



2-21-2012

Of Frightened Horses and Autonomous Vehicles: Tort Law and its Assimilation of Innovations

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**OF FRIGHTENED HORSES AND AUTONOMOUS
VEHICLES:
TORT LAW AND ITS ASSIMILATION OF
INNOVATIONS**

Kyle Graham*

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INTRODUCTION

In his contribution to this symposium, Professor Gary Marchant anticipates how judges and juries are likely to perceive some of the liability issues that may arise when autonomous vehicles become implicated in personal injuries or property damage.¹ In doing so, Professor Marchant implicitly acknowledges the uncertainty that tends to surround the application of tort law to emerging technologies.² This Article emphasizes this uncertainty. To borrow from screenwriter William Goldman, when predicting how tort law will interact with innovations, nobody knows anything—at least for a while.³ The precise content of the

* Assistant Professor of Law, Santa Clara University. The author thanks Ryan Calo, Colleen Chien, Pratheepan Gulasekaram, and Brad Joondeph for their comments on drafts of this Article.

1. Gary E. Marchant & Rachel A. Lindor, *The Coming Collision Between Autonomous Vehicles and the Liability System*, 52 SANTA CLARA L. REV. — (2012).

2. *See generally id.* (frequently using the words “likely” or “unlikely” in describing the anticipated interplay between tort law and autonomous vehicles).

3. WILLIAM GOLDMAN, *ADVENTURES IN THE SCREEN TRADE* 39 (1983). *See*

legal rules that will eventually coalesce around autonomous vehicles is likely to remain quite unclear for some time after these devices first appear on public highways. And if the past provides any useful precedent here, the law pertaining to these vehicles may take at least one wrong turn before heading in what ultimately proves to be the right direction.

The liability rules that come to surround an innovation do not spring immediately into existence, final and fully formed. Instead, sometimes there are false starts and lengthy delays in the development of these principles. These detours and stalls result from five recurring features of the interplay between tort law and new technologies, which also will provide the basic architecture for this Article. *First*, the initial batch of cases presented to courts may be atypical of later lawsuits that implicate the innovation, yet relate rules with surprising persistence. *Second*, these cases may be resolved by reference to analogies that rely on similarities in form, and which do not wear well over time. *Third*, it may be difficult to isolate the unreasonable risks generated by an innovation from the benefits it is perceived to offer. *Fourth*, claims by early adopters of the technology may be more difficult to recover upon than those that arise later, once the technology develops a mainstream audience. *Fifth*, and finally, with regard to any particular innovation, it may be impossible to predict whether, and for how long, the recurring themes within tort law and its application that tend to yield a “grace” period for an invention will prevail over those tendencies with the opposite effect. In short, it takes time for an innovation, such as autonomous vehicles, to become fully assimilated within everyday tort law, and one rarely can anticipate the precise timetable for this process, or its final results.

also Gregory N. Mandel, *History Lessons for a General Theory of Law and Technology*, 8 MINN. J.L. SCI. & TECH. 551 (2007) (“It is inevitable that legal disputes concerning [a] new technology will be handled under the preexisting legal scheme in early stages of technological development. At this stage, there often will not be enough information and knowledge about nascent technologies to develop or modify appropriate legal rules.”). As I do here, Professor Mandel looked to the past for lessons applicable to the present; though the specific points I make diverge from his, I liked his approach, so I chose to adopt it.

I. ATYPICAL EARLY CLAIMS

First, the initial cluster of lawsuits that surrounds an innovation may not resemble the claims that the device produces in its more mature state.⁴ The rules that emerge from these early cases, however, may persist even as the technology evolves and the risks it generates shift, swell, or subside.

Consider, for example, the initial batch of negligence lawsuits that involved automobiles.⁵ These cases, dating from the very first years of the twentieth century, entailed none of the usual fodder for automobile litigation today:

- They generally did not involve multi-car collisions—there were not enough automobiles on the road at the time for these accidents to occur very often.⁶
- Suits involving injured pedestrians also did not predominate, though they certainly were not unheard of; the reasons for this are less clear, but likely owed to the potency of the contributory negligence defense in that era.⁷

4. DANIEL C. MOWERY & NATHAN ROSENBERG, *PATHS OF INNOVATION: TECHNOLOGICAL CHANGE IN 20TH-CENTURY AMERICA* 2 (1999) (“Inventions, when they are first introduced or patented, are typically very far from the form that they embody when they eventually achieve widespread diffusion; or, to put it differently, it is the improvements that they undergo that finally lead to widespread diffusion.”).

5. A robust discussion of early legislative oversight of the automobile lies beyond the scope of this essay. For now, it suffices to say that some local ordinances pertinent to automobile use predated 1900. See, e.g., *Ordinance No. 480*, SACRAMENTO DAILY UNION, Oct. 26, 1898, at 7 (relating a local ordinance that prescribed speed limits and rules of the road for different types of vehicles, including automobiles). The first state laws specifically directed at automobiles appeared right around the turn of the century. E.g., An Act to Amend the Highway Law, in Relation to the Use of Highways by Automobiles or Motor Vehicles and Requiring the Owners of Such Vehicles to Register With the Secretary of State, N.Y. STATS., 1901, ch. 531. Long before that time, New York had added to its books a statute that regulated the use of steam traction engines on public highways. An Act in Relation to Highways, Constituting Chapter Nineteen of the General Laws, N.Y. STATS. 1890, ch. 568, § 155.

6. There were fewer than 10,000 registered automobiles in the United States in 1900; by 1930, there were 23,034,753. MOWERY & ROSENBERG, *supra* note 4, at 49.

7. See XENOPHON P. HUDDY, *THE LAW OF AUTOMOBILES* 551–607 (6th ed. 1922) [hereinafter HUDDY, *LAW OF AUTOMOBILES* 1922] (discussing how the contributory negligence of pedestrians affected their ability to recover in tort against the operator of a motor vehicle). During this era, “In an action by a

- There also were few lawsuits brought by injured passengers against early automobile drivers. This deficit owed in part to interspousal immunity rules, which were still vibrant at that time.⁸ Unspoken social norms also may have discouraged such suits, especially among the elite who comprised most early automobile owners,⁹ and perhaps these passengers also worried that if they brought suit, the driver would have a viable

pedestrian to recover damages for an injury from an automobile, there [could] be, as a general proposition, no recovery unless the plaintiff was free from negligence which contributed to the injury.” *Id.* at 552. Some courts, though by no means all, held that it was “negligence *per se* on the part of a pedestrian to fail to look before attempting to cross a street.” *Id.* at 563–64. Other jurisdictions were more generous to pedestrian plaintiffs (or their next of kin), but even so, the uncertainty that surrounded this sort of claim may have deterred marginal suits. The slow speeds and noisy nature of many early automobiles also may help explain the dearth of pedestrian suits in 1900 and the years immediately thereafter. See BEVERLY RAE KIMES, PIONEERS, ENGINEERS, AND SCOUNDRELS: THE DAWN OF THE AUTOMOBILE IN AMERICA 170 (2005) (discussing the noisiness of early gasoline-powered vehicles); *Automobile Brougham for a City Physician*, SCIENTIFIC AMERICAN, Jul. 1, 1899, at 6 (discussing a new automobile produced by the Pope Manufacturing Company, and which claimed an average running speed of approximately eight miles per hour, and a maximum speed of eleven miles per hour).

This said, even at the dawn of the automobile era, some pedestrians found themselves on the wrong end of a Locomobile. Automobile historian Beverly Rae Kimes recounts one notable incident:

One day on Fifth Avenue, while motoring at a sedate pace, [Mrs. Hamilton Fish] struck a pedestrian who got up and was brushing off his hat when she hit him again. In her excitement, the lady couldn’t remember which way to move the lever to stop and, after knocking the poor fellow down three times before finally figuring it out, she left the car there and found another way home.

KIMES, *supra*, at 94. See also *Topics of the Times*, N.Y. TIMES, Oct. 31, 1901, at 8 (remarking upon “[t]hose rather numerous people who have been killed in the streets of this city by automobiles driven at reckless speed”); *Automobile Wins Damage Suit*, CHI. DAILY TRIB., Feb. 23, 1901, at 16 (reporting on a defense verdict in a personal-injury lawsuit brought by the mother of a boy who had been run over by an automobile).

8. See HUDDY, LAW OF AUTOMOBILES 1922, *supra* note 7, at 880 (observing that “it is doubtful if a wife [riding in a vehicle] can recover such damages from her husband with whom she was cohabitating at the time of the injury”); Elizabeth Katz, *How Automobile Accidents Stalled the Development of Interspousal Liability*, 94 VA. L. REV. 1213, 1224–29 (2008) (discussing the status of interspousal tort immunity, circa 1900); Carl Tobias, *Interspousal Tort Immunity in America*, 23 GA. L. REV. 359, 383 (1989) (same).

9. For one of many observations that early automobile owners tended to be wealthy, see H.B. Brown, *The Status of the Automobile*, 17 YALE L.J. 223, 230 (1909) (“Automobiles are usually owned by men of wealth, to whom ordinary fines are of no consequence.”).

assumption of the risk or contributory negligence defense.¹⁰

- Finally, there were few (if any) lawsuits brought against automobile manufacturers, in which plaintiffs complained of negligently constructed vehicles.¹¹ Possibly, these suits were suppressed by a sense that a lack of contractual privity with the manufacturer would defeat a claim, except in rare circumstances.¹² Yet many early automobile consumers purchased their vehicles directly from the manufacturer,¹³ such that any privity rule, on its own, would not have precluded lawsuits these buyers might have been inclined to file.

10. For some time, the duties of an automobile passenger *qua* passenger were quite unclear. A 1927 treatise, for example, observed that while “ordinarily, a guest, especially if he is sitting in the rear seat of an automobile, may rely upon the capacity of his host as a competent driver,” at the same time, “it is the duty of a passenger in another’s automobile to warn the driver of danger which he sees or which in the exercise of ordinary care he should see,” and even “a gratuitous guest in an automobile cannot idly sit by, observe clear violations of the law by operating the automobile at excessive speed or otherwise, and acquiesce in it and then hold the driver or the owner liable for damages resulting from such violation.” DEWITT C. BLASHFIELD, 2 BLASHFIELD’S CYCLOPEDIA OF AUTOMOBILE LAW 1086–87 (1927). Though these rules were far from universally recognized and applied, that is not the point; as the text above argues, uncertainty, on its own, can deter lawsuits.

11. See XENOPHON P. HUDDY, THE LAW OF AUTOMOBILES 103 (1906) [hereinafter HUDDY, LAW OF AUTOMOBILES 1906] (“Among the many reported judicial decisions concerning motoring and the motor car, no reported case in reference to the manufacturer’s part played in automobiling has as yet appeared,” even though “[n]o person is more intimately connected with motoring, and of so vital importance in qualifications, as the manufacturer.”).

12. C.B., *Negligence—Liability of Manufacturer to Third Parties—Nature of the Goods as Test—MacPherson v. Buick Motor Co.*, III N.E. (N.Y.) 1050, 25 YALE L.J. 679, 679 (1916). The leading treatise of the time, Xenophon Huddy’s *The Law of Automobiles*, supposed that negligence liability might adhere to the manufacturer of an automobile, but also noted another treatise-writer’s recitation of the privity bar. HUDDY, LAW OF AUTOMOBILES 1906, *supra* note 11, at 105–06.

13. ROBERT GENAT, THE AMERICAN CAR DEALERSHIP 17 (2004). Some of these manufacturers had to issue their own express warranties to convince buyers that their products were safe. Xenophon P. Huddy, *The Legal Aspect of Automobile Engineering*, THE HORSELESS AGE, Nov. 7, 1906, at 674 (discussing the law of express and implied warranties as they apply to automobiles); *Irresponsible Guarantees*, THE HORSELESS AGE, Apr. 17, 1901, at 48 (observing that manufacturers of automobiles were guaranteeing their products against accidents resulting from “defective workmanship and material,” but expressing the suspicion that the manufacturers of some low-priced vehicles were offering these warranties but “expect to extricate themselves in some manner from the obligations which such guarantees involve”).

Also, some scholars have questioned whether a lack of privity was ever widely regarded as a pre-emptive bar to suits that attacked the negligent construction of a mass-marketed good.¹⁴ It may be equally likely that uncertainty regarding precisely *what* amounted to the negligent design or construction of a device that was as novel and fast-evolving as the automobile dissuaded injured parties from filing suit.

So, if none of the modern automobile-lawsuit categories predominated back in 1900, what did? The answer: most early automobile cases involved claims that the sight or sound of a motor carriage caused a horse to take fright, resulting in injury either to the horse's rider, the occupants of a carriage or wagon the horse had been towing, or the horse itself.¹⁵

14. Gary T. Schwartz, *Cardozo as Tort Lawmaker*, 49 DEPAUL L. REV. 305, 310 (1998) ("I am unaware of any [case prior to *MacPherson v. Buick Motor Co.*, 111 N.E. 1050 (N.Y. 1916)] in England or New York in which the privity doctrine had shielded a mass-producing manufacturer from liability for an injury suffered by the ultimate consumer."). Indeed, in the first reported case in which a manufacturer's liability for an automobile sold through a distributor was an issue, *Olds Motor Works v. Shaffer*, 140 S.W. 1047 (Ky. 1911), the appellate court found that a lack of privity did not bar recovery for an automobile manufacturer's negligence. *Id.* at 1051. The first significant decision to the contrary (*Cadillac Motor Car Co. v. Johnson*, 221 F. 801 (2d Cir. 1915)), which appeared four years later, was not regarded at the time as the inevitable outgrowth of well-settled principles. See *Favors Cadillac in Broken Wheel Case*, THE HORSELESS AGE, Mar. 17, 1915, at 361 (reporting on the decision, and discussing the possibility of a petition for writ of certiorari being filed).

15. *Some Leading Automobile Suits*, THE HORSELESS AGE, Nov. 5, 1902, at 512 (reporting on known tort suits involving automobiles, the vast majority of which involved frightened horses); *For and Against the Auto*, THE WASH. POST, Aug. 17, 1902, at 17 (observing that "[m]ore [auto-related] accidents have been caused by the frightening of restive horses . . . than in any other way"). See also *Murphy v. Wait*, 92 N.Y.S. 253, 254 (App. Div. 1905) (commenting upon frequent frightened-horse lawsuits); HUDDY, LAW OF AUTOMOBILES 1906, *supra* note 11, at 19 ("That the automobile has a tendency to frighten horses unaccustomed to its appearance must be conceded. This has been one of the worst obstacles to motoring and driving, and has been the cause of much litigation."). For specific frightened-horse cases from this era, see *Indiana Springs Co. v. Brown*, 74 N.E. 615 (Ind. 1905); *Shinkle v. McCullough*, 77 S.W. 196 (Ky. 1903); *Mason v. West*, 65 N.Y.S. 651 (C.C.N.Y.1900), *rev'd*, 70 N.Y.S. 478 (N.Y.A.D. 1901); *An Interesting Automobile Damage Case*, SCI. AM., Dec. 21, 1901, at 407; *Suit Over Motor Vehicle*, N.Y. TIMES, Oct. 31, 1901, at 16 ("For the first time yesterday the Supreme Court tried a suit involving the alleged use of chauffeurs in driving a motor vehicle along a public highway and by its presence frightening a horse and causing physical injury."); *Damage Suit at Providence*,

Though these cases come across as idiosyncratic today, they seemed both obvious and propitious to McKinley-era plaintiffs.¹⁶ For one thing, plaintiffs in these matters could draw upon a large body of frightened-horse caselaw of relatively recent vintage.¹⁷ These cases specified the fact patterns that would and would not suffice for a viable negligence claim. More subtly, the substantial volume of frightened-horse cases communicated to persons injured under similar circumstances that they had suffered a harm that just might lead to a recovery in tort.¹⁸ In other words, when an automobile frightened a horse, those injured¹⁹ often could appreciate the existence of a tort claim (as opposed to merely *damnum absque injuria*), and evaluate the likelihood of success with some precision.

On this latter point, at the very outset of the automobile age some of the caselaw associated with frightened-horse claims seemed quite favorable to plaintiffs. Though there

THE HORSELESS AGE, Nov. 15, 1899, at 8 (reporting on two civil suits arising out of a frightened-horse incident). Due to these lawsuits, some insurers refused to issue policies to the operators of early steam-powered automobiles (while making policies available to owners of other types of motor cars) “because records have proven that horses are more easily frightened by escaping steam than by any other cause.” *Automobile News*, SCI. AM., Nov. 15, 1902, at 327.

16. See Marc Galanter, *Case Congregations and Their Careers*, 24 LAW & SOC’Y REV. 371, 390–92 (1990) (describing how “intervening factors” influence whether, and how many cases within a particular “case congregation” are filed, including the level (frequency) of the activity, “the presence of rights, standards, doctrine, and norms that promise some success to the litigant,” and awareness that a grievance exists).

17. *E.g.*, *Thompson v. Dodge*, 60 N.W. 545 (Minn. 1894); *Holland v. Bartch*, 22 N.E. 83 (Ind. 1889). Much, though not all of this caselaw concluded that other vehicles could be lawfully operated along a highway, notwithstanding a propensity to frighten horses. *E.g.*, *Macomber v. Nichols*, 34 Mich. 212 (1876) (finding error in a lower-court instruction to the effect that if the jury were to find that a steam engine, being operated on a highway, “was well calculated to frighten horses of ordinary gentleness, then the plaintiff is entitled to recover”; holding instead that liability requires a dearth of reasonable care in the operation of the vehicle).

18. See Galanter, *supra* note 16, at 377 (identifying a plaintiff’s awareness of a grievance as being among the factors that contribute to the beginning of a “case career”).

19. Many people were injured due to horse-automobile interactions. The number of horse-related fatalities in New York City increased by almost fifty percent between 1899 and 1907, an uptick that likely includes increased automobile use among its causes. CLAY MCSHANE & JOEL A. TARR, *THE HORSE IN THE CITY: LIVING MACHINES IN THE NINETEENTH CENTURY* 168 (2007).

existed a split of opinion on this issue, some courts subscribed to the position that the defendant's mere operation of a vehicle likely to frighten horses on a public highway created a jury question as to whether he breached his duty of reasonable care.²⁰ The plaintiffs in some early frightened-horse cases that involved automobiles made similar arguments.²¹ Indeed, one of the very first appellate opinions to consider the liability of an automobile driver to the owner of a frightened horse followed this lead.²²

These frightened-horse cases would make for an interesting anecdote, and little more, except for the fact that they produced automobile-friendly rules with staying power. Turn-of-the-century judges and juries knew that *any* new

20. *E.g.*, *McCann v. Consolidated Traction Co.*, 36 A. 888, 889 (N.J. Err. & App. 1897); *Jones v. Snow*, 57 N.W. 478 (Minn. 1894) (finding a jury issue regarding negligence when the defendant's "wagon was so arranged and decorated as to readily frighten horses of ordinary gentleness, and that the display was not such as was really necessary for carrying on defendant's business, except in the way of advertising it."). *But see* *Thompson v. Dodge*, 60 N.W. 545, 546 (Minn. 1894) (rejecting a plaintiff's negligence theory on the ground that there was "no allegation in the complaint that the defendant knew, or had any reason to believe or anticipate, that plaintiff's horse would be frightened at defendant's bicycle, or the manner in which he was riding the same"). Suggestions to the effect that a negligence claim might lie when a driver operated a vehicle built or modified "as to suggest to a reasonably prudent person that it would frighten or terrify an ordinary horse" did not disappear entirely for many years after the introduction of the automobile, though in later cases the concept was mostly raised only in dictum. *Pease v. Cochran*, 173 N.W. 158, 159-60 (N.D. 1919).

21. *See, e.g.*, *An Interesting Automobile Damage Case*, SCIENTIFIC AMERICAN, Dec. 21, 1901, at 407 (reciting, as one of the allegations in the complaint in an early frightened-horse case, that "the electric vehicle was noiseless in its running qualities, but calculated by its peculiar appearance to frighten horses of ordinary gentleness.").

22. *Mason v. West*, 70 N.Y.S. 478, 479-80 (N.Y.A.D. 1901). *See also Col. Hughes Wins His Suit*, THE HAMILTON (OH) WKLY. SUN, Oct. 9, 1902, at 1 (relating a case in which the jury was charged that a driver of an automobile must exercise "peculiar care lest he cause horses to take fright," and in which the jury returned a \$12,070 verdict for the plaintiff). Quite quickly, a general rule emerged that the driver of an automobile would not be liable in negligence if the plaintiff could only establish that his horse was frightened by the sight of the motor car. More was necessary, such as a showing of excessive speed; facts suggesting that the driver knew or should have known of a particular horse's frightened state, and then failed to take appropriate countermeasures; or a failure to obey the horse-automobile code of etiquette that many states incorporated within their hastily prepared automobile laws. HUDDY, LAW OF AUTOMOBILES 1906, *supra* note 11, at 48-51. For a typical statutory provision governing horse-automobile encounters, see N.Y. STATS. 1901, ch. 531, § 169.

contrivance on the highways could frighten a horse²³—as the earlier caselaw (which had involved sources of highway terror as varied as bicycles,²⁴ trolley cars,²⁵ and elephants²⁶) had demonstrated. It also was understood that as time passed and animals became more familiar with a device, the number of accidents attributable to frightened horses would decrease.²⁷ Thus there was less need for stringent judicial regulation; if automobiles were more than a passing fad,²⁸

23. See *Bicycles and Horses*, THE BUCKS COUNTY (PA) GAZETTE, Sept. 1, 1881, at 1 (listing, among things known to frighten horses, “an umbrella over a short woman’s head . . . a boy sitting on the roadside . . . a wheelbarrow . . . even . . . a man on horseback.”).

24. E.g., *Holland v. Barch*, 22 N.E. 83 (Ind. 1889); *Notes*, THE FORT WAYNE WORLD, Apr. 25, 1885, at 1 (commenting on a defense verdict in a lawsuit in which a bicycle was alleged to have frightened a horse). For a discussion of the law that came to surround bicycle use during the 1880s and 1890s, see Ross D. Petty, *The Impact of the Sport of Bicycling on American Safety Law*, 35 AM. BUS. L.J. 185 (1998).

25. E.g., *Chapman v. Zanesville Street Ry. Co.*, 11 Ohio Dec. Reprint 492 (Ohio Common Pleas 1892).

26. *Scribner v. Kelley*, 38 Barb. 14 (N.Y. Sup. Ct. 1862). See also *Means for Checking Runaway Horses*, THE HORSELESS AGE, Sept. 11, 1901, at 490 (listing some of the stimuli known to frighten horses).

27. In *Gilbert v. Flint & P.M. R. Co.*, 16 N.W. 868 (Mich. 1883), for example, the court related that “[w]e have street-cars, and steam fire-engines, and steam threshing-machines, but horses readily become familiar with them, and serious frights are exceedingly rare and entirely exceptional. As objects calculated to alarm horses, the rule is in favor of their harmlessness.” *Id.* at 869. The *Gilbert* court then added:

If a standing freight car should be deemed as dangerous as here represented, it would be impossible to consider these machines and vehicles as fit to appear on the highway. Moreover, the reason would apply to a thousand customary and convenient modes of use of our ordinary highways, which have always been exempt from such doctrine, and which must remain exempt unless we are prepared to surrender a large and valuable portion of our rights connected with the public thoroughfares.

Id. at pp. 869. Judges’ charges to juries in frightened-horse cases from the early automobile era often touched on this theme. For example, one judge instructed a jury:

Far be it from us to have any prejudice against a horseless carriage. . . . The automobile has as much right in the street as the horse has. The bicycle used to be under the ban, but nobody now thinks of having any ill feeling against the bicycle. The same way the improvement of the automobile is good.

The Law of the Road for Automobiles, THE HORSELESS AGE, Apr. 24, 1901, at 73.

28. Early observers considered it quite possible that automobile use was only a short-lived craze, much like the bicycling fad of the 1890s. E.g., *Bitter*

then the problem would resolve on its own.²⁹ Accordingly, courts swiftly and soundly rejected the view that operation of an automobile on a public highway might, by itself, amount to negligence simply because the vehicle was prone to frighten horses.³⁰ Moreover, rulings in early frightened-horses cases also snuffed out any prospect that automobiles would be regarded as nuisances,³¹ or that their owners would be subject to strict liability for harms associated with their use.³²

Fight All Over the Country Against Automobiles, CHI. DAILY TRIB., Aug. 17, 1902, at 39 (“The mass of the population still is prone to consider automobilism almost entirely as a sport, a luxury, or a fad.”). This perception had an important influence on the early regulation of automobiles. As one contemporary commentator observed:

The stages through which the law has passed regarding automobilism has been much the same in every country, and the changes have faithfully represented public opinion. First of all, there has been the stage of contemptuous indifference or disbelief, legislatures having at one time held that it was quite unnecessary to legislate for vehicles which were never likely to become numerous or practical. This stage has been generally followed by fear and by inability to understand the immensely greater power of control in mechanical than in animal traction; and that again has been followed by jealous dislike of and prejudice against a system of propulsion which is contrary to the ideas of all previous generations. The third stage has been often marked by panic legislation, due to the fact that the increase of motor-cars has been so rapid in some countries that a new political and social force has arisen, which is feared by those who love to cling to old ideas.

John Scott-Montagu, *Automobile Legislation: A Criticism and Review*, THE N. AM. REV., Aug. 1904, at 168.

29. *Means for Checking Runaway Horses*, *supra* note 26, at 490 (“It is to be expected that horses will soon become accustomed to automobiles, just as they have to bicycles, and that runaway accidents due to these vehicles will then be very rare.”); *Rights of the Automobile*, L.A. TIMES, Jun. 18, 1899, at 2 (“the curiosity of the horse is easily satisfied, and when he learns that the new style of vehicle is no more dangerous than any other, he will cease to regard it with fear, or even with suspicion”).

30. HUDDY, LAW OF AUTOMOBILES 1906, *supra* note 11, at 48–51 (relating cases). See also FORT WAYNE MORNING J.-GAZETTE, May 25, 1901, at 4 (“The courts now decide, that, when a horse frightens at an automobile and runs away, smashing things, it is the fault of the horse not the automobile.”).

31. *E.g.*, *The Automobile Not a Nuisance*, THE HORSELESS AGE, Sept. 26, 1900, at 10 (reporting on a jury verdict in a lawsuit that alleged that operation of an automobile on a public highway amounted to a nuisance).

32. *E.g.*, *Lewis v. Amorous*, 59 S.E. 338, 340 (Ga. App. 1907) (“It is not the ferocity of automobiles that is to be feared, but the ferocity of those who drive them. They are not to be classed with bad dogs, vicious bulls, and evil disposed mules and the like.”). This outcome seems obvious now, but that wasn’t necessarily the case back in 1900. See *Torts – Liability Without Intent or Negligence – Operation of Defective Automobile*, 34 HARV. L. REV. 564, 564

(1921) (considering whether strict liability should apply to the operation of an automobile). Particularly given that many early automobile owners were among the nation's ultra-rich, the possibility of a strict-liability regime to govern automobile use was not all that far-fetched. See KIMES, *supra* note 7, at 92 ("Who bought automobiles? Prior to the turn of the century, they were, most conspicuously, the same people who owned private railroad cars, had stables for at least twenty carriages at their estates on Long Island, and summered at their opulent 'cottages' in Newport."). *Id.* at 152 (observing that as of 1900, only 4,000 Americans owned automobiles, with this number rising to 40,000 by 1904). *Id.* at 189 (quoting future President Woodrow Wilson as stating, in 1906, "Nothing has spread socialistic feeling in this country more than the automobile," as "to the countryman they are a picture of the arrogance of wealth, with all its independence and carelessness."). The saving graces, for automobiles, were threefold. First, their beneficial uses were quite obvious, assuming that they would reach a price point at which they would be more generally available. See, e.g., *The Status of the Horse at the End of the Century*, HARPER'S WKLY., Nov. 18, 1899, at 1172 ("We must expect, as electricity and steam and gasoline and compressed air are more and more used to propel all sorts of vehicles, that the number of horses in the world will diminish."); *Comparative Operating Cost of Horse and Electric Delivery Wagons*, SCI. AM., Jul. 22, 1899, at 50 (comparing the cost-effectiveness of electric motor vehicles, relative to horses); *Horseless Carriages Are Clearing the Way*, S.F. CALL, Aug. 14, 1898, at 23 (describing the many anticipated uses of motor carriages, even though the "vehicle is hardly likely to ever come into general use in San Francisco on account of the hills"). Second, the automobile's principal substitute, the horse, hardly had a spotless safety record of its own. See Eric Morris, *From Horse Power to Horsepower*, 30 ACCESS 2, 6 (2007), available at <http://www.uctc.net/access/30/Access%2030%20-%2002%20-%20Horse%20Power.pdf> (noting that in New York City, circa 1900, 200 people died in accidents involving horses and horse-drawn vehicles, as compared to 344 auto-related fatalities in that same city in 2003); *Dangers of the Automobile, As Tested in France by a Monthly Record, Do Not Exceed Those of the Bicycle and Form a Surprisingly Small Proportion of the Perils Always Imminent in the Street*, S.F. CALL, Jun. 22, 1901, at 6. On the relative safety profiles of horses and automobiles, the opinion expressed in *Automobile Ordinances*, WATERLOO (IA) COURIER, Dec. 15, 1902, at 4, is typical of the era:

The progress of civilization constantly demands better methods of performing any service and in this progress the motor vehicle is sure to be accepted as substitute for the horse. It should be kept in mind that not only is the motor vehicle cleaner, faster and less destructive to the streets but it is far safer than a horse. It never frights, will not kick and always responds to the will of the driver instantly. Not only may it start quicker and travel faster, but it may likewise be stopped quicker than a horse vehicle, while its ability to turn quickly, thus avoiding danger is also very great. These facts render an automobile one of the safest means of traveling.

Third, the carnage wrought by the automobile was commensurate with its use; the fears regarding automobile use were somewhat abstract (and offset, perhaps, by the hope among those who feared these vehicles that they also might own one, someday) until bodies started to pile up. Compare KIMES, *supra* note 7, at 189 ("As more and more cars appeared on the road, so did public hostility against them."), with Harry C. Marillier, *The Automobile: A Forecast*,

In other words, these frightened-horse cases yielded a cluster of forgiving liability rules premised on the belief that automobiles represented an unexceptional addition to the continuum of new technologies that had appeared on the highways. Similar principles might have emerged even had a different type of tort case predominated at the dawn of the automobile age. Yet it is also possible that had the first batch of automobile lawsuits introduced a seemingly endless parade of mangled pedestrians, this carnage would have produced a regime that entailed enhanced oversight over automobile use. Instead, a deferential system emerged and then persisted,³³ even as time passed and the number of automobiles and the associated body count both soared.³⁴

II. THE LIMITATIONS OF REASONING BY ANALOGY

Second, just as the types of lawsuits that implicate a technology tend to change over time, the sorts of reasoning used to resolve these cases also may evolve. More specifically, as Professor Gregory Mandel and others have observed, in resolving disputes that involve a new device, courts often focus on similarities in form between the innovation and existing technologies.³⁵ Over time, however, these analogies tend to give way to analysis that incorporates a more thoughtful consideration of the risk profiles presented by the invention.

The early application of defamation law to broadcasts by radio and television offers one example of such a transition. The question of whether defamation communicated by way of

in THE ECLECTIC MAG. OF FOREIGN LITERATURE 774, 774 (1895) (“[I]t is probable that in a year or two every one will be wanting to drive without horses, and to scour the open country at sweet will in a vehicle that can match the bicycle for lightness and for speed, while saving the superfluous element of labor.”).

33. For a discussion of the persistence of legal rules within the judicial system even as circumstances change, see generally Oona A. Hathaway, *Path Dependence in the Law: The Course and Pattern of Legal Change in a Common Law System*, 86 IOWA L. REV. 601 (2001).

34. Automobiles were responsible for more than 200,000 deaths during the 1920s. PETER D. NORTON, FIGHTING TRAFFIC: THE DAWN OF THE MOTOR AGE IN THE AMERICAN CITY 21 (2008).

35. See Mandel, *supra* note 3, at 553–57 (relating how early cases involving telegraphy embraced simple analogies instead of any thoughtful consideration of the “rationale for the existing legal categories in the first instance”).

radio or television should be regarded as libel, or as slander, vexed courts for decades. The distinction matters because it is easier to recover for libel than for slander.³⁶ In trying to place these new technologies in the proper slot (the notion of a third category never having caught on³⁷), precedent and policy were at odds. On the one hand, black-letter law provides that slander involves aural communications, whereas libel entails printed material.³⁸ This rule supports the treatment of defamation by radio and television as slander, since both rely upon sound for their publication.³⁹ At the same time, the more liberal standard for recovery for libel recognizes that words on the printed page tend to reach a broad audience, as radio and television broadcasts did.⁴⁰ This distinction points in the direction of treating defamation by radio and television as libel.⁴¹

Courts that wrestled with this conflict in the early days of radio and television reached some awkward compromises. Among them, some courts held that if a radio broadcast had been read from a script, it was libel; otherwise, it was slander.⁴² This approach satisfied few;⁴³ one commentator

36. Harold M. Halpern, *Defamation via Television Ad Lib; Libel and Slander Distinctions*, 6 *BUFF. L. REV.* 325, 325–26 (1956) (“Libel is actionable without proof of damages, while slander is actionable only if there is proof of special damages, viz: a pecuniary loss, unless the defamation is within the narrow category known as slander per se.” (footnotes omitted)).

37. One court did create a third type of defamation to cover these circumstances, labeled “defamacast.” *Am. Broadcasting-Paramount Theatres, Inc. v. Simpson*, 126 S.E.2d 873 (Ga. 1962). For a discussion of the tendency of courts to shoehorn new technologies into existing frameworks, see Mandel, *supra* note 3, at 553, 564 (observing that “there often appears to be an inclination to handle new technology disputes under existing rules.”).

38. W. PAGE KEETON ET AL., *PROSSER AND KEETON ON THE LAW OF TORTS* 785 (student ed. 1984). Moreover, early radio and television broadcasts resembled slander in that they lacked permanence, at least among their broad audiences.

39. For an example of an authority that adopted this view, see Stuart Sprague, *Freedom of the Air*, 8 *AIR L. REV.* 30, 43 (1937–38) (“It is believed that as long as a distinction exists between libel and slander all radio defamations should be deemed slander and not libel whether the speaker reads from a manuscript or speaks extemporaneously or from memory”).

40. See, e.g., *Defamation by Radio*, 30 *LAW NOTES* 3 (1926) (“The law of slander is . . . inadequate when applied to radio broadcasting, where the speaker is consciously addressing an audience which may be greater than the circulation of any newspaper.”).

41. *Id.*

42. Halpern, *supra* note 36, at 325–26 (citing cases). See also *RESTATEMENT*

observed that “to say that one may recover if the defamation is read from a script, even though unknown to the listener, but may not recover if an ad lib, is unrealistic.”⁴⁴ Some of these critics preferred an approach that focused on the scope of the risks created by the media, under which defamation by radio and television “should be held libel because of the great capacity it has to harm one’s reputation.”⁴⁵ Eventually, most courts gravitated toward the view that policy trumps form—meaning that defamation by radio and television constitute libel.⁴⁶ Yet this transition took decades to occur. The Restatement (Second) of Torts’ discussion of defamation by radio and television, published in 1977, described the cases on the subject as still being “divided and confused.”⁴⁷ Furthermore, some statutes enacted early in the development of these media, under which defamation by radio and television are considered slander, remain in place today.⁴⁸

An arguably similar story surrounds airplanes. Ground damage attributable to fallen aircraft long was considered one of the rare circumstances in which strict liability, as opposed

OF TORTS § 568 cmt. f (1938) (observing that “[a] libel may be published by broadcasting over the air by means of the radio, if the speaker reads from a prepared manuscript or speaks from written or printed notes or memoranda.”) This treatise further provides that when a radio broadcast contains extemporaneously spoken defamatory content, whether it amounts to libel or slander hinges on factors enumerated in section 568(3) of the Restatement, namely, “the area of dissemination, the deliberate and premeditated character of its publication, and the persistence of the defamatory conduct.” *Id.* at § 568(3), cmt. f.

43. To play devil’s advocate here, one policy argument in favor of this halfway approach would note that written defamation “is an act of deliberation” that merits a more potent response, in a way that extemporaneously spoken words over the radio or television may not be. *Defamation by Radio, supra* note 40, at 3.

44. Halpern, *supra* note 36, at 327.

45. *Id.* at 328.

46. See *McLaughlin v. Rosanio, Bailets & Talamo, Inc.*, 751 A.2d 1066, 1076 (N.J. Super. A.D. 2000) (“The consensus elsewhere seems to be that radio and television broadcasts should be categorized as libel.”).

47. RESTATEMENT (SECOND) OF TORTS § 568A (1977).

48. For example, California Civil Code § 46 and § 48.5, under which defamation by radio and television are regarded as slander, were enacted back in 1945 and 1949, when form reigned. An Act to Add Section 48.5 to the Civil Code, Relating to Defamation by Radio, STATS. 1949, ch. 1258, § 1; An Act to Amend Sections 46, 47, 48, and 48a of the Civil Code and Add a New Section to the Civil Code, to Be Numbered 45a, Relating to Libel and Slander, CAL. STATS. 1945, ch. 1489, § 2.

to negligence, would provide the appropriate rule. This approach dates back to *Guille v. Swan*, an 1822 case that involved hot-air ballooning.⁴⁹ After the Wright brothers' fateful flight, commentators assumed that *Guille's* strict-liability rule for ground damage would apply to motorized aircraft.⁵⁰ Both balloons and airplanes rose to, and fell from, the sky, after all; and the plaintiffs in such cases presumably would be equally blameless. Suitably, the Restatement of Torts endorsed strict liability for ground damage caused by aircraft crashes.⁵¹ This view proved remarkably persistent, even as commercial aviation became commonplace and its safety record improved.⁵² After a pitched debate, the

49. *Guille v. Swan*, 19 Johns. 381 (N.Y. Sup. Ct. 1822).

50. *E.g.*, Simeon E. Baldwin, *Liability for Accidents in Aerial Navigation*, 9 MICH. L. REV. 20, 21 (1910); HAROLD H. HAZELTINE, *THE LAW OF THE AIR: THREE LECTURES DELIVERED AT THE UNIVERSITY OF LONDON AT THE REQUEST OF THE FACULTY OF LAWS 86-87* (1911). Two issues dominated early conversations regarding tort law and airplanes: how to reconcile manned flight with the *ad coelum* doctrine, see generally STUART BANNER, *WHY OWNS THE SKY?* (2008) (describing the lengthy struggle to reconcile air traffic with the general principle that one who owns land also owns the skies above it), and the concern that individuals, minding their own business upon the ground, would suddenly be crushed from above by an airplane as it plummeted to the earth. On this latter point, one early article on the legal implications of flight began with the remark, "It cannot be long before the American courts will be called upon to decide whether aeronauts, who cause damage by a descent to the earth, are liable at all events, or only when chargeable with negligence or want of skill." Baldwin, *supra* note 50, at 20. The author argued for application of strict liability, as the aeronaut was engaging "in a dangerous pursuit" solely "for his own advantage or amusement"; this being the case, "he ought to be held responsible for whatever misadventures, of a kind not unusual in such a pursuit, may befall him." *Id.* at 21. See also HAZELTINE, *supra*, at 82-88 (discussing the possibility that planes will crash-land, injuring persons on the ground, and the preferable liability rule to apply in such circumstances); Arthur K. Kuhn, *The Beginnings of an Aerial Law*, 4 AM. J. INT'L LAW 109, 128 (1910) ("The opening of the airspace to the aerial navigator brings with it . . . concomitant responsibility. The law of gravitation is constant and inevitable and he who seeks temporarily to overcome its effects must reckon with an extraordinary responsibility for injuries to person or property in the event of failure."). And indeed, some of first tort suits to involve flight involved injuries to persons on the ground. *E.g.*, *Morrison v. Fisher*, 152 N.W. 475 (Wis. 1915) (ruling on an appeal in a case arising out of an air-show accident, in which the jury below had ruled for the defendant aviator, finding him not negligent).

51. RESTATEMENT OF TORTS § 520 cmt. b (1938).

52. In fairness, there were a few early dissenters from the orthodox view. *E.g.*, George W. Lupton, Jr., *Progress of aviation law*, AVIATION, Feb. 1933, at 43. "The difference between a balloon, at the sport of the winds, and an airplane or airship, ordinarily easily controlled, is obvious. The former is

Restatement (Second) of Torts retained the strict-liability rule.⁵³ Only relatively recently has a critical mass of courts and commentators determined that airline operators, given their relatively benign safety profile, should be subject to a liability rule for ground damage that is no more stringent than the one applied to, for example, automobile drivers.⁵⁴

That early courts tend to seize upon analogies based on similarities in form is not surprising; until an invention matures and becomes more broadly diffused among consumers, its ultimate risk profile cannot be predicted with accuracy. In any event, the net effect of this tendency is difficult to predict. As the juxtaposition of the radio and airplane examples demonstrate, simplistic early analogies do not always favor plaintiffs. These cases may produce rules that are later rejected as too deferential (as in the case of radio and television) or as too harsh (as with airplanes) to the new technology. That is, if they are ever rejected at all.⁵⁵

III. SEPARATING THE GOOD FROM THE BAD

Third, the aspects of an innovation that involve unreasonable risks often prove difficult to identify, to segregate from the device's beneficial attributes, and to rely upon as predicates for liability.

The public can exaggerate the harms associated with an innovation; this problem is, I believe, well understood, and forms part of the basic critique of tort law as it applies to

inherently dangerous, the latter is less dangerous than the automobile or the train, if competently operated." *Id.*

53. The history of the strict-liability rule and the debates surrounding its retention in the Restatement (Second) of Torts are related in the Reporter's Note to Comment k to section 20 of the Restatement (Third) of Torts (2010). RESTATEMENT (THIRD) OF TORTS § 20 cmt. k reporter's note (2010).

54. See *Crosby v. Cox Aircraft Co. of Washington*, 746 P.2d 1198, 1200 (Wash. 1987) (relating that "The modern trend followed by a majority of states is to impose liability [for ground damage] only upon a showing of negligence by either the aircraft owner or operator," and citing cases from other jurisdictions). The Restatement (Third) of Torts declines to take a position on whether strict liability applies to these circumstances, however. RESTATEMENT (THIRD) OF TORTS § 20 reporter's note (2010).

55. For a discussion of how inertia and path dependence (both in its formal, *stare decisis* sense and in its other dimensions) can deter changes in the law, see generally Hathaway, *supra* note 33.

innovation.⁵⁶ One hears less about the tendency to *underestimate* the dangers created by a new practice or device; yet this too can occur. A positive aura that surrounds an innovation can cloak its unnecessarily risky features, at least for a time.

Here, consider two relatively recent innovations: hybrid vehicles and Tasers. In 2000, Toyota sold its first Prius vehicles in the United States.⁵⁷ The Prius, like other hybrid and electric vehicles, comes equipped with a quirk: it is very quiet, especially while being operated at low speeds. So quiet, that research has found that these vehicles may pose a danger to unsuspecting pedestrians and bicyclists.⁵⁸ Ten years after the first Prius hit the streets, President Obama signed legislation that will require these vehicles to produce an alert noise.⁵⁹ In the interim, however, not a single reported case decision appeared in which the lack of noise on a hybrid or electric vehicle was attacked as a product defect.⁶⁰

It is possible that no Prius or other hybrid vehicle ever snuck up on an unsuspecting jogger during this span.⁶¹ But perhaps the public simply was not conditioned to appreciate that the lack of noise associated with hybrid vehicles amounted to an unreasonable and avoidable risk. Hybrid vehicles are desirable, on balance; it may take time to

56. See *infra* text accompanying notes 104–109.

57. Andrew Pollack, *It's Easier to Be Green*, N.Y. TIMES, Nov. 19, 2000, at A1.

58. See NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, INCIDENCE OF PEDESTRIAN AND BICYCLIST CRASHES BY HYBRID ELECTRIC PASSENGER VEHICLES 3 (2009) (concluding that hybrid and electric vehicles “have a higher incidence rate of pedestrian and bicyclist crashes than do [internal combustion engine] vehicles in certain vehicle maneuvers”); Sarah Simpson, *Didn't Hear It Coming: Must hybrid cars be louder to be safe for pedestrians?*, SCI. AM., Aug. 2008, at 22. The risks presented by the silence of hybrid vehicles had been the subject of anecdotal reports for years prior to the preparation of these reports. See, e.g., Gary Richards, *Quiet hybrids pose an 'invisible' risk*, SAN JOSE MERCURY NEWS, Feb. 3, 2006, at A1 (discussing concerns to this effect that had been raised by representatives of the National Federation of the Blind).

59. Pedestrian Safety Enhancement Act of 2010, S. 841, Pub. L. 111-373 (Jan. 4, 2011).

60. As based on a review of the Westlaw ALLCASES database, September 2011.

61. *But see* NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, *supra* note 58, at 19 (concluding that hybrid and electric vehicles “have a higher incidence rate of pedestrian and bicyclist crashes than do [internal combustion engine] vehicles in certain vehicle maneuvers.”).

recognize that we need not accept the bitter in order to gain the benefit of the sweet. On a “micro-” level, the jogger just discussed may grasp that he had been struck by a Prius, but will likely assign blame to the driver, rather than to the lack of a noisemaking device on the vehicle.

While personal injuries caused by hybrid-car accidents are speculative, injuries associated with Tasers are quite well-documented.⁶² Even so, it has taken time to grasp the preventable risks associated with these devices. Only over the past few years has a distinction been drawn between those situations in which Tasers offer a preferable means of non-lethal force, and those in which their use may be regarded as improper.⁶³ These distinctions have served as the predicate for the ongoing surge of lawsuits against the manufacturer of Tasers—most of which allege a failure to adequately warn of the product’s dangers when used in certain assertedly “unreasonable” circumstances.⁶⁴

As background, a Taser is a branded “conducted energy device” that uses an electric current to disable a target. These devices have been sold since the mid-1970s.⁶⁵ Today, they are most closely associated with a particular model line, marketed as the “Taser.”⁶⁶ According to Taser International, the manufacturer of Tasers, around 590,000 of these devices have been sold to law enforcement agencies as of 2011.⁶⁷

62. AMNESTY INT’L, EXCESSIVE AND LETHAL FORCE? AMNESTY INTERNATIONAL’S CONCERNS ABOUT DEATHS AND ILL-TREATMENT INVOLVING POLICE USE OF TASERS (2004), *available at* <http://www.amnesty.org/en/library/asset/AMR51/139/2004/en/48fc6252-d581-11dd-bb24-1fb85fe8fa05/amr511392004en.html>.

63. See JAMES M. CRONIN & JOSHUA A. EDERHEIMER, CONDUCTED ENERGY DEVICES: DEVELOPMENT OF STANDARDS FOR CONSISTENCY AND GUIDELINES 23–29 (2006) (proposing guidelines for Taser use).

64. TASER INT’L, INC., ANNUAL REPORT ON FORM 10-K, YEAR ENDED DECEMBER 31, 2010 50 (2011), *available at* <http://www.sec.gov/Archives/edgar/data/1069183/000095012311025257/c13977e10vk.htm> (relating that most of the pending products-liability lawsuits against the corporation, to the extent that they involve their Taser product, involve a failure to warn).

65. *Los Angeles Police Get Nonlethal Arms*, N.Y. TIMES, Nov. 28, 1980, at 28; Fred Ferretti, *Zap!*, N.Y. TIMES, Jan. 4, 1976, at SM4; AMNESTY INT’L, *supra* note 62. As of 1985, only eight major police departments used these devices. *Defensive Use of Stun Guns Increases*, N.Y. TIMES, Apr. 28, 1985, at 43.

66. CRONIN & EDERHEIMER, *supra* note 63, at 3.

67. *Press Kit*, TASER INTERNATIONAL, <http://www.taser.com/press-kit> (last

Tasers have been marketed as a less-violent alternative to lethal force. This pitch has proved persuasive; by 2004, more than 4,000 police departments across the United States used Tasers.⁶⁸ That same year, however, a spate of newspaper articles⁶⁹ and an Amnesty International report⁷⁰ raised concerns about whether law-enforcement officers were using these devices properly. Some of these critiques, and others that followed,⁷¹ also questioned whether Taser International was issuing proper warnings and instructions to these officers.⁷²

These reports may have caused a change in public opinion with regard to Tasers, or they may have merely documented this shift. What *is* clear is that there were very few product-liability lawsuits against the makers of conducted energy devices prior to the public discussion of the avoidable harms caused by Tasers, and quite a few contemporaneously and afterwards. The first products-liability case against a conducted energy device manufacturer to appear in the Westlaw federal and state caselaw database (ALLCASES) was brought in the mid-1980s, leading to an opinion in September 1987.⁷³ The next opinion in such a case, as

visited Apr. 21, 2012).

68. Sarah Kershaw, *As Shocks Replace Police Bullets, Deaths Drop but Questions Arise*, N.Y. TIMES, Mar. 7, 2004, at N1.

69. *E.g.*, Alex Berenson, *As Police Use of Tasers Soars, Questions Over Safety Emerge*, N.Y. TIMES, Jul. 18, 2004, at N1; Kershaw, *supra* note 68, at N1.

70. AMNESTY INT'L, *supra* note 62.

71. *E.g.*, Allison Torres Burtka, *Electric shock from tasers can injure and kill, lawsuits claim*, TRIAL, May 2005.

72. A 2006 report on conducted energy devices, prepared by the Department of Justice, summarized the concerns that had come to surround Tasers by that time. In describing its genesis, the report explained:

Advocacy organizations raised questions about the devices, claiming they were being misused, overused, and posed serious health risks. Policy issues emerged on a plethora of concerns ranging from placement on the force continuum to activation parameters on at-risk populations such as children, the elderly, persons under the influence of drugs, and pregnant women. Training questions arose, especially about the mandatory exposure of police officers to these devices. Tactical issues surfaced, ranging from holster placement to the practice of activating persons in vehicles. The medical effects of CEDs were—and remain—controversial because some people have died in proximity to a CED activation.

CRONIN & EDERHEIMER, *supra* note 63, at 4.

73. *Zurich Ins. Co. v. Alvarez*, 669 F.Supp. 307 (C.D. Cal. 1987).

contained within the database, appeared fully 18 years later, in September 2005.⁷⁴ Since 2004, more than 100 lawsuits have alleged either improper use of a Taser, product-liability theories against Taser International, or both.⁷⁵ As of March 2011, the company was named as a defendant in 51 ongoing personal injury or wrongful death lawsuits.⁷⁶

The vast majority of the lawsuits against Taser International have failed.⁷⁷ But the simple fact of the lawsuits, and their delayed timing relative to the initial appearance of Tasers, is for present purposes much more significant than the case outcomes to date. With both hybrid vehicles and Tasers, prospective plaintiffs simply lacked substantial “claim consciousness” for some period of time after the product’s initial development and dissemination.⁷⁸

IV. EARLY ADOPTERS

Fourth, there exists a tendency, in early accidents that involve a novel device, to focus on the behavior of its consumers, whose conduct may be easier to map against prevailing standards of care than that of the product’s manufacturers. In suits brought by users themselves, the law often regards early adopters as taking their chances with a technology. Meanwhile, in situations in which a third party might bring suit, responsibility for the harm may be shifted away from the technology itself and toward the user’s decisions vis-à-vis the innovation.

This “blaming the user” dynamic appeared during the dawn of the automobile. By any standard, early automobiles contained many serious defects.⁷⁹ For example, the December 1, 1900, issue of *Scientific American* casually remarked upon

74. Sanders v. City of Fresno, 2005 WL 2435893 (E.D. Cal. Sept. 30, 2005).

75. NEWS RELEASE: JURY AWARD FOR PLAINTIFF IN TURNER V. TASER INTERNATIONAL (2011) available at <http://investor.taser.com/phoenix.zhtml?c=129937&p=irol-newsArticle&ID=1586646&highlight=>.

76. TASER INT’L, INC., *supra* note 64, at 49.

77. *Id.*

78. See Galanter, *supra* note 16, at 377 (discussing the importance of grievance awareness in catalyzing lawsuits).

79. Sally H. Clarke, *Unmanageable Risks: MacPherson v. Buick and the Emergence of a Mass Consumer Market*, 23 LAW & HIST. REV. 1, 11 (2005) (“At least until 1904, the automobile’s rudimentary character created many technological defects.”).

the fact that “[m]any accidents have occurred on account of the tires becoming detached from the steering wheels of automobiles, and too much attention cannot be paid to this matter.”⁸⁰ Yet even basic features of automotive technology were indefinite and difficult to critique during this era.⁸¹ This being the case, when problems appeared with early automobiles, “it [was] not always possible to say with absolute certainty whether a breakage or other accident [was] due to defects in construction or improper operation.”⁸² In these situations, the definite tendency was to assign fault to the user, rather than engage in a probing review of the technology. The sin of speeding received special scrutiny, being blamed for many early automobile accidents.⁸³ In this spirit, *The New York Times* related in a 1904 editorial that

80. *Automobile News*, SCI. AM., Dec. 1, 1900, at 342.

81. The large number of manufacturers that tend to appear in the early phases of industry development also may complicate efforts to appreciate and critique a product’s design. See DAVID BLANKE, *HELL ON WHEELS: THE PROMISE AND PERIL OF AMERICA’S CAR CULTURE, 1900–1940* 20 (2007) (observing that as of 1908, there were 253 manufacturers of automobiles, although some of these manufacturers were, in fact, simply glorified parts assemblers); KIMES, *supra* note 7, at 91 (relating an official estimate that as of 1899, 30 automobile producers manufactured 2,500 vehicles); Michael Gort & Steven Klepper, *Time Paths in the Diffusion of Product Innovations*, 92 *ECON. J.* 630, 651 (1982) (discussing how there often exist a relatively large number of product manufacturers at early stages of industry development, with participants dropping out as the industry matures). In theory, design diversity would seem to benefit plaintiffs, in that this variety would tend to present reasonable alternatives to the defendant’s design choice. But this assumes a fairly well-defined and advanced cause of action. Prior to that time, a range of designs may make it unclear what the basic nature of the product is, and thus what its design *should* be. See KIMES, *supra* note 7, at 164 (observing that, in the early years of automobile development, “[t]here was no really definitive answer to what an automobile should be yet and some bizarre notions of what it might be.”). *Id.* at 165 (discussing the early divide among steam-, electric-, and gasoline-powered automobiles). Also, the high attrition rate among corporations that marks early industrial development begs the question of whether companies participating in nascent industries are likely to be deterred by the remote prospect of tort liability if they happen to be one of the few, fortunate surviving entities.

82. *Irresponsible Guarantees*, *supra* note 13, at 48.

83. See, e.g., *The Automobile*, S.F. CALL, Sept. 14, 1902, at 22 (calling for stricter regulation of speeding in the wake of a fatal automobile accident); *Recent Automobile Accidents*, SCI. AM., Nov. 9, 1901, at 290 (“we wish to draw attention to the fact that a mere acquaintance with the management and control [of an automobile] under normal conditions, does not qualify the owner as an expert under all-round conditions.”).

the automobile “is dangerous only when run imprudently or recklessly—less dangerous, indeed, than horses ever were or are ever likely to be.”⁸⁴

Speeding was blamed even for accidents that seem, in hindsight, to have been caused by an obvious mechanical issue. One 1904 *Horseless Age* story reported, “During the past few weeks the daily papers have been full of reports of automobile accidents, and one remarkable feature of these reports has been that in the vast majority of them the cause of the trouble is stated to have been connected with the steering gear.”⁸⁵ This diagnosis seemed quite sound, given that in these accidents, either pins were falling out of the steering gear, or the steering gear simply broke.⁸⁶ The article’s author begged to differ, offering the opinion: “Now, while a mishap to the steering gear is very likely to cause a serious accident, it is hard to believe that the steering gears of so many cars are so carelessly constructed that they break or drop to pieces on the road.”⁸⁷ Instead, the article continued, “we are rather inclined to think that the greater portion of these accidents are simply the result of reckless driving, mostly by comparative novices.”⁸⁸

Passenger air travel offers another example of “blaming the user” while a technology gradually transitions from an extravagance to a necessity. Most early air passengers either chartered planes or paid “barnstormers” for short trips up in the air.⁸⁹ The pilots on these journeys hardly claimed spotless

84. *The American Automobile*, N.Y. TIMES, Sept. 23, 1904, at 8.

85. *A New Explanation of Speed Accidents*, THE HORSELESS AGE, Aug. 3, 1904, at 98.

86. *Id.*

87. *Id.*

88. *Id.*

89. Routine scheduled passenger air traffic did not take off until the late 1920s. By 1929, scheduled air-service lines carried 173,405 passengers, up from 5782 in 1926. ROGER E. BILSTEIN, *FLIGHT IN AMERICA* 57 (3d ed. 2001). See also THOMAS HART KENNEDY, *INTRODUCTION TO THE ECONOMICS OF AIR TRANSPORTATION* 56–57 (1944) (describing the factors behind the boom in passenger air traffic in the late 1920s). Prior to that time, except as to a handful of routes in which airplanes could soar over water hazards, early aircraft were too slow, and their flying radius too limited, to compete with railroads and automobiles. R.E.G. DAVIES, *AIRLINES OF THE UNITED STATES SINCE 1914* 4–5 (1972) (discussing the obstacles that hindered the development of commercial flight in the United States). The first regularly scheduled air passenger route connected Tampa and St. Petersburg, Florida, and commenced

safety records; these flights—or, more accurately, the unplanned cessation of these flights—led to a significant number of injuries and deaths. Between 1921 and 1923, there were 470 reported civilian airplane accidents, resulting in 221 deaths and 391 injuries.⁹⁰ Nevertheless, for a quarter-century after the Wright brothers' first flight there were no published decisions in which recovery in tort was sought for passenger injuries or deaths due to a plane crash.⁹¹ Surveying the field in the late 1920s, one observer wrote, "Liability to passengers is, with the exception of Connecticut and probably Massachusetts, a wide open question, the

service in 1914. R.E.G. Davies, *The Birth of Commercial Aviation in the United States*, 78 *REVUE BELGE DE PHILOLOGIE ET D'HISTORIE* 993, 994–96 (2000).

90. AERONAUTICAL CHAMBER OF COMMERCE OF AM., INC., *THE AIRCRAFT YEAR BOOK FOR 1924* 103 (1924). If contemporary accounts can be credited, the accident rate associated with early flight was positively sky-high, especially among so-called "gypsy" (itinerant) pilots. According to one *Scientific American* article, the approximately 600 to 650 civilian airplanes in the hands of gypsy pilots in 1922 were involved in 122 accidents that year. *The Demand for Air Laws*, *SCI. AM.*, Aug. 1923, at 84. The "deplorable and unnecessary loss of life" associated with journeyman fliers had grown so troublesome that by mid-1923 *Scientific American* joined aircraft manufacturers, and several operators of small airlines, in calling for federal regulation of aviation. *Id.* Though there was a lull in air traffic in 1924 and 1925, industry resurgence following the enactment of the Air Commerce Act of 1926 (44 Stat. 568, May 20, 1926) produced a concomitant increase in passenger deaths and injuries. According to the Department of Commerce, the first six months of 1929 witnessed 116 passenger fatalities associated with civil air transportation, along with eighty-nine severe injuries and eighty minor injuries. AERONAUTICAL CHAMBER OF COMMERCE OF AM., INC., *THE AIRCRAFT YEAR BOOK FOR 1930* 508 (1930); Air Commerce Act of 1926, 69 Pub. L. No. 254, 44 Stat. 568.

91. The first published appellate decision in a lawsuit brought by a passenger (or their estate) that attacked the negligent operation of an airplane appeared in 1929. *Hough v. Curtiss Flying Service* (1929), U.S. Av. Rep. 99 (Me. Sup. Jud. Ct. 1929). The *Hough* decision was followed in short order by *Greunke v. North American Airways Co.*, 230 N.W. 618 (Wis. 1930) and *Smith v. New England Aircraft Co.*, 170 N.E. 385 (Mass. 1930). Beforehand, there had been a number of published decisions that involved claims brought under insurance policies in the wake of air accidents, most of which were resolved against the insured. *E.g.*, *Wendorff v. Missouri State Life Ins. Co.*, 1 S.W.2d 99 (Mo. 1927); *North Am. Acc. Ins. Co. v. Pitts*, 104 So. 21 (Ala. 1925); *Meredith v. Business Men's Acc. Ass'n of America*, 252 S.W.2d 976 (Mo. App. 1923); *Traveler's Ins. Co. v. Peake*, 89 So. 418 (Fla. 1921); *Bew v. Travelers' Ins. Co.*, 112 A. 859 (N.J. Err. & App. 1921). There also had been a few cases involving injuries to bystanders at air shows, for example, *Morrison v. Fisher*, 152 N.W. 475 (Wis. 1915), and the author has located one early, apparently unpublished case that involved a midair collision between two airplanes. *Air "Traffic Laws" Cited*, *L.A. TIMES*, Oct. 14, 1925, at A1.

decision of which will have great bearing on the development of aircraft.”⁹²

What accounted for this dearth of caselaw? One 1929 commentator associated the lack of lawsuits with the public’s benign view toward airplanes, surmising that “Although few subjects offer as fertile a field for legal study as the problem of an aviator’s tort liability, a general attitude of kindly tolerance toward all things aeronautical has kept this topic so far chiefly one for academic discussion.”⁹³ Perhaps this was true. It seems more likely, however, that prospective plaintiffs sensed that they were unlikely to recover in any lawsuit they might file.

In the early 1900s, potential cases that would allege injuries or death arising out of air travel suffered from two substantial impediments. First, many of the early air carriers likely could not pay any judgment that might be awarded against them. A large share of these operators hovered on the precipice of insolvency.⁹⁴ And, glamorous though they were, barnstormers made for terrible defendants. They too were generally cash-strapped, and had the unfortunate habit of dying in the very same crashes that might have led to lawsuits. Second, an early airplane passenger was understood to be courting danger.⁹⁵ One

92. Chuster W. Cuthell, Book Note, 37 YALE L.J. 687, 688 (1928) (reviewing Rowland W. Fixel, *Law of Aviation* (1927)). Connecticut and Massachusetts both had enacted statutes that related liability rules for injuries suffered as a result of airplane crashes. An Act Concerning the Registration, Numbering, and Use of Air Ships, and the Licensing of Operators Thereof, CONN. STATS. 1911, ch. 86, § 11 (“Every aeronaut shall be responsible for all damages suffered in this state by any person from injuries caused by any voyage in an air ship directed by such aeronaut.”); An Act to Regulate the Use of Air Craft, Acts and Resolves of the General Court of Massachusetts, 1913, ch. 663, § 6 (providing that an aviator “shall be held liable for injuries resulting from his flying unless he can demonstrate that he had taken every reasonable precaution to prevent such injury”).

93. Arthur R. Newman, II, *Damage Liability in Aircraft Cases*, 29 COLUM. L. REV. 1039, 1039 (1929).

94. Only 17 of the 88 operators listed in the 1921 annual report of the Aeronautical Chamber of Commerce could be found among the 129 operators listed in the analogous report of two years later. HENRY LADD SMITH, *AIRWAYS: THE HISTORY OF COMMERCIAL AVIATION IN THE UNITED STATES* 88 (1942).

95. See, e.g., ROGER E. BILSTEIN, *FLIGHT PATTERNS: TRENDS OF AERONAUTICAL DEVELOPMENT IN THE UNITED STATES, 1918–1929* 62 (1983) (describing early perceptions of barnstormers and their patrons).

itinerant pilot described the sort of plane typically flown by his fellow “gypsy” aviator as “usually in poor condition, due to the fact that he has no shelter for it and as a rule cannot afford to repair it unless absolutely necessary. More often than not it was a condemned war training plane when he bought it.”⁹⁶ Prospective plaintiffs thus must have anticipated a robust assumption of the risk or contributory negligence defense in the event of any suit.

Even when state-of-the-art planes and more substantial airline concerns were involved, there remained a sense that passengers might be taking a substantial risk simply by leaving the ground. At a minimum, the boundaries of contributory negligence were ill-defined, and potentially expansive. One commentator wondered aloud in 1929, “Let us assume that a passenger engages an airplane and takes off in the midst of a severe storm and fog. It would be negligent for the pilot to take off under such conditions. Would it not be contributorily negligent for a passenger to engage in the flight? It would seem so, and he should be barred from recovering for any resultant damages.”⁹⁷ Similar concerns did not have to rise to the level of an absolute defense to deter lawsuits; due to the perceived riskiness of flight, many injured plaintiffs, or their next of kin, likely never considered themselves as having a valid claim in tort. Only when passenger flight became a relatively unremarkable and widespread occurrence did a sense develop that the experience did not, and should not, involve a healthy dose of assumed risk.

When air-passenger lawsuits finally commenced in the late 1920s and early 1930s, the plaintiffs in these cases did not invariably name the manufacturers of the downed airplanes as defendants. Why not? In addition to the difficulties associated with proving negligent manufacture (and the unavailability of a strict products-liability claim in that era⁹⁸), here again there appeared a tendency to blame

96. *The Gypsy Flier’s Viewpoint*, AVIATION, Jan. 22, 1923, at 103.

97. Newman, *supra* note 93, at 1049. See also W. JEFFERSON DAVIS, AERONAUTICAL LAW 295 (1930) (“It would appear that one taking flight in an airplane assumes certain apparent risks in this mode of travel which are of greater hazard than travel on land or water.”).

98. Acceptance of strict products liability was more than three decades in

users, not the machine.⁹⁹ Take, for example, the investigation and court proceedings that stemmed from one of the first major passenger air disasters, a March 1929 crash of a Ford airplane in Newark, New Jersey, in which more than a dozen people died.¹⁰⁰ The official investigation found that one engine on the doomed airplane failed shortly after takeoff, and that another may have failed later. To a modern trial lawyer, these facts would suggest a potentially defective engine, and perhaps a claim of negligent manufacture—especially because the uncontroverted testimony was that the engine had been properly serviced by the airline.¹⁰¹ Back then, blame for the accident was placed squarely on the pilot's shoulders. In the minds of investigators, "the man more than the machine was the cause of the casualties."¹⁰² This conclusion flavored the lawsuit that followed, in which only the airline and its servants—not Ford—were named as defendants.¹⁰³

V. THE TWO FACES OF UNCERTAINTY

This Article's fifth point is a bit more general than those that precede it, and in some respects builds upon and follows from these assertions. Simply put, this final principle holds that as to any particular innovation, it is exceedingly difficult to ascertain in advance whether, and for how long, those recurring themes within tort law's application to innovation that tend to produce a "grace" period for an invention will predominate over those tendencies that may have the

the future. See, e.g., *Greenman v. Yuba Power Prods., Inc.*, 377 P.2d 897 (Cal. 1963).

99. *13 Killed in Sightseeing Plane Crash; Huge Ship Cut in Two on a Railway Car as It Falls in the Jersey Meadows*, N.Y. TIMES, Mar. 18, 1929, at 1 (relating a 1928 Navy report that attributed most airplane crashes to date to "the human factor").

100. *Id.*

101. One of the plaintiffs' claims was that the airline had permitted "the motors and other parts of the plane to become defective, unsecured, and insufficient." *Boele v. Colonial W. Airways*, 164 A. 436, 437 (N.J. Ct. Err. & App. 1933). However, the appellate court determined that "The defendant, no doubt, proved that the plane had been properly serviced and inspected from the time of its purchase new." *Id.*

102. *Aeronautics: Flights & Fliers*, TIME, Apr. 8, 1929, at 18.

103. *Boele*, 164 A. at 436; *Ziser v. Colonial W. Airways*, 162 A. 591, 591 (N.J. Sup. 1932).

opposite effect.

One side of this ledger already has been discussed. This Article has related how the first batch of tort suits that implicate an invention may allege what ultimately prove to be idiosyncratic claims, as to which judges prescribe what in hindsight prove to be a permissive set of rules; how early lawsuits may be stymied by difficulties in pinpointing the unreasonably hazardous accoutrements of an innovation; and how a tendency exists to ascribe responsibility for harms associated with a new technology to its early users, instead of the innovation itself. Put together, these principles form a rough argument that tort law sometimes (though not always) blesses innovations with a “honeymoon” period, in which the necessary information, doctrine, and expectations do not exist to assimilate grievances that involve these inventions into everyday torts practice.

But there exists another side to the story. According to conventional wisdom, tort law routinely penalizes innovation, while rewarding manufacturers who adhere to the status quo. The leading article in this vein is Peter Huber’s *Safety and the Second Best: The Hazards of Public Risk Management in the Courts*.¹⁰⁴ In this article, Huber posits that, as a general matter, “courts . . . greatly prefer natural, old, or established hazards to those deriving from new technologies.”¹⁰⁵ According to Huber, more tort suits are directed against innovations than is warranted by the risks these technologies generate, as compared to the hazards posed by more-entrenched substitutes.¹⁰⁶ Huber credits this disparity to both a sort of cognitive dissonance among courts and the general public, and to a surfeit of information regarding the risks posed by new technologies. As to the former, Huber surmises that

judges and juries, like most people unfamiliar with the quantitative aspects of risk, routinely assume that new and less familiar hazards are graver than they really are, and that older, more common ones are less severe. The risk-creator’s conduct inevitably looks very much more

104. Peter Huber, *Safety and the Second Best: The Hazards of Public Risk Management in the Courts*, 85 COLUM. L. REV. 277 (1985).

105. *Id.* at 307.

106. *Id.* at 317.

reasonable when it produces familiar and entrenched hazards than when it creates novel ones.¹⁰⁷

As to the latter, Huber observes that “the amount of information regarding relatively new risks is usually much greater than the amount of information regarding old ones,”¹⁰⁸ due to the information-generating character of the regulatory vetting that sometimes precedes an innovation’s introduction into the market.¹⁰⁹

This Article essay leaves a full critique of Huber’s thesis for another day. At a minimum, however, if one examines the historical record, one quickly discovers that Huber’s argument applies to some innovations far better than it does to others. Information regarding the hazards associated with new technologies is often quite limited, relative to the data that surrounds their more well-entrenched substitutes. For example, in 1900, almost every American experienced the dangers (and other disagreeable qualities) of horses on a daily basis.¹¹⁰ Meanwhile, the public at that time appreciated that

107. *Id.* at 319.

108. *Id.* at 318.

109. Huber and others would reiterate and amplify these critiques over the next decade. *See, e.g.*, Janet R. Hunziker & Trevor O. Jones, eds., *PRODUCT LIABILITY AND INNOVATION* (1994); *THE LIABILITY MAZE: THE IMPACT OF LIABILITY LAW ON SAFETY AND INNOVATION* (Peter W. Huber & Robert E. Litan eds., 1991); PETER W. HUBER, *LIABILITY: THE LEGAL REVOLUTION AND ITS CONSEQUENCES* 153–74 (1988). More recently, in their article *Torts and Innovation*, 107 *MICH. L. REV.* 285 (2008), Professors Alex Stein and Gideon Parchamovsky perceive a systemic bias against innovation within tort doctrine. According to Stein and Parchamovsky, this bias results from the role of custom in ascertaining negligence. More specifically, when considering whether a party acted negligently, courts and juries may consider (among other matters) whether they adhered to or departed from customary practices. *Id.* at 291. Here, adherence to custom may bespeak reasonable behavior, while a departure from custom may signify unreasonable conduct. *Id.* Since a departure from custom may amount to negligence, Stein and Parchamovsky reason, those who adopt innovations tend to be held liable for negligence more often than those who do not. *Id.* at 294. As a result, the “reliance on customs and conventional technologies as the benchmark for assigning tort liability chills innovation and distorts its path.” *Id.* at 286. Stein and Parchamovsky’s view has been critiqued as overstating the importance of custom in shaping litigation outcomes. George L. Priest, *The Effects of Modern Tort Law on Innovation and Economic Growth*, in *THE KAUFMANN TASK FORCE ON LAW, INNOVATION AND GROWTH, RULES FOR GROWTH: PROMOTING INNOVATION AND GROWTH THROUGH LEGAL REFORM* 273, 283 (2011).

110. *See* Morris, *supra* note 32, at 5 (relating that circa 1880, horses deposited approximately 4,000,000 pounds of manure and 40,000 gallons of

automobiles *might* be dangerous, but many observers associated these perils with irresponsible use, instead of perceiving them as being inherent in the technology itself. And as discussed elsewhere in this Article, other technologies also have benefitted, early on in their diffusion, from the perception that they were less risky than they ultimately proved to be, or that those who adopted these innovations were taking their chances in doing so. As to any specific invention, it may be impossible to anticipate whether these forces will subsidize the method or device in its incipiency, or whether the dynamics that Huber describes will prevail.

A related limitation of Huber's thesis is that, insofar as it suggests that uncertainty regarding potential liability tends to stymie innovation, it overlooks the fact that uncertainty can cut two ways. Uncertainty as to the prospect, viability, and magnitude of tort claims regarding an invention may chill its development or diffusion. But uncertainty as to matters such as the existence of a cause of action and the likelihood of recovery also may stifle the filing of claims that attack the innovation as unreasonably dangerous.¹¹¹ The dialogue that has surrounded tort law and innovation to date has dwelled upon courtroom dynamics that supposedly penalize new technologies, and the concerns that product manufacturers have about these forces. Perhaps comparable attention should be paid to the pre-filing thought processes of prospective plaintiffs and their attorneys. By making this effort, we eventually may gain a more nuanced understanding of how tort law interacts with innovation, and

urine in city streets and city stables every day, across New York and Brooklyn). *Id.* at 6 (reciting the number of deaths attributed to horses in New York City in 1900). Meanwhile, other alternative forms of transportation of that era also were understood as responsible for a large number of accidents, and deaths. *City Averages a Homicide a Week*, S.F. CHRON., Aug. 8, 1908, at 14 (relating the annual report of the San Francisco coroner, which ascribed 109 deaths to steam, electric, and cable cars during the fiscal year ending June 30, 1908, as compared to 14 deaths due to automobile accidents during this span).

111. Peter Schuck, *Mass Torts: An Institutional Evolutionist Perspective*, 80 CORN. L. REV. 941, 949 (1995) (observing that uncertainties associated with recovery have the effect of "increas[ing] the cost of filing and litigating claims [and] discourag[ing] meritorious claimants"); Galanter, *supra* note 16, at 389 (discussing how the rules that surround a particular type of tort claim, and lawyer expertise in evaluating potential lawsuits that would allege that claim, mature over time).

appreciate which sorts of technologies produce “too many” lawsuits, and which, “too few.” As matters stand, all that can be said with confidence is that, depending upon the direction that (and how deeply) uncertainty cuts, particular innovations may have an initial competitive advantage, or disadvantage, relative to better-established substitute technologies.

VI. IMPLICATIONS FOR AUTONOMOUS VEHICLES

I began this piece by stating that, when it comes to predicting the interplay between tort law and new technologies, nobody knows anything. My thesis would suffer from a certain inconsistency were I to offer any definite predictions here regarding the reception that autonomous vehicles are likely to receive. Nevertheless, I can offer some caveated suppositions, all of which will assume that autonomous vehicles will eventually, if gradually, find a mass market.

At the outset, I believe that the types of tort claims associated with autonomous vehicles will evolve over time. Early claims likely will resemble contemporary lawsuits that allege negligent vehicle use.¹¹² These cases will probably also involve a relatively “passive” plaintiff class; that is to say, plaintiffs who did not knowingly expose themselves to any of the potential novel risks generated by these vehicles. As basic ground rules regarding the use of autonomous vehicles emerge, so too will new causes of action. The first such claims likely will continue to ascribe fault to the users of autonomous vehicles, drawing distinctions between “proper” and “improper” use premised on the slowly accumulating body of knowledge on this topic. Some of these claims may lack analogues in current torts practice. For example, perhaps plaintiffs will attack decisions to utilize autonomous vehicles in specific areas where experience has shown that they present relatively significant dangers.

When suits against the manufacturers of autonomous

112. As Professor Marchant notes, some such claims might resemble the fact pattern in *Brouse v. U.S.*, 83 F. Supp. 373, 374 (D. Ohio 1949), in which a pilot was faulted for not maintaining a proper lookout while engaging the autopilot function. Marchant & Lindor, *supra* note 1, at 105.

automobiles first appear, they likely will sound in a failure to warn of some danger associated with vehicle use, as opposed to a design defect. For a plaintiff to reach a jury on a design-defect claim, she may have to engage in a searching review of the computer code that directs the movement of these vehicles. This project may be difficult, and expensive. Warning-defect claims would seem, on the whole, to be easier to grasp and prosecute, and represent more logical candidates for user defendants looking to foist blame onto another party.

On the whole, I am more optimistic than Professor Marchant appears to be about the interplay between tort law and autonomous vehicles. It is possible that the development of these vehicles will succumb to an onslaught of tort suits, or that the prospect of ruinous liability will chill investment to the point that research on these devices stalls. But I doubt it. Assaults on this technology may not be intuitive, and the types of claims especially feared by Professor Marchant will emerge only gradually, if ever, such that the technology will have an opportunity to evolve and further reduce its risk profile prior to encountering a wave of tort litigation. It strikes me as at least as likely that autonomous vehicles will benefit from a “honeymoon period,” and even after that span expires, the innovations incorporated within autonomous vehicles may confer upon them a competitive advantage relative to conventional automobiles—which, after all, also may be attacked insofar as they fail to incorporate the safety-enhancing devices that appear within autonomous cars.

But, then again, nobody knows anything.