcrash fires.

¶ 54 Ford's experts opined that there is no optimum fuel tank location for all vehicles. Rather, the design of a fuel system depends upon the design of the overall car structure and considerations regarding impacts from various directions. It was their opinion that it is important to consider that the body-on-frame design of the Panther platform has different package space and different strengths that interact with the location of the fuel tank. These qualities make the location of the tank for that car different from what might be the best location for a front-wheel drive, unit body, or smaller car. If the fuel tank were moved in the Panther platform vehicles to the forward-of-the-axle location, the body-on-frame construction and rear-wheel drive would have to be eliminated, making it a totally different car. In the defense experts' opinion, the vertical behind-the-axle tank was the best and safest design for the 1993 Lincoln Town Car and provided the most protection from all types of crashes.

¶ 55 Ford introduced statistical data including data indicating that 99.9993% of all Town Cars made from 1992 to 2001 had never been involved in a fatal rear-end collision with fire. Similarly, considering all Panther platform vehicles made in that same 10-year period, 99.9993% had never been involved in a fatal rear collision with fire. By 2003, there were about 15 million vehicles still on the road that were manufactured in 1993 with aft-of-axle tanks. With respect to the other 416 accidents introduced by plaintiffs, Ford's experts indicated that none were relevant to consider because they were cars of a different era, built to different safety standards and performed differently in a crash.

¶ 56 A. Compliance With Federal Motor Vehicle Safety Standards

¶ 57 The NHTSA is the federal agency responsible for implementing federal highway safety laws. The NHTSA specifically promulgates the Federal Motor Vehicle Safety Standards required for fuel system integrity. Ford presented evidence that at the time of manufacture, the 1993 Lincoln Town Car satisfied the applicable version of Safety Standard 301, which required 1993 model-year vehicles to withstand, with minimal fuel leakage, a rear impact at 30 miles per hour from a nondeformable, 4,000-pound barrier. Ford also introduced evidence of its own internal higher fuel integrity standards which involved car-to-car crash testing at 50 miles per hour from three different angles.

¶ 58 According to Ford's experts, these standards were more stringent than Safety Standard 301, and more rigorous than most standards used by any other vehicle manufacturers at the time. In 2000, the NHTSA rejected a proposal from some advocacy groups that the NHTSA

regulate the location of fuel tanks, requiring them to be forward of the axle. The NHTSA explained that "such a requirement is unnecessary and would be design restrictive," noting that "the structural and component design is a more critical factor than fuel tank location in maintaining fuel system integrity."

¶ 59 Ford additionally sought to introduce evidence that in 2004, the NHTSA adopted a more stringent version of Safety Standard 301, requiring it to withstand a 50-mile-per-hour crash test, and that the 1993 Lincoln Town Car satisfied the new standard promulgated more than a decade after the car was manufactured. The circuit court excluded this evidence.

¶ 60 B. Over-the-Axle Design Not Workable

¶ 61 With respect to the design of the 1993 Lincoln Town Car, Ford introduced evidence from its employee Jack Ridenour, a mechanical engineer and fuel system designer who joined the fuel system design group at Ford in 1971. He testified that the over-the-axle location advocated by Severy did not show that the vertical-behind-the-axle tank location was an unsafe dangerous location. Ridenour stated that the research done by Severy in the late sixties advocated the over-the-axle design as superior to the under-the-trunk location. He testified that the over-the-axle tank location addressed by Severy and Daniels ultimately proved unworkable.

¶ 62 Based on Severy's research it was thought at the time that the over-the-axle tank location was superior to the under-the-trunk location. Ford's European designed Caprice was held up as an example of how to implement that design effectively and was manufactured until 1972. The advantages of that design were that it was farther away from the rear bumper and provided more crush space behind the fuel tank. Also, the tank would not be exposed to the under-vehicle environment and road hazards.

¶ 63 Ridenour testified that the cost estimate for the over-the-axle tank and placement of a metal barrier to protect the passenger compartment had nothing to do with the 1993 Lincoln Town Car fuel system, fuel tank location, or the way it was executed. Rather, he stated that the 1971 cost estimate showed the increased costs associated with the metal barrier for the over-the-axle tank.

¶ 64 He was not aware of any manufacturer who was ever able to accomplish the design concepts of Severy and Daniels in a workable design. Ford crash test results for this design revealed that the impact forces on the passenger compartment and the occupants were unsatisfactory. Therefore, the Caprice was discontinued in 1972 and Ford discontinued the use of the over-the-axle tank location. Ford's expert testified that the 1957 Skyliner had a different frame structure and was not a crashworthy design that would have passed fuel safety standards in 1993. The disadvantages of the over-the-axle design included a susceptibility to damage in override collisions, the risk that gasoline vapors could collect in the passenger area of the vehicle presenting a combustion hazard, the inability to separate the tank from the passenger compartment with a metal barrier, and a risk that trunk contents could puncture the fuel tank.

¶ 65 C. Vertical Behind the Axle Best Location for Town Car

¶ 66 Ridenour testified that the Panther vehicle is executed with a steel floor pan that totally isolates the tank from the interior of the vehicle, the passenger compartment and the trunk and that forms a barrier between any trunk contents and the tank. He testified that the vertical-behind-the-axle design also incorporates the positive attributes of the over-the-axle location. The vertical design of the Town Car tank is about the same distance away from the rear bumper as the over-the-axle tank. Also, similar to the over-the-axle location, the vertical-behind-the-axle location is also between the area cradled by the rear wheels. It is well protected in side crashes by the heavy axle structure and suspension of a rear-wheel-drive vehicle. Severy indicated that this location was least often compromised from collisions of all types.

¶ 67 Ford also introduced evidence that there are advantages and disadvantages to the forward-of-the-axle location. Specifically, Ford's experts addressed the advantages to that tank location in a front-wheel-drive vehicle with a smaller "unit body" car where there are more options with respect to the placement of the fuel tank. Body-on-frame cars have a different package space and are rear-wheel drive, which has certain benefits. A disadvantage of the forward-of-the-axle location is the fill pipe because the longer the pipe, the more vulnerable it is in a crash. Also, the forward-of-the-axle tank is more susceptible to damage in side-impact crashes.

¶ 68 Ford's experts believed that the tank design in the 1993 Town Car was the best location for that particular car because the tank is well forward of the bumper, providing a lot of crush space in the back of the car. It is below the vehicle floor and separated from the inside of the vehicle and allows for a short fill pipe. The tank is inside the frame rails, which are very strong, and the axle is able to move forward, creating space for the fuel tank to move forward which is an advantage in certain types of crashes.

¶ 69 D. Accident Was Unforeseeable

¶ 70 With respect to the cause of the accident and whether it was foreseeable, Ford presented expert testimony that the cause resulted from a combination of necessary and sufficient conditions that had to occur for this accident to have happened. Those factors included the speed of the vehicle that struck the Town Car, the configuration of that vehicle, the exact alignment of those vehicles at the time of impact, the exact location and longitudinal alignment of the pipe wrench in the trunk on impact, the type of trailer hitch on the Town Car, and other factors that caused the pipe wrench to penetrate the fuel tank. Out of millions of Town Cars on the road, it was the only known accident in which the fuel tank had been penetrated by trunk contents and the only known non-police-vehicle incident considering all Panther platform vehicles. Ford's experts believed that the incident was so rare that the risk of trunk contents puncturing the fuel tank should be given little consideration in fuel system design.

¶ 71 E. Proposed Shielding Was Unworkable

¶ 72 With respect to the proposed shielding of the trunk wall advocated by Arndt, the Interceptor Trunk Pack was tested in the Crown Victoria Police Interceptor and proved

effective in preventing trunk contents from puncturing the trunk. Ford's expert testified that based on his testing, a Kevlar backing in the trunk might have added strength, but would not have prevented the pipe wrench from puncturing the tank in this particular accident. Additionally, he testified that there was no feasible guarding system for the rear of the tank that would have prevented the pipe wrench from penetrating the tank. A metal barrier could be designed in between the trunk wall and the tank, but would likely puncture the tank in a side-impact collision. Therefore, the design would make the overall safety worse compared to this remote event. He testified that there was no alternative feasible shield design that would have prevented this particular accident.

¶ 73 III. Procedural History at the Close of the Evidence

¶ 74 At the close of the evidence, Ford renewed its motion for a directed verdict on all theories and grounds of recovery. Plaintiffs then voluntarily dismissed their strict liability count with prejudice and Ford moved for a mistrial claiming that "substantial evidence was presented in this case under the guise that it was relevant in a strict liability claim." Ford particularly argued it was prejudiced by the postsale conduct introduced into evidence. The circuit court denied the motion for a mistrial and for a directed verdict.

¶ 75 Thereafter, during the instructions conference, the circuit court accepted plaintiffs' issues instruction, which provided for the fourth, yet unpleaded theory that Ford was negligent in "failing to inform of the existence of the Trunk Pack and/or Trunk Pack Recommendations." With regard to the fourth theory, Ford again objected to any postsale duty to warn and argued that plaintiffs never pleaded a postsale duty to warn. Plaintiffs then sought leave to amend their pleadings to conform them to the proof adduced at trial, which the circuit court granted over Ford's objection. No pleading was tendered to the court until after judgment.

¶ 76 The circuit court gave a non-Illinois Pattern Jury Instruction (IPI) relying on the Restatement (Third) of Torts: Products Liability § 10 (1998), regarding a postsale duty to warn and another non-IPI instruction directing the jury that Ford "could be liable for voluntarily undertaking to provide a post-sale warning to some customers but not to others." The circuit court additionally rejected Ford's proposed special interrogatories, all of which plaintiffs objected to on the basis of improper form.

¶ 77 After closing arguments, the jury returned a general verdict awarding Dora Mae Jablonski compensatory damages totaling $23.1 million and awarding punitive damages in the sum of $15 million. The jury also awarded compensatory damages to the estate in excess of $5 million.

¶ 78 Thereafter, over Ford's objections, between May and November 2005, plaintiffs were granted three opportunities to amend the pleadings to conform them to the proof at trial. The sixth amended complaint alleged that Ford was negligent for the additional reason that it failed "to inform the plaintiffs of the existence of the Trunk Pack and/or trunk pack recommendations even though Ford had voluntarily undertaken to inform police consumers of the existence of the trunk pack and/or trunk pack recommendations." The trial court subsequently denied Ford's motion for a judgment notwithstanding the verdict or alternatively for a new trial.

¶ 79 On appeal, the appellate court affirmed the judgment. This court granted Ford's petition for leave to appeal. Ill. S. Ct. R. 315(a) (eff. Feb. 26, 2010). In addition, pursuant to Supreme Court Rule 345 (Ill. S. Ct. R. 345 (eff. Sept. 20, 2010)), we allowed the Illinois Trial Lawyers Association (ITLA) to file a brief *amicus curiae* on behalf of plaintiffs. We also permitted Caterpillar, Inc., and the Alliance of Automobile Manufacturers to file briefs as *amici curiae* on behalf of Ford.

¶ 80 ANALYSIS

¶ 81 Although Ford raises numerous issues for our review, as an initial matter, to answer these questions, we must first clarify the duty analysis in a negligent-product-design case, and specifically address the application of the risk-utility test in determining the duty of care.

¶ 82 We begin our discussion by setting forth the general principles applicable to a negligent-product-design case. A product liability action asserting a claim based on negligence, such as negligent design, is based upon fundamental concepts of common law negligence. *Calles v. Scripto-Tokai Corp.*, 224 Ill. 2d 247, 270 (2007). As in any negligence action, a plaintiff must establish the existence of a duty, a breach of that duty, an injury that was proximately caused by that breach, and damages. *Heastie v. Roberts*, 226 Ill. 2d 515, 556 (2007).

¶ 83 The determination of whether a defendant owes a duty to a plaintiff is a question of law, reviewed *de novo*. *Thompson v. Gordon*, 241 Ill. 2d 428, 438-39 (2011). A manufacturer has a nondelegable duty to design a reasonably safe product. *Calles*, 224 Ill. 2d at 270. Thus, the key question in a negligent-design case is whether the manufacturer exercised reasonable care in designing the product. *Id*. "In determining whether the manufacturer's conduct was reasonable, the question is 'whether in the exercise of ordinary care the manufacturer should have foreseen that the design would be hazardous to someone.' " *Id.* at 271 (quoting American Law of Products Liability 3d § 28:48, at 28-66 (1997)). To show that the harm was foreseeable, the plaintiff must show that "the manufacturer knew or should have known of the risk posed by the product design at the time of manufacture" of the product. *Id.*; *Sobczak v. General Motors Corp.*, 373 Ill. App. 3d 910, 923 (2007).

¶ 84 It has long been held that whether the manufacturer exercised reasonable care in designing its product also encompasses a balancing of the risks inherent in the product design with the utility or benefit derived from the product. Restatement (Second) of Torts § 291, at 54 (1965) ("[T]he risk is unreasonable and the act is negligent if the risk is of such magnitude as to outweigh what the law regards as the utility of the act or of the particular manner in which it is done."). When the risk of harm outweighs the utility of a particular design, there is a determination that the manufacturer exposed the consumer to a greater risk of danger than is acceptable to society. Sheila L. Birnbaum, *Unmasking the Test for Design Defect: From Negligence [to Warranty] to Strict Liability to Negligence*, 33 Vand. L. Rev. 593, 610 (1980) ("[c]onceptually and analytically, this approach bespeaks negligence").

¶ 85 In the context of a strict liability design-defect case, we have previously set forth a nonexhaustive list of factors derived from various authorities that may be relevant to the risk-utility analysis. These factors include evidence of (1) the availability and feasibility of alternate designs at the time of the product's manufacture; or (2) that the design used did not

conform to the design standards in the industry, design guidelines provided by an authoritative voluntary organization, or design criteria set by legislation or governmental regulation. *Calles*, 224 Ill. 2d at 263-64 (quoting *Anderson v. Hyster Co.*, 74 Ill. 2d 364, 368 (1979)). Other factors that may be relevant include the utility of the product to the user and to the public as a whole, the safety aspects of the product including the likelihood that it will cause injury and the probable seriousness of the injury, and the manufacturer's ability to eliminate the unsafe character of the product without impairing its usefulness or making it too expensive to maintain its utility. *Id.*; see also *Mikolajczyk v. Ford Motor Co.*, 231 Ill. 2d 516, 555 (2008) (finding the risk-utility formulation in the Restatement (Third) of Torts: Products Liability § 2, cmt. f, at 23 (1998), to be instructive in a design defect case).

¶ 86 In *Calles*, we concluded that risk-utility balancing remains operative in determining whether a defendant's conduct is reasonable in a negligent-design case. *Calles*, 224 Ill. 2d at 269 ("the conclusion that the risk-utility test is not applicable in negligent-product-design cases is not binding precedent"). Numerous commentators have concurred that the balancing test developed for strict liability claims, which examines whether a product is unreasonably dangerous, is essentially identical to the test applied in determining whether a defendant's conduct in designing a product is unreasonable and that any distinction is mere semantics. See Aaron D. Twerski, *Chasing the Illusory Pot of Gold at the End of the Rainbow: Negligence and Strict Liability in Design Defect Litigation*, 90 Marq. L. Rev. 7, 12 (2006) ("There simply is no difference between reviewing the conduct of the manufacturer and the product design. Ultimately, products are neither reasonable nor unreasonable; they are deemed so only because a human fact-finder utilizing risk-utility tradeoffs decides one way or another on the issue."); William Powers, Jr., *A Modest Proposal to Abandon Strict Products Liability*, 1991 U. Ill. L. Rev. 639, 654 ("[C]ourts have had to expend considerable energy trying to explain how defectiveness under the risk-utility test differs from negligence. The effort has been far from successful."); see also *Blue v. Environmental Engineering, Inc.*, 215 Ill. 2d 78, 118 (2005) (Fitzgerald, J., specially concurring, joined by McMorrow, C.J.) (noting that the risk-utility test in strict liability and the approach used in administering traditional reasonableness standard of negligence appear to be coextensive).

¶ 87 There are a myriad of factors that may be relevant to the balance, and they may vary depending upon the unique facts and circumstances of each case. In applying the balancing test, the court must initially balance factors it finds relevant to determine if the case is a proper one to submit to the jury. *Calles*, 224 Ill. 2d at 266 (citing Restatement (Third) of Torts: Products Liability § 2, Reporters' Note, cmt. f, at 94 (1998)). Once this threshold determination has been met, the issue is then for the fact finder to determine the weight to be given any particular factor, and its " 'relevance, and the relevance of other factors, will vary from case to case.' " *Calles*, 224 Ill. 2d at 266 (quoting Restatement (Third) of Torts: Products Liability § 2, cmt. f, at 23 (1998)). With these principles in mind, we now consider Ford's specific contentions.

¶ 88 Ford contends that it is entitled to a judgment notwithstanding the verdict on plaintiffs' first three theories of negligence because plaintiffs failed to present sufficient evidence that it breached any recognized standard of care and, therefore, insufficient evidence to justify submitting any of their negligence claims to the jury. "[V]erdicts ought to be directed and

judgments *n.o.v.* entered only in those cases in which all of the evidence, when viewed in its aspect most favorable to the opponent, so overwhelmingly favors movant that no contrary verdict based on that evidence could ever stand." *Pedrick v. Peoria & Eastern R.R. Co.*, 37 Ill. 2d 494, 510 (1967). In other words, a motion for judgment *n.o.v.* presents " 'a question of law as to whether, when all of the evidence is considered, together with all reasonable inferences from it in its aspect most favorable to the plaintiffs, there is a total failure or lack of evidence to prove any necessary element of the [plaintiff's] case.' " *York v. Rush-Presbyterian-St. Luke's Medical Center*, 222 Ill. 2d 147, 178 (2006) (quoting *Merlo v. Public Service Co. of Northern Illinois*, 381 Ill. 300, 311 (1942)). We review *de novo* the trial court's decision denying Ford's motion for judgment notwithstanding the verdict. *Lazenby v. Mark's Construction, Inc.*, 236 Ill. 2d 83, 100 (2010).

¶ 89 I. Compliance With Industry Standards

¶ 90 Ford initially argues that its compliance with industry standards alone is dispositive of its duty in a negligent-design claim. Ford relies on the proposition of law in *Blue*, that a claim for negligent design requires proof that the "defendant deviated from the standard of care that other manufacturers in the industry followed." *Blue*, 215 Ill. 2d at 96 (plurality op.). As we explained, this view does not represent the appropriate duty analysis in a negligent-design claim.

¶ 91 Although the plurality opinion in *Blue* suggests that conformance to an industry standard is dispositive on the issue of negligence (see *Blue*, 215 Ill. 2d at 100), as we explained in *Calles*, that language is not binding authority (*Calles*, 224 Ill. 2d at 269) and is contrary to well-settled law in Illinois and throughout the country. Rather, we have previously held that evidence of industry standards is a factor to be considered in the balance and has always been relevant to determining whether a defendant has exercised reasonable care in designing a product. See *Ruffiner v. Material Service Corp.*, 116 Ill. 2d 53, 58 (1987); *Darling v. Charleston Community Memorial Hospital*, 33 Ill. 2d 326, 331 (1965); see also *Cornstubble v. Ford Motor Co.*, 178 Ill. App. 3d 20, 39 (1988) (Calvo, J., dissenting); *Nave v. Rainbow Tire Service, Inc.*, 123 Ill. App. 3d 585, 591-92 (1984); *Denniston v. Skelly Oil Co.*, 47 Ill. App. 3d 1054, 1068 (1977); *McNealy v. Illinois Central R.R. Co.*, 43 Ill. App. 2d 460, 469-70 (1963).

¶ 92 However, the mere fact that a manufacturer adhered to all relevant industry standards does not require judgment as a matter of law. It is well settled that conformance to industry standards is relevant, but not dispositive on the issue of negligence. Restatement (Second) of Torts § 295A (1965); 1 Dan B. Dobbs, The Law of Torts § 164, at 397 (2001); Prosser and Keeton on Torts § 33, at 195 (W. Page Keeton *et al.* eds., 5th ed. 1984). See also *Texas & Pacific Ry. Co. v. Behymer*, 189 U.S. 468, 470 (1903) ("What usually is done may be evidence of what ought to be done, but what ought to be done is fixed by a standard of reasonable prudence, whether it usually is complied with or not."). Similarly, evidence of a violation of industry standards is considered probative of, but not conclusive on, the question of negligent design. The standard remains whether the conduct was reasonable under the circumstances. *Calles*, 224 Ill. 2d at 270; *Modelski v. Navistar International Transportation*

Corp., 302 Ill. App. 3d 879, 887 (1999).

¶ 93 Moreover, we note that Ford understood this to be the standard. During the motions *in limine* conference, plaintiffs sought to limit Ford from introducing evidence regarding governmental safety standards. In arguing the motion, Ford stated:

> "We do not intend to say [to] the jury that because [we] complied with Federal Motor Vehicle Safety Standards, therefore we win the case, okay. It is, we are entitled to show the standard, what it is, that we complied with it. And it is *** evidence of due care. And it is evidence, but it is not dispositive and we are not going to argue it is dispositive."

¶ 94 Additionally, in opening statements Ford acknowledged that compliance with industry standards was not conclusive evidence of reasonableness but, rather, that it "used the federal standards as one of their criteria." Ford stated that "this doesn't dispose of the issue, but it is an indication." Accordingly, Ford's contention that compliance with industry standards is dispositive of a negligent-product-design claim lacks merit.

¶ 95 II. Application of the Risk-Utility Balancing Test

¶ 96 We next consider Ford's contention that it was erroneously held to a higher duty of care than reasonable care, requiring it to design out, guard against, and warn of every conceivable risk. A manufacturer is not required to guard against every conceivable risk, regardless of the degree of harm. *Cunis v. Brennan*, 56 Ill. 3d 372, 376 (1974). Rather, as we explained, plaintiff was required to produce evidence that Ford's conduct in designing the fuel system was unreasonable by presenting evidence that the risk was foreseeable and that the risks inherent in the product design outweighed the benefits. *Calles*, 224 Ill. 2d at 270-71.

¶ 97 It was uncontradicted that the 1993 Lincoln Town Car satisfied the specific federal fuel system integrity standards promulgated by the NHTSA for rear-end collisions and exceeded that standard with Ford's own internal 50-miles-per-hour crash testing. It was Arndt's opinion that the ability to maintain fuel system integrity was the standard by which to measure the reasonable design of the fuel system. It was also uncontradicted that it was an accepted industry practice in 1993 to locate the fuel tank aft of axle, as other manufacturers in the industry, including Audi, BMW, Chrysler, General Motors, and Volvo, continued to manufacture vehicles with aft-of-axle fuel tanks at that time. After investigating the 1993 Lincoln Town Car, the NHTSA chose not to mandate a different location for the tank, concluding that "the structural and component design is a more critical factor than fuel tank location in maintaining fuel system integrity."

¶ 98 Given that Ford complied with, and even exceeded, the industry standard set for fuel system integrity, plaintiffs were required to come forward with evidence that despite Ford's compliance, its conduct was otherwise unreasonable because the foreseeable risk posed by the vertical-behind-the-axle design of the fuel tank at the time of manufacture outweighed its utility.

¶ 99 Plaintiffs sought to establish that Ford's conduct in designing the fuel tank was unreasonable because at the time of manufacture, there was a safer alternative feasible tank design either over the axle or forward of the axle. Arndt believed that forward of the axle was

the safest tank location "a fair amount of the time" and presented evidence of a successful crash test with a 1992 Thunderbird with a forward-of-the-axle tank.

¶ 100 Nevertheless, Arndt acknowledged that other variables must also be considered in evaluating the design of a fuel system. Arndt agreed the structure and component design of the particular vehicle are important considerations in maintaining fuel system integrity. The Lincoln Town Car was a heavy-duty six-passenger vehicle, with a deep-well trunk, a body-on-frame construction, which aided in the absorption of energy in a collision, and a solid rear axle, which was less susceptible to damage and less expensive to repair than an independent rear suspension. Arndt additionally acknowledged that an automobile designer must consider collision impacts from all angles. The uncontradicted evidence presented was that the design of the Lincoln Town Car had advantages over the Thunderbird in side-impact collisions.

¶ 101 It was also uncontradicted that moving the tank would have required Ford to completely redesign the vehicle, and would have introduced other risks of equal or greater magnitude, including fuel-fed fires from the filler pipe and tank rupture from other parts of the vehicle.

¶ 102 The over-the-axle tank had its own safety risks. That location was discontinued by Ford in 1972, and by 1994, no other manufacturer in the industry was manufacturing vehicles with an over-the-axle tank. "It is not sufficient that the alternative design would have reduced or prevented the harm suffered by the plaintiff if it would also introduce into the product other dangers of equal or greater magnitude." Restatement (Third) of Torts: Products Liability § 2, cmt. f, at 23 (1998).

¶ 103 Ultimately, Arndt agreed with the NHTSA's conclusion that it was appropriate not to dictate fuel tank location because, as he stated, "you could probably make a good fuel tank in any location." Accordingly, the evidence presented regarding an alternative feasible design did not support the conclusions that Ford's conduct in locating the fuel tank in the vertical-behind-the-axle location in the 1993 Lincoln Town Car was unreasonable. Plaintiffs must show more than the technical possibility of an alternative design.

¶ 104 Plaintiffs also introduced the Severy research, Ford's internal engineering recommendations from the late 1960s and early 1970s advocating an over-the-axle tank location, and the costs associated with moving the tank to that location. However, these recommendations were made a decade before the Panther platform was introduced. The reasonableness of the vertical-behind-the-axle design for a fuel tank was not considered at that time. Rather, Severy found that the under-the-trunk tank location, inches from the rear bumper, was unsafe because it exposed the tank to rupture at low speeds. Instead, the alternative over-the-axle location was thought by Severy to be "an improved location." Thus, this evidence was relevant to the risks associated with the under-the-trunk location and the need to move the tank from that location. It was not evidence from which the jury could conclude that Ford's conduct was unreasonable with respect to an entirely different fuel tank location ultimately chosen for this particular vehicle a decade later which was never tested in Severy's research.

¶ 105 Plaintiffs also introduced evidence that Ford was aware of the potential for trunk contents to puncture the fuel tanks in other designs that Ford ultimately chose not to adopt. However, the risk was so remote that it had never manifested itself with respect to this design in the 15

years that millions of Panther platform vehicles were on the road prior to 1993. Nor was Arndt aware of any accident prior to 1993 involving any vehicle made by any manufacturer where any object in a trunk had ever punctured a fuel tank. Plaintiffs also introduced 416 purportedly substantially similar accidents in support of its contentions. However, there was no evidence that in any of these incidents trunk contents ever punctured the tank in a Panther platform vehicle or in any other vehicle manufactured by Ford or any other manufacturer as of 1993.

¶ 106 Additionally, with respect to shielding, although not required to develop a specific prototype, it was incumbent upon plaintiffs to present evidence that there was a shield that was feasible to prevent trunk contents from puncturing the tank in the 1993 Lincoln Town Car. Regarding the possibility of a shield that would be fitted over the fuel tank, Arndt "mocked up" a shield that would conceivably fit on the tank, but stated that it was not "proven out by crash testing or some sort of design process." With respect to the existence of the optional Kevlar Trunk Pack designed for the Crown Victoria Police Interceptor in 2002, Arndt conceded that the Trunk Pack designed for that vehicle was not appropriate for the 1993 Lincoln Town Car. Although Ford's crash testing at 75 miles per hour revealed that the Upgrade Kit shielding developed to prevent punctures from the component parts surrounding the tank was effective, the experts all agreed that the Upgrade Kit would not have prevented the ruptures that occurred in the Jablonski accident. Accordingly, there was insufficient evidence of a shield that would have been feasible to prevent this accident from occurring.

¶ 107 In sum, after balancing the foreseeable risks and utility factors, plaintiffs failed to present sufficient evidence from which a jury could conclude that at the time of manufacture, Ford's conduct was unreasonable or that it had acted unreasonably in failing to warn about the risk of trunk contents puncturing the tank. It complied with the industry standard for fuel system integrity, it exceeded that standard by its own heightened crash-testing standards, other manufacturers in the industry continued to produce vehicles with aft-of-axle fuel tanks, and despite the clear gravity of the injury, the risk was extremely remote. Additionally, there was no evidence of a feasible shield that would have prevented the injury in this case. Accordingly, there was insufficient evidence to justify the submission of plaintiffs' first three claims of negligence to the jury.

¶ 108 III. Postsale Duty to Warn

¶ 109 We next consider Ford's various contentions regarding plaintiffs' fourth theory of negligence. Specifically, Ford maintains that plaintiffs' fourth theory of negligence, which was never pleaded before trial, is premised upon a postsale duty to warn which is contrary to Illinois law. Under plaintiffs' fourth theory, the jury was instructed that it could find Ford negligent for its failure to "inform of the existence of the Trunk Pack and/or Trunk Pack recommendations." Ford developed these measures a decade after the sale of the 1993 Lincoln Town Car.

¶ 110 We initially reject plaintiffs' argument that Ford has forfeited any claim of error on the postsale duty to warn issue. The pretrial and trial record is replete with instances where Ford

raised the lack of a postsale duty and challenged the relevance of the postsale testimony in relation to its duty to the consumer at the time of manufacture.

¶ 111 With respect to the merits, under established Illinois precedent, when a design defect is present at the time of sale, the manufacturer has a duty to take reasonable steps to warn at least the purchaser of the risk as soon as the manufacturer learns or should have learned of the risk created by its fault. *Woodill v. Parke Davis & Co.*, 79 Ill. 2d 26, 33-36 (1980) (duty to warn if manufacturer knew or should have known of the danger at the time of sale); *Carrizales v. Rheem Manufacturing Co.*, 226 Ill. App. 3d 20, 34 (1991) ("Illinois law has been reluctant to impose a duty to warn beyond the time when the product leaves the manufacturer's control unless the manufacturer knew or should have known at that time that the product was defective."); *Kempes v. Dunlop Tire & Rubber Corp*., 192 Ill. App. 3d 209, 218 (1989).

¶ 112 Nevertheless, "a manufacturer is under no duty to issue postsale warnings or to retrofit its products to remedy defects first discovered after a product has left its control." *Modelski v. Navistar International Transportation Corp.*, 302 Ill. App. 3d 879, 890 (1999); *Carrizales*, 226 Ill. App. 3d at 34; *Collins v. Hyster Co.*, 174 Ill. App. 3d 972, 977 (1988) ("[T]he law does not contemplate placing the onerous duty on manufacturers to subsequently warn all foreseeable users of products based on increased design or manufacture expertise that was not present at the time the product left its control.").[1]

¶ 113 Plaintiffs argue that their fourth theory has always been premised upon a continuing duty to warn at the time the car was manufactured, and thereafter. Specifically, they argue that if a manufacturer knew or should have known of the hazard at the time of manufacture, establishing a duty to warn when the product left its control, that duty to warn is then a continuous one.

¶ 114 The appellate court agreed and found that plaintiffs' theory was based upon a continuous duty to warn. We do not quarrel with the statement of the law recognizing a continuing duty to warn. We reiterate, as the appellate court noted in *Modelski*, a continuing duty may be imposed if at the time of manufacture of the product the manufacturer knew or should have known of the hazard.

¶ 115 Nevertheless, that theory was not presented to the jury at trial. During the hearing on Ford's motion for a directed verdict, plaintiffs specifically noted that the evidence pertaining to subsequent remedial measures was admissible to support "a post-sale duty to warn."

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[1] A duty may be imposed upon a manufacturer by a statute or administrative regulation which mandates the recall of the product, under circumstances where the dangerous characteristic of the product is not discovered until after the product has left the manufacturer's control. *Modelski*, 302 Ill. App. 3d at 889; see also Restatement (Third) of Torts: Products Liability § 11 (1998) (addressing the duty in the context of a recall). However, in the absence of such an obligation, or a voluntary undertaking, Illinois has not imposed such a duty on a manufacturer in the context of product design or specifically failure to warn. But see, *e.g.*, *Proctor v. Davis*, 291 Ill. App. 3d 265, 278 (1997) (in the context of pharmaceutical products duty to notify the medical profession of additional side effects discovered from product's use).

Moreover, the jury instruction proffered by plaintiffs does not comport with a continuing duty to warn theory. Rather, over Ford's objections, the trial court submitted the following non-IPI instruction to the jury:

> "One engaged in the business of selling or otherwise distributing products is subject to liability for harm to persons caused by the seller's failure to provide a warning after the time of sale or distribution of a product if a reasonably careful person in the seller's position would provide such a warning under the circumstances.
>
> A reasonably careful person in the seller's position would provide a warning after the time of sale if:
>
> The seller knows or reasonably should know that the product poses a substantial risk of harm to persons; and
>
> Those to whom a warning might be provided can be identified and can reasonably be assumed to be unaware of the risk of harm; and
>
> A warning can be effectively communicated to and acted on by those to whom a warning might be provided; and
>
> The risk of harm is sufficiently great to justify the burden of providing a warning.
>
> Whether or not Ford Motor Company acted as a reasonably careful person under the circumstances of this case is for you to decide."

¶ 116 This instruction is virtually a verbatim recitation of section 10 of the Restatement (Third) of Torts: Products Liability (1998),[2] which has not been previously adopted in Illinois. As explained under comment a, section 10 specifically recognizes a "duty to warn of a product-related risk after the time of sale, *whether or not the product is defective at the time of original sale*," if a reasonable person in the seller's position would provide a warning under the enumerated circumstances. (Emphasis added.) Restatement (Third) of Torts: Products Liability § 10, cmt. a, at 192 (1998). The reporters' note to comment a specifically highlights

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[2]The Restatement (Third) of Torts: Products Liability § 10 (1998) provides:

> "(a) One engaged in the business of selling or otherwise distributing products is subject to liability for harm to persons or property caused by the seller's failure to provide a warning after the time of sale or distribution of a product if a reasonable person in the seller's position would provide such a warning.
>
> (b) A reasonable person in the seller's position would provide a warning after the time of sale if:
>
> (1) the seller knows or reasonably should know that the product poses a substantial risk of harm to persons or property; and
>
> (2) those to whom a warning might be provided can be identified and can reasonably be assumed to be unaware of the risk of harm; and
>
> (3) a warning can be effectively communicated to and acted on by those to whom a warning might be provided; and
>
> (4) the risk of harm is sufficiently great to justify the burden of providing a warning."

that Illinois has "reject[ed] the imposition of any post-sale duty to warn if the product was not defective at the time of sale." Restatement (Third) of Torts: Products Liability § 10, Reporters' Note, cmt. a, at 198 (1998).

¶ 117 Accordingly, the jury instruction as proffered allowed the jury to find Ford negligent even if Ford had not breached a duty of care existing at the time the car was manufactured. The instruction allowed the jury to recognize a duty that could arise based upon knowledge of risks discovered after the sale of the car even if it found Ford had not acted unreasonably at the time the car was manufactured. Indeed, there was evidence admitted that Ford subsequently learned of tank punctures from trunk contents causing fuel-fed fires in Panther platform Crown Victoria Police Interceptor vehicles involved in high-speed rear-end collisions. Based upon this subsequently acquired knowledge alone, the jury could have found a postsale duty to inform of the safety improvements made nearly a decade later without ever concluding that Ford knew or should have known the product was unreasonably dangerous at the time of sale. Consequently, where plaintiffs' theory, as presented to the jury, was premised upon a duty not recognized in Illinois at the time of trial, it was legally defective and improperly submitted to the jury for its consideration. See *Lazenby v. Mark's Construction, Inc.*, 236 Ill. 2d 83, 98 (2010).

¶ 118 Alternatively, plaintiffs and *amicus* ITLA ask this court to adopt section 10 and to recognize the postsale duty to warn theory articulated by the American Law Institute. Although we do not foreclose the possibility that a postsale duty to warn could be recognized in the future in Illinois, we decline the invitation to expand the duty in this case under the particular facts and circumstances presented here.

¶ 119 Even if we were to adopt the formulation as reflected in the Restatement (Third) of Torts, there was insufficient evidence presented to the jury with regard to the enumerated circumstances under which a reasonable person would provide a warning under section 10. As stated previously, the theory was never pleaded by plaintiffs prior to trial. Furthermore, required elements of such a claim included whether "[t]hose to whom a warning might be provided can be identified," and whether a warning could effectively be communicated to those persons and acted on by the consumer. ITLA suggests that Ford could have easily identified the customers and effectively communicated the warning. ITLA notes that vehicle identification numbers (VIN) are used to register vehicles and would allow for the location of the current owner. ITLA indicates that Ford could feasibly identify the VINs of vehicles for which a postsale warning should be given and that Ford could have publicized to consumers through the general media. Nevertheless, none of this evidence was specifically presented to the jury at trial on this theory, nor was Ford provided with an opportunity to dispute these circumstances as articulated under this new theory. With respect to the failure to inform of the Trunk Pack, Arndt acknowledged that it was not even suitable for the 1993 Lincoln Town Car. Accordingly, we decline to consider in this case whether Illinois should adopt a postsale duty to warn.

¶ 120 IV. Voluntary Undertaking

¶ 121 To the extent that the appellate court alternatively found plaintiffs' fourth theory of

recovery cognizable under the voluntary undertaking doctrine, we find the court erred in invoking this doctrine under these circumstances. The non-IPI instruction that plaintiffs proffered and that was submitted to the jury stated as follows:

> "A manufacturer who voluntarily undertakes to provide an after[-]the[-]sale warning to some of its customers may be subject to liability if it does not warn other customers.
>
> Whether the manufacturer's conduct in warning some of its customers and not others was reasonable under the circumstances is for you to decide."

¶ 122 The instruction was purportedly premised upon the Restatement (Second) of Torts § 323 (1965) and this court's rulings in *Nelson v. Union Wire Rope Corp.*, 31 Ill. 2d 69 (1964), and *Wakulich v. Mraz*, 203 Ill. 2d 223 (2003). However, the instruction as submitted to the jury is not an accurate statement of the law. The voluntary undertaking theory as expressed in section 323 of the Restatement (Second) of Torts provides as follows:

> "§ 323. Negligent Performance of Undertaking to Render Services
>
> One who undertakes, gratuitously or for consideration, to render services to another which he should recognize as necessary for the protection of the other's person or things, is subject to liability to the other for physical harm resulting from his failure to exercise reasonable care to perform his undertaking, if
>
> (a) his failure to exercise such care increases the risk of such harm, or
>
> (b) the harm is suffered because of the other's reliance upon the undertaking." Restatement (Second) of Torts § 323 (1965).

¶ 123 As we recently reiterated, "[u]nder a voluntary undertaking theory of liability, the duty of care to be imposed upon a defendant is limited to the extent of the undertaking." *Bell v. Hutsell*, 2011 IL 110724, ¶ 12 (quoting *Frye v. Medicare-Glaser Corp.*, 153 Ill. 2d 26, 32 (1992)). "The theory is narrowly construed." *Id*. (citing *Frye*, 153 Ill. 2d at 33).

¶ 124 In this case, Ford's impetus for developing the optional "Trunk Pack" and the "Trunk Packing Considerations" was the result of its Crown Victoria Police Interceptor Blue Ribbon Panel under which Ford and law enforcement representatives agreed to evaluate fuel system upgrades and police procedures as part of a "Police Officer Safety Action Plan." The evidence revealed that between 1993 and 2003, law enforcement agencies had become increasingly aware of high-speed rear-end collisions in which police officers were injured or killed due to postcrash fires in Crown Victoria Police Interceptors while performing police duties.

¶ 125 As a result of the panel's findings, Ford developed recommendations for improved police safety procedures, including the "Trunk Packing Considerations for Police Vehicles," which advised officers how to place items in the trunk to reduce the potential for trunk contents puncturing the fuel tank, and developed the optional "Interceptor Trunk Pack," consisting of a drop-in trunk liner, requiring the police to place objects in the trunk laterally rather than longitudinally. The sticker on the Trunk Pack indicated "align hard or sharp police equipment laterally." Ford also developed a website containing information regarding the upgrades to the Police Interceptor and notified fleet customers of the Trunk Pack. However, civilian

owners of Panther platform vehicles, including the Jablonskis, never received notice of the availability of these upgrades.

¶ 126 Based upon the evidence at trial, the extent of Ford's undertaking in developing the Trunk Pack and Trunk Packing Considerations was directed specifically at improved police safety related to use of the Police Interceptor. The Trunk Pack was developed for the Police Interceptor by Ford with input from law enforcement to address specific police concerns and that was the impetus for its development, along with the packing considerations for police vehicles. That undertaking did not create a duty owed toward other individual civilian customers. Furthermore, at no time in any of plaintiffs' six iterations of its complaint did they ever contend that Ford undertook a voluntary duty with respect to any nonpolice customers. Consequently, contrary to the appellate court's finding, the trial court erred in instructing the jury on a postsale duty to warn theory based on a voluntary undertaking.

¶ 127 V. Other Contentions Raised by Ford

¶ 128 In light of our holding, we need not address Ford's multiple remaining contentions regarding whether there was sufficient evidence of misconduct to warrant submission of plaintiffs' claim for punitive damages to the jury, and its contentions regarding various evidentiary rulings, including whether the trial court erred in admitting evidence related to postsale remedial measures, whether the 416 other accidents were substantially similar, and whether the court erred in rejecting Ford's special interrogatories.

¶ 129 CONCLUSION

¶ 130 In sum, we hold that the duty analysis in a negligent-product-design case encompasses a risk-utility balancing test, and compliance with industry standards is a relevant factor in that analysis, but is not dispositive. Furthermore, in this case, plaintiffs presented insufficient evidence from which a jury could conclude that Ford breached its duty of reasonable care on the first three negligent-design theories. Plaintiffs' fourth theory, premised on a postsale duty to warn, was not cognizable under Illinois law and its voluntary undertaking did not create a duty to civilian customers. For the foregoing reasons, we reverse the judgments below.

¶ 131 Judgments reversed.