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# Autonomous Vehicle Liability—Application of Common Carrier Liability

*Dylan LeValley*\*

## I. INTRODUCTION

The future of personal transportation may be in vehicles that drive themselves, requiring little—or no—human input. Several manufacturers<sup>1</sup> are currently developing these vehicles, referred to as “autonomous vehicles.”<sup>2</sup> One company, Google, has already been actively testing autonomous vehicles on public roadways,<sup>3</sup> and several states have recently passed laws authorizing the use of such vehicles on public highways.<sup>4</sup> The day that we all have a personal, robotic chauffeur may not be too far away.

Autonomous vehicles could, potentially, alleviate many problems with our current transportation model. The vehicles could deal with traffic more efficiently, reduce the vehicle’s carbon emissions by ensuring the car is always operating at maximum efficiency, increase safety through better accident-avoidance mechanisms, and increase worker productivity by freeing the driver to multitask during a commute.<sup>5</sup>

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1. See Mark Hachman, *Volkswagen Develops Self-Driving Car, Almost*, PCMAG.COM (June 23, 2011, 10:16 AM), <http://www.pcmag.com/article2/0,2817,2387524,00.asp#fbid=cbDEXQGvzSY> (Volkswagen); Ben Wojdyla, *Ford Developing System To Tell Future, Predict Crashes Before They Happen*, JALOPNIK (Oct. 9, 2009, 2:45 PM), <http://jalopnik.com/5377690/ford-developing-system-to-tell-future-predict-crashes-before-they-happen> (Ford); Chuck Squatriglia, *GM Says Driverless Cars Could Be on the Road by 2018*, WIRED.COM AUTOPIA, (Jan. 7, 2008, 1:49 PM), <http://www.wired.com/autopia/2008/01/gm-says-driverl> (General Motors).

2. See, e.g., Delen Goldberg, *Self-Driving Robot Cars About to Hit Nevada Highways*, LAS VEGAS SUN (June 26, 2011, 2:00 AM), <http://www.lasvegassun.com/news/2011/jun/26/self-driving-robot-cars-about-hit-nevada-highways>.

3. Sebastian Thrun, *What We’re Driving at*, OFFICIAL GOOGLE BLOG, (Oct. 9, 2010, 12:00 PM), <http://googleblog.blogspot.com/2010/10/what-were-driving-at.html>. Google claims it has driven the vehicles more than 140,000 miles on public roads without incident and with minimal driver interaction. *Id.*

4. 2011 CA S.B. No. 1298 (NS) (California); F.S.A. § 316.86 (Florida); N.R.S. 482A.100 (Nevada).

5. Thrun, *supra* note 3.

But the emergence of autonomous vehicles presents many legal questions. Particularly, how should liability, absent statutory or regulatory directive, be assessed and apportioned when an autonomous vehicle, under automatic control, gets into an accident that is not clearly the fault of another vehicle? How the law treats autonomous vehicle liability, while attempting to preserve as many of the benefits as possible, could have substantial effects on the development and safety of the technology, and the subsequent future of transportation.<sup>6</sup> Obviously the statutory and regulatory treatment of autonomous vehicles will play a large role in shaping the future of this technology. But courts, too, will play a pivotal role in shaping the legal treatment of autonomous vehicles by answering questions not addressed (or addressed poorly) by legislation and regulation. Accordingly, this Comment offers courts guidance on approaching the question of liability arising from an accident involving an autonomous vehicle.

Courts will inevitably struggle to adapt existing liability laws to this new technology. This Comment outlines some of the legal issues presented by autonomous vehicles, and then focuses on how a court could proceed when presented with a question of liability for an accident involving an autonomous vehicle. Part II discusses the history of autonomous vehicles and the current legal landscape with respect to autonomous vehicles. Part III assesses analogies to similar previously automated technologies to determine what principles can be drawn from the legal reaction to those technologies, and assesses those principles for their applicability to autonomous vehicles. Finally, Part IV encourages courts to conclude that autonomous vehicle manufacturers, similar to common carriers of passengers, owe the public the highest duty of care, liable for even the slightest negligence. Two rationales support this conclusion: first, autonomous vehicles are similar to common carriers of passengers in most important facets; second, the policy justifications for holding common carriers to the highest standard of care are similarly applicable to autonomous vehicle manufacturers.

## II. BACKGROUND

Autonomous vehicle technology dates as far back as the 1939 World's Fair in New York.<sup>7</sup> Development of fully autonomous vehicles, however, did not occur until the early part of the twenty-first century. In

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6. See Squatriglia, *supra* note 1 (suggesting that bureaucratic hurdles, such as government regulation and liability laws, create a larger barrier to autonomous vehicles than do technical challenges).

7. Randal O'Toole, GRIDLOCK: WHY WE'RE STUCK IN TRAFFIC AND WHAT TO DO ABOUT IT 189–92 (2009).

2004, 2005, and 2007, the Defense Advanced Research Projects Agency held a series of challenges, inviting researchers at universities and corporations to compete for a cash prize by developing vehicles capable of performing complex maneuvers such as merging, passing, parking, and negotiating intersections without any human control or remote input.<sup>8</sup> The vehicles competing in these competitions, and other autonomous vehicles tested at the time, were mostly developed in university research labs.<sup>9</sup> Increasingly, however, car companies are developing technologies that can take control of the car from the driver in emergencies,<sup>10</sup> or even drive the car completely.<sup>11</sup>

In 2010, Google announced that it had developed several autonomous vehicles, based on Toyota's Prius, which were capable of navigating public roads, including interacting with traffic, entirely without human input.<sup>12</sup> Further, Google stated that the cars had already driven over 140,000 miles on California roads without incident and with only occasional human control.<sup>13</sup> But on August 5, 2011, one of Google's autonomous vehicles rear-ended another car.<sup>14</sup> Although Google immediately announced that the accident occurred while the car was being operated manually, and not in automatic mode, the accident caused some to question the legality of autonomous vehicle use on public roads.<sup>15</sup>

Nothing in California law prevented Google from testing the cars,<sup>16</sup> and an official from the California Department of Motor Vehicles at the

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8. DARPA URBAN CHALLENGE, <http://archive.darpa.mil/grandchallenge/index.asp> (last visited Apr. 1, 2012).

9. Kristen Grieshaber, *Free University Driverless Car Navigates Berlin Streets*, HUFFINGTON POST (Sept. 20, 2011, 10:44 AM), [http://www.huffingtonpost.com/2011/09/20/free-university-driverless-car\\_n\\_971675.html](http://www.huffingtonpost.com/2011/09/20/free-university-driverless-car_n_971675.html). See also Tyler Brown, *The Car that Drives Itself*, STANFORD DAILY (Apr. 12, 2010), <http://www.stanforddaily.com/2010/04/12/the-car-that-drives-itself>.

10. Wojdyla, *supra* note 1.

11. Hachman, *supra* note 1. In fact, we already drive vehicles with numerous "autonomous" systems. Consider: "'I don't think cars will become autonomous instantly,' [Michael] Montemerlo said, pointing to 'smart' anti-lock brakes that are already in cars. 'You should think of that car as being just a tiny bit autonomous. Cars are going to have more and more of these adaptive systems and one day you'll wake up, and you'll have a car that's able to drive itself.'" Rahul Kanakia, *Robot Car to Tackle City Streets—Stanford Racing Team Has Big Plans for 2007 Grand Challenge*, STANFORD DAILY ONLINE (Oct. 11, 2006).

12. Thrun, *supra* note 3.

13. John Markoff, *Google Cars Drive Themselves, in Traffic*, N.Y. TIMES (Oct. 9, 2010), <http://www.nytimes.com/2010/10/10/science/10google.html?adxnnl=1&adxnnlx=1314590761-rC39CHKoUVybCEEcEQB6GQ>.

14. Justin Hyde, *This Is Google's First Self-Driving Car Crash*, JALOPNIK (Aug. 5, 2011, 11:45 AM), <http://jalopnik.com/5828101/this-is-googles-first-self-driving-car-crash>.

15. Chris Matyszczyk, *Google's Self-Driving Wreck: Really Human Error?*, CNET NEWS (Aug. 5, 2011, 1:19 PM), [http://news.cnet.com/8301-17852\\_3-20088751-71/googles-self-driving-wreck-really-human-error](http://news.cnet.com/8301-17852_3-20088751-71/googles-self-driving-wreck-really-human-error).

16. See Cal. Vehicle Code §§ 34500–34520.5 (2005) (providing safety regulations for motor vehicles in California).

time of Google's announcement commented that any accidents would be treated similarly to cruise control, with the driver being held liable for any accident as if she were in full control of the car.<sup>17</sup> In the subsequent years, several states have passed statutes legalizing the use of autonomous vehicles on public roads.<sup>18</sup>

Nevada, reportedly in partial response to significant lobbying by Google,<sup>19</sup> became the first state in the nation to expressly legalize the operation of autonomous vehicles on public roads.<sup>20</sup> The law tasks the Nevada Department of Motor Vehicles with developing safety and liability regulations governing the use of autonomous vehicles on public roads and highways.<sup>21</sup> California and Florida have passed similar laws.<sup>22</sup> Other states have since considered bills authorizing the use of autonomous vehicles, with Arizona, Hawaii, and Oklahoma currently considering such laws.<sup>23</sup> Additionally, the National Highway Traffic Safety Administration is planning a one-year pilot program to test autonomous vehicles' ability to prevent accidents.<sup>24</sup>

As the technology becomes closer to widespread implementation, however, questions surrounding the law's treatment of autonomous vehicles become more pressing. For example, autonomous vehicles will likely rely on map databases for determining the best route to a destination. Electronic map databases, like those used by now-ubiquitous in-car navigation devices, can have outdated or erroneous information.<sup>25</sup> While liability is not a concern when a driver is following the directions of a navigation aid, is the same true if an accident caused by an erroneous database were to occur without any human interaction? Google's vehicles purportedly have laser range-finders to "see" other traffic,<sup>26</sup> but will the-

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17. Justin Hyde, *Are Google's Driverless Cars Legal?*, JALOPNIK (Oct. 11, 2010, 4:00 PM), <http://jalopnik.com/5661240/are-googles-driverless-cars-legal>.

18. *See supra*, note 4.

19. John Markoff, *Google Lobbies Nevada to Allow Self-Driving Cars*, N.Y. TIMES (May 10, 2011), [https://www.nytimes.com/2011/05/11/science/11drive.html?\\_r=2&emc=eta1](https://www.nytimes.com/2011/05/11/science/11drive.html?_r=2&emc=eta1); Goldberg, *supra* note 2.

20. NEV. REV. STAT. § 482A.030–482A.200 (2011).

21. *Id.* *See also* Goldberg, *supra* note 2.

22. CAL. VEH. CODE § 38750 (2013); FLA. STAT. § 316.86 (2012).

23. H.R. 2679, 50th Leg., 2d Reg. Sess. (Ariz. 2012); H.R. 3007, 53d Leg., 2d Sess. (Okla. 2012) (proposed legislation in Oklahoma); 2011 HI H.C.R. 212-12 (NS), Mar. 14, 2012 (proposed legislation in Hawaii). *See also* Alisa Priddle, *Self-Driving Cars Get Closer Every Day, but Won't Hit You*, USA TODAY, (Mar. 24, 2012, 2:40 PM), <http://www.usatoday.com/money/autos/story/2012-03-25/self-driving-car/53734450/1>.

24. *Id.*

25. *See* Krissy Clark, *The GPS: A Fatally Misleading Travel Companion*, NPR.ORG (July 26, 2011), <http://www.npr.org/2011/07/26/137646147/the-gps-a-fatally-misleading-travel-companion>.

26. Thrun, *supra* note 3.

se cars be able to detect turn signals or unexpected events (such as a child running into the road)?<sup>27</sup>

The answers to these questions, and countless others, will only become more relevant as implementation of the technology approaches. This Comment next assesses the legal treatment of a few analogous technologies to determine whether the law's treatment of those technologies could inform our discussion of autonomous vehicles. It then attempts to answer the basic question of how a court could approach the issue of liability in an autonomous vehicle accident.

### III. ANALOGIES TO PREVIOUS AUTOMATED TECHNOLOGIES

Scholars have attempted to draw analogies between autonomous vehicles and other automated technologies, but have found these analogies to be lacking.<sup>28</sup> For instance, the obvious analogy, to autopilots in ships and airplanes, proves inadequate because courts in those settings require constant human oversight, an undesirable result in the case of autonomous vehicles.<sup>29</sup> On the other hand, a less expected analogy, to automated elevators, may provide some interesting insights to the way the law has adapted to automated technologies. We look at these two analogous technologies separately.

#### A. Airplane and Ship Autopilots

A natural analogy to autonomous vehicles is autopilots used in airplanes and ships. Both types of technologies involve turning over control of a method of transportation to a combination of software and hardware.<sup>30</sup> Unfortunately for our purposes, most litigation over liability arising from an accident involving an autopilot has determined that human error by the operators, not malfunctioning of the autopilots, was the cause of the accident.<sup>31</sup> In the contexts of airplanes and ships, constant

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27. Goldberg, *supra* note 2.

28. K. Krasnow Waterman & Matthew T. Henson, *Imagine the Ram-ifications: Assessing Liability for Robotics-Based Car Accidents*, ABA SCITECH LAW, vol. 5, no. 4, 2009, at 14.

29. A further discussion of why a duty of constant oversight would be undesirable in the context of autonomous vehicles can be found in Part IV(B), *infra*.

30. See, generally ROBERT NELSON, FLIGHT STABILITY AND AUTOMATIC CONTROL (2d ed. 1998); Now—*The Automatic Pilot*, POPULAR SCIENCE MONTHLY, February, 1930, at 22.

31. See, e.g., *In re Korean Air Lines Disaster of Sept. 1, 1983*, 932 F.2d 1475 (D.C. Cir. 1991) (Affirming a finding of “willful misconduct” on behalf of pilots who were unaware that the autopilot had caused an airplane to divert 360 miles into restricted USSR air space, and ultimately finding that human error, not the autopilot, was responsible for the diversion); see also Marine Report: Heeling Accident on M/V Crown Princess, NTSB/MAR-08/01 (Nat'l Transp. Safety Bd. Jan. 30, 2008), available at <http://www.nts.gov/doclib/reports/2008/MAR0801.pdf> (detailing a National Transportation Safety Board critique of the captain of a cruise ship for engaging the ship's autopilot too early after leaving port, and a second officer's steering responses, leading to an accident that injured more

oversight is both implied and expected, thus reducing the role of the autonomous technology.<sup>32</sup> On the other hand, in autonomous vehicles, reducing or eliminating the duty of constant oversight may be necessary to effectuate many benefits of the technology. For example, the possibility of increased productivity during commutes would be reduced or eliminated if drivers of autonomous vehicles, like ship captains or airplane pilots, were required to maintain constant oversight of the vehicle while in “automatic” mode.<sup>33</sup>

Further, autopilots on ships and airplanes are limited to devices designed to maintain a singular course or direction by passively reacting to variations in limited, discrete outside conditions (like wind or current).<sup>34</sup> Autonomous vehicles, on the other hand, will be required to interact with complex, evolving environments (e.g., traffic, unexpected events), and to make affirmative choices so as to safely arrive at the destination (e.g. what lane to be in, what exit to take). Thus, because autonomous vehicle technology may be most valuable given some reduced level of oversight, and because the technology involves substantially different expectations regarding expectations and capabilities, an analogy to ship and airplane autopilots is unenlightening. These critical differences between autonomous vehicles and automatic pilots in ships and airplanes make it difficult to draw any strong conclusions as to how the law should deal with autonomous vehicles.

Nevertheless, there is one case involving an airplane autopilot that may inform our discussion of autonomous vehicles. In *Beverly Richardson v. Bombardier*,<sup>35</sup> a plaintiff asserted that the a crash of a C-23B, a military transport aircraft, while under autopilot was the result of a defective autopilot.<sup>36</sup> But in denying the plaintiff’s motion for a new trial, the court revealed that the evidence showed that the airplane was misbalanced—either as a result of mis-loading or design—which rendered the

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than 300 passengers). For a further discussion of airplane autopilots and liability, see Krasnow & Henson, *supra* note 28.

32. Krasnow & Henson, *supra* note 28.

33. The argument that a driver of an autonomous vehicle should have a reduced or eliminated oversight duty is more thoroughly discussed in Part IV(B), *infra*.

34. See Lawrence Sperry: *Autopilot Innovator and Aviation Innovator*, HISTORYNET.COM, (June 12, 2006), <http://www.historynet.com/lawrence-sperry-autopilot-inventor-and-aviation-innovator.htm> (describing the history and development of the airplane automatic pilot). While airplane automatic pilots are obviously inordinately complex, they are designed to deal fundamentally with three variables (yaw, pitch, and roll). *Id.* Alternatively, automated vehicles will have to be able to react to an infinite amount of external variables (other vehicles, for example).

35. *Richardson v. Bombardier, Inc.*, No. 8:03CV544T31MSS, 2005 WL 3087864 (M.D. Fla. Nov. 16, 2005).

36. *Id.* at \*6.

autopilot incapable of recovering from a dive.<sup>37</sup> A similar approach, focusing on the design of vehicles themselves, could be used with autonomous vehicles, and this approach is discussed more thoroughly below.

### B. Automation of Elevators

Elevators, once manually operated, made a gradual shift to automatic operation in the first half of the twentieth century. This shift was accompanied by two significant changes that encouraged the widespread adoption of automatic elevator technology: innovative insurance policies<sup>38</sup> and increased state regulation.<sup>39</sup> For example, almost every state has passed regulation specifying requirements for elevator construction and maintenance.<sup>40</sup> Instead of adopting their own standards, almost every state has adopted industry-proposed safety standards.<sup>41</sup> While the transition from manual to automatic elevators may not be completely analogous to the evolution of autonomous vehicles, the adoption of industry safety standards may be instructive as a potential avenue for developing initial regulatory schemes. Currently, the Industrial Truck Standards Development Foundation has published suggested safety standards for unmanned automated industrial vehicles, as well as for the automated functions of manned industrial vehicles.<sup>42</sup> While these standards are not directly applicable to autonomous vehicles on public roads, they may provide a template for developing safety standards for autonomous vehicle legislation and regulation.<sup>43</sup>

Additionally, along with the widespread adoption of elevators, insurance companies created special “elevator liability” insurance.<sup>44</sup> Similarly, innovative insurance policies may be developed to deal with the legal questions presented by autonomous vehicles.

However, another legal reaction to elevators (automated or not) was to consider the elevator as a common carrier, and thus hold their opera-

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37. *Id.* at \*14.

38. See, e.g., James A. Robertson, *How Umbrella Policies Started Part 2: The First Umbrella Forms*, INT’L RISK MGMT. INST., INC. (Apr. 2000), available at <http://www.irmi.com/Expert/Articles/2000/Robertson04.aspx>.

39. Krasnow & Henshon, *supra* note 28.

40. See *Elevator Safety Regulations*, 0060 REGSURVEYS 7 (2012).

41. Krasnow & Henshon, *supra* note 28.

42. INDUS. TRUCK STANDARDS DEV. FOUND., SAFETY STANDARD FOR GUIDED INDUSTRIAL VEHICLES AND AUTOMATED FUNCTIONS OF MANNED INDUSTRIAL VEHICLES (Nov. 1, 2004), available at [http://www.egeminusa.com/pdf/ITSDF\\_B56-5-2005-rev-2-28-06.pdf](http://www.egeminusa.com/pdf/ITSDF_B56-5-2005-rev-2-28-06.pdf).

43. The content of such standards is beyond the scope of this Comment. Similarly, we do not address the question of whether regulation, legislation, or some combination would be the most appropriate method for ensuring autonomous vehicle safety.

44. See, e.g., Robertson, *supra* note 37.



tors and manufacturers to a higher duty of care.<sup>45</sup> Initially, courts struggled with the question of whether an elevator was a common carrier.<sup>46</sup> Some courts held that elevator owners were only required to use reasonable and ordinary care (because elevator operators did not charge a fee for their use and an alternative mode of transportation—stairs—was available),<sup>47</sup> while other courts held that elevator owners owed the highest level of care to passengers because “such responsibility attaches to all persons engaged in employments where human beings submit their bodies to their [sic] control by which their lives or limbs are put in hazard.”<sup>48</sup> Eventually, courts reached a consensus: elevators are common carriers of passengers,<sup>49</sup> and thus their operators and manufacturers are held to the highest duty of care.

This Comment next addresses the reasons why autonomous vehicles are analogous to common carriers. It then analyzes how the resulting heightened duty of care would apply to autonomous vehicle manufacturers.

#### IV. AUTONOMOUS VEHICLES AS COMMON CARRIERS

The law treats common carriers differently than other entities, holding that a common carrier owes the highest duty of care to its passengers.<sup>50</sup> Autonomous vehicles will share many characteristics with common carriers: they will engage in transportation services, their services will be widely available to the public, and the passenger’s safety is not entirely within the control of the passenger. This Comment argues that courts should hold autonomous vehicle manufacturers to the same standard as common carriers—they should owe passengers the highest duty of care. For this analogy to stand, however, we must discuss the scope and limitations of this Comment as well as several necessary assumptions.

##### *A. Scope: What About Product Liability?*

Although manufacturers are generally held strictly liable for defective products, courts treat liability for defectively designed products dif-

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45. See, e.g., *Willoughby v. Montgomery Elevator Co.*, 87 S.W.3d 509 (Tenn. Ct. App. 2002).

46. Compare Case Comment, *An Elevator Not a Common Carrier*, 10 YALE L. J. 287 (1901) (discussing several decisions in which New York courts had rejected the argument that elevators were common carriers), with Case Comment, *Carriers—Liability of Elevator Operator*, 4 TEX. L. REV. 247 (1926) (concluding that a majority of jurisdictions consider elevators as common carriers).

47. See *An Elevator Not a Common Carrier*, *supra* note 46.

48. *Id.* at 288–89.

49. See, e.g., *Willoughby*, 87 S.W.3d at 511–12.

50. “Common carriers of passengers are those that undertake to carry all persons indifferently who may apply for passage, so long as there is room, and there is no legal excuse for refusal.” BLACK’S LAW DICTIONARY 269 (4th ed. 1968).

ferently from products that are defectively manufactured. Exploring the distinction between a “design defect” and a “manufacturing defect” is necessary to determine how a court would deal with an autonomous vehicle alleged to have been defectively designed.

Generally, product manufacturers are held strictly liable for defectively manufactured products.<sup>51</sup> The strict liability standard articulated in the Restatement (Second) of Torts section 402A, and first adopted by California in *Greenman v. Yuba Power Products*,<sup>52</sup> is instructive to courts when determining liability stemming from manufacturing defects.<sup>53</sup> A product with a manufacturing defect is a product manufactured with some *unintended* flaw.<sup>54</sup> In autonomous vehicles, courts could treat a manufacturing defect like any other product: the manufacturer would be strictly liable for any damage caused by a vehicle that was delivered to the consumer in a defective condition.<sup>55</sup> For example, if the autonomous vehicle was designed to have four cameras to monitor surrounding traffic, but the vehicle was—through accident or otherwise—manufactured with only three, that manufacturer would be liable for any harm stemming from the lack of the fourth camera, regardless of whether its exclusion was negligent.<sup>56</sup>

Design defects, however, are less simple. Design defects are inherent in the design of the product, and are intended.<sup>57</sup> Section 402A was not written with design defects in mind,<sup>58</sup> and courts have struggled with defining what constitutes defective design.<sup>59</sup> For strict liability to attach to a product, the plaintiff must prove that the product was in a defective condition and was unreasonably dangerous at the time of its sale by the defendant.<sup>60</sup> Therefore, to prove that a manufacturer is strictly liable for a

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51. See RESTATEMENT (SECOND) OF TORTS § 402A (1965).

52. 377 P.2d 897 (Cal. 1963).

53. Mary J. Davis, *Design Defect Liability: In Search of a Standard of Responsibility*, 39 WAYNE L. REV. 1217, 1232–1233 (1993).

54. *Id.*

55. See RESTATEMENT (SECOND) OF TORTS § 402A (1965).

56. For a thorough discussion of how products liability law, as it stands today, would deal with autonomous vehicles, and an argument that the law need not adopt changes to product liability to deal with autonomous vehicles, see Note, Andrew P. Garza, “Look Ma, No Hands!”: *Wrinkles and Wrecks in the Age of Autonomous Vehicles*, 46 NEW ENG. L. REV. 581 (2012).

57. Davis, *supra* note 53.

58. For a thorough history of the American Law Institute proceedings that form the backdrop to section 402A, see George L. Priest, *Strict Products Liability: The Original Intent*, 10 CARDOZO L. REV. 2301 (1989) (arguing that Section 402A was intended to only reach “mismanufactured” products); and John E. Montgomery and David G. Owen, *Reflections on the Theory and Administration of Strict Tort Liability for Defective Products*, 27 S.C. L. REV. 803 (1976).

59. See 3 Fowler V. Harper, Fleming James, Jr. & Oscar S. Gray, LAW OF TORTS, § 12.2 at 107 (2d ed. 1986); John W. Wade, *On Product “Design Defects” and Their Actionability*, 33 VAND. L. REV. 551, 566–69 (1980).

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

product that caused some harm (absent a manufacturing defect), a plaintiff must prove that the design itself is defective.<sup>61</sup>

In defining what constitutes a defective condition that is unreasonably dangerous, courts and commentators have adopted a variety of tests that introduce negligence-like balancing factors to a strict liability analysis.<sup>62</sup> These factors include an evaluation of the product's overall usefulness (to both society and the individual user), an evaluation of the product's overall safety, and a determination of the viability of products or features alternative to the offending one at issue.<sup>63</sup> Thus, while courts still state that they are applying a "strict liability" standard, they are often weighing the utility of the product, the severity of the harm caused, and the burden on the manufacturer of an alternative design. The result is that many courts, when assessing an allegedly defective design, are—instead of simply applying strict liability—actually performing a similar analysis to that set forth as a test for negligence by Judge Learned Hand in *United States v. Carroll Towing*<sup>64</sup>—weighing the possibility and gravity of potential harm against the burden on the manufacturer of avoiding such harm.<sup>65</sup>

Regardless of the test for determining what constitutes a design defect, questions remain regarding the responsibility of a manufacturer for

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61. *Id.*

62. John W. Wade, *On the Nature of Strict Tort Liability for Products*, 44 MISS. L.J. 825, 836–38 (1973). Wade proposed seven factors for courts to consider when evaluating defective design claims. They are as follows:

- (1) The usefulness and desirability of the product—its utility to the user and to the public as a whole.
- (2) The safety aspects of the product—the likelihood that it will cause injury, and the probable seriousness of the injury.
- (3) The availability of a substitute product which would meet the same need and not be as unsafe.
- (4) 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.
- (5) The user's ability to avoid danger by the exercise of care in the use of the product.
- (6) The user's anticipated awareness of the dangers inherent in the product and their avoidability, because of general public knowledge of the obvious condition of the product, or of the existence of suitable warnings or instructions.
- (7) The feasibility, on the part of the manufacturer, of spreading the loss by setting the price of the product or carrying liability insurance.

*Id.* For examples of courts applying these and similar factors, see *Phipps v. General Motors Corp.*, 363 A.2d 955 (Md. 1976); *Thibault v. Sears, Roebuck & Co.*, 395 A.2d 843 (N.H. 1978); *Voss v. Black & Decker Mfg. Co.*, 450 N.E.2d 204 (N.Y. 1983); *Phillips v. Kimwood Mach. Co.*, 525 P.2d 1033 (Ore. 1974); *Turner v. General Motors Corp.*, 584 S.W.2d 844 (Tex. 1979).

63. Davis, *supra* note 53.

64. 159 F.2d 169 (2d Cir. 1947).

65. Davis, *supra* note 53.

advances in technology during and after the time of manufacturing.<sup>66</sup> The challenges will be particularly difficult with new technologies, like autonomous vehicles, where no similar products can provide a direct comparison.

The primary legal questions regarding autonomous vehicles, therefore, will likely converge around what constitutes a safe design. Although a wide variety of scenarios may lead to litigation, the question of whether the vehicle was defectively designed could be raised in any accident where (1) the vehicle is in automatic mode; (2) there is no manufacturing defect; and (3) liability is disputed or fault does not lie entirely with another driver. Especially in the early stages, defining what constitutes a safe design for autonomous vehicles will be challenging.<sup>67</sup> After addressing the limitations and assumptions of this Comment, we will then argue that courts should hold manufacturers of autonomous vehicles to the highest duty of care, liable for even the slightest negligence in the design of autonomous vehicles.

### *B. Assumptions*

As described below, we make three assumptions for purposes of this Comment.

Reduced Driver's Duty. We assume a reduction of the duty of care owed by the driver, either by statute, regulation, or common law. An example of a reduced duty of care for drivers is the Nevada bill, which provides an exception to the state's prohibition on cell phone use while driving.<sup>68</sup> The exception states that, for the purposes of the cell phone use prohibition, "a person shall be deemed not to be operating a motor vehicle if the motor vehicle is driven autonomously through the use of artificial-intelligence software and the autonomous operation of the motor vehicle is authorized by law."<sup>69</sup> Although similar provisions may not be included in all laws authorizing the use of autonomous vehicles on public roads, we make the assumption of a reduced duty for drivers for several reasons.

First, reducing the duty of care the driver owes to passengers and other drivers would be required to realize many of the potential benefits of autonomous vehicle technology. For example, the purported benefit of allowing commuters the ability to multi-task while commuting (e.g., an-

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66. See John W. Wade, *On the Effect in Product Liability of Knowledge Unavailable Prior to Marketing*, 58 N.Y.U. L. REV. 734 (1983).

67. For example, what type of equipment must be included for the vehicle to be deemed safely constructed?

68. NEV. REV. STAT. § 484B.165 (2011); see also Markoff, *supra* note 13

69. NEV. REV. STAT. § 484B.165 (2011).

swering email) and the resultant increase in efficiency and productivity<sup>70</sup> would be lost were the driver held to the same standard as if she were in manual control of the vehicle—the driver would have to maintain constant vigilance, as if she were manually driving. Another potential benefit of autonomous vehicles is the possibility of limiting the instances of drunk driving. However, the benefit of allowing drunk drivers to have their car drive them home would be lost if the driver's duty was not reduced, in which case the driver may be incentivized to intervene in an emergency or potentially be held liable for an accident caused while the vehicle was in automatic mode. Finally, autonomous vehicles could offer unprecedented opportunities to people with disabilities—especially those with physical limitations like blindness that prevent them from driving—opportunities that would be foreclosed if the driver were required by law to maintain oversight of the vehicle while in automatic operation.<sup>71</sup>

Second, driver intervention while a vehicle is in automatic mode may not be desirable. Even if a driver of an autonomous vehicle is not authorized by law to engage in activities otherwise illegal for a driver (texting, for instance, is allowed for a driver of an autonomous vehicle under Nevada's law),<sup>72</sup> a driver is unlikely to maintain the same level of attention as if he were driving manually. A driver intervening to avoid an accident will likely not have closely monitored blind spots, for example, and intervening in an impending emergency may lead to a less-safe reaction. A similar, and instructive, situation occurred in the fatal crash of Air France Flight 447. Icing of air speed sensors caused the autopilot to disengage, and when the pilot took over manual control, his incomplete understanding of the situation caused him to react in a manner that exacerbated the problem, ultimately leading to the plane's crash.<sup>73</sup> To be clear, the pilot's lack of understanding about the causes of the situation led *directly* to the crash.<sup>74</sup> Similarly, a driver of an autonomous vehicle who intervenes during an accident may not have the same situational awareness as if she were manually driving, potentially leading to accidents that could otherwise be avoided.

Third, incentivizing drivers to intervene may make autonomous vehicles less safe. For example, autonomous vehicles may be able to follow

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70. Thrun, *supra* note 3.

71. See Torie Bosch, *Watch a Blind Man Take Google's Self-Driving Car for a Spin*, SLATE.COM, (Mar. 29, 2012, 12:14 PM), [http://www.slate.com/blogs/future\\_tense/2012/03/29/google\\_s\\_self\\_driving\\_car\\_takes\\_a\\_blind\\_man\\_to\\_tacos\\_bell\\_video\\_.html](http://www.slate.com/blogs/future_tense/2012/03/29/google_s_self_driving_car_takes_a_blind_man_to_tacos_bell_video_.html).

72. NEV. REV. STAT. § 484B.165 (2011).

73. Jeff Wise, *What Really Happened Aboard Air France 447*, POPULAR MECHANICS (Dec. 6, 2011), <http://www.popularmechanics.com/technology/aviation/crashes/what-really-happened-aboard-air-france-447-6611877>.

74. *Id.*

closer than a human driver to a vehicle ahead of it on the highway, and thus be more efficient, due to the vehicle's much-faster reaction time to a stoppage ahead. Incentivizing a driver to intervene in some situations may place the driver in a situation that the autonomous vehicle has the ability to navigate safely, but the driver does not.

The duty of care that a driver of an autonomous vehicle in automatic mode should owe to other drivers and passengers is beyond the scope of this Comment. Because many of the benefits of autonomous vehicles may only be realized if that the driver's duty of care owed to others on the road is lowered, and because lowering a driver's duty while the vehicle is in automatic operation may actually lead to safer vehicles, this Comment assumes that the driver's potential liability is reduced while the vehicle is in automatic mode to the point where a driver is not incentivized to intervene in an emergency.

Absence of Liability-Appportioning Legislation. We next assume that rules regarding apportioning liability between drivers and autonomous vehicle manufacturers are not set out by statute or regulation. A statute can override the duty of care owed by an entity, including a common or private carrier.<sup>75</sup> Nevada's statute authorizes the Nevada Department of Motor Vehicles to "adopt regulations authorizing the operation of autonomous vehicles" on Nevada highways, and requires that those regulations set forth minimum mechanical requirements, insurance requirements, safety standards, testing, geographical restrictions, and "such other requirements as the Department determines to be necessary."<sup>76</sup> Therefore, it remains to be seen whether Nevada will set forth statutory standards apportioning liability between autonomous vehicle manufacturers and drivers, but the Department is not required to do so before autonomous vehicles become legal on Nevada highways. This Comment assumes that the question of liability for an accident involving an autonomous vehicle could come before a court as a matter of first impression with no statutory direction.<sup>77</sup>

Manufacturers are Analogous to Operators. Finally, we assume that a manufacturer of an autonomous vehicle is analogous to an operator of the vehicle. The law of common carriers is designed around holding the operator (or owner) of the carrier liable. With autonomous vehicles, there is no human "operator," and the owner of the vehicle would likely be a

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75. *See, e.g., De Vera v. Long Beach Pub. Transp. Co.*, 225 Cal. Rptr. 789 (Cal. Ct. App. 1986).

76. NEV. REV. STAT. § 482A.100 (2011).

77. While this Comment is intended to help courts interpret the complexities presented by autonomous vehicle liability, the principles discussed in this Comment could also be instructive for regulators pondering the same question.

private party (oftentimes, the driver). However, the manufacturer of the autonomous vehicle, like a carrier operation, will have exclusive control over the capabilities and limitations of the mode of transportation—the autonomous technology.

Obviously there are some problems with this assumption. Primarily, the manufacturer of the autonomous vehicle, unlike the operator or owner of a common carrier, will likely have little control of the vehicle after a sale, and is thus not in a position to ensure that the owner properly maintains the vehicle. However, the manufacturer, like an operator of a carrier, will have exclusive control over the capabilities and limitations of the technology, the decision-making processes of the vehicle, and the designed safety margins. Thus, even though the analogy is imperfect, we equate manufacturers of autonomous vehicles to the operators of carriers to determine whether the heightened duty of care owed by common carriers is applicable to those manufacturers.

### *C. Liability of Common Carriers*

In order to understand the implications of comparing autonomous vehicles with common carriers of passengers, we must first analyze the duty to which the law holds such entities. Generally, common carriers<sup>78</sup> are held strictly liable for any injury to goods, but are held to owe passengers the highest standard of care, bound to “extraordinary diligence. . . to protect the lives and persons of his passengers.”<sup>79</sup> This heightened

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78. A “common carrier” is “one whose business, occupation or regular calling it is to carry chattels for all persons who may choose to employ him and remunerate him.” *Central of Georgia Ry. Co. v. Lippman*, 110 Ga. 665 (1900). Alternatively, a “common carrier of passengers” is one who “undertake[s] for hire to carry all persons indifferently who may apply for passage, so long as there is room, and there is no legal excuse for refusing.” *Id.*

79. *Id.* Although it at first seems odd that a common carrier of goods is held to a higher standard (strict liability) than a common carrier of passengers, the Supreme Court of Georgia justified such incongruence thusly:

[S]trange as it may seem, both at common law and under our statute, the responsibility of a passenger carrier for the lives and persons of his passengers is less in degree than a common carrier in the transportation of goods. The former is bound only to extraordinary diligence; the latter, not only to extraordinary diligence, but, if the goods are injured or destroyed, no excuse avails him, unless such injury or destruction was occasioned by the act of God or the public enemies of the state. The reasons are obvious: A box of goods remains where it is placed; a man has locomotion and a will. When a carrier receives the first, he has absolute control; while his control of the passenger is limited to the promulgation of rules, which may or may not be observed.

*Id.* The U.S. Supreme Court has used similar rationale in holding that common carriers were not strictly liable when transporting slaves, but instead should be held to a lesser, but still high, standard of care:

“The law regulating the responsibility of common carriers, does not apply to the case of carrying intelligent beings. . . . The carrier has not, and cannot have over them the same absolute control that he has over inanimate matter. In the nature of things, and in their

standard of care is the highest degree of care, vigilance, and precaution for the passengers' safety consistent with the nature of the conveyance and its proper and normal operation.<sup>80</sup> The liability of a carrier of passengers "is not that of an insurer, but such carrier is bound by law to extraordinary diligence to protect the lives and persons of his passengers."

<sup>81</sup> The United States Supreme Court has said that passengers are owed the duty of utmost care and diligence and that passenger carriers are "answerable for the smallest negligence."<sup>82</sup> This standard of care is often established by statute,<sup>83</sup> but derives from the common law, based in the theory that there exists a "special relationship" between the carrier and the passenger.<sup>84</sup> Under this heightened duty of care, a common carrier of passengers is liable for injuries to passengers resulting from even the slightest negligence.<sup>85</sup> This heightened duty is justified in part because passengers have little control over the operation of the transport, the actions of the carriers' employees, the conduct of the business, or their own safety.<sup>86</sup>

Alternatively, private carriers are held to a normal negligence standard.<sup>87</sup> Private carriers are entities that provide transportation services, but who do not serve the public indiscriminately—they only provide transportation to passengers pursuant to a special agreement or understanding, in a particular instance, and only to a previously agreed destination.<sup>88</sup>

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character, they resemble passengers, and not packages of goods. It would seem reasonable therefore, that the responsibility of the carrier should be measured by the law which is applicable to passengers, rather than by that which is applicable to the carriage of common goods."

Boyce v. Anderson, 27 U.S. 150, 154 (1829).

80. Mitchell v. New York, L.E. & W.R. Co., 146 U.S. 513 (1892). *See also* W. Page Keeton et al., PROSSER & KEETON ON THE LAW OF TORTS § 34, at 209 (5th ed. 1984) ("Common Carriers, who enter into an understanding toward the public for the benefit of all those who wish to make use of their services, must use great caution to protect passengers entrusted to their care. . . .").

81. Central of Georgia Ry. Co. v. Lippman, 110 Ga. 665 (1900).

82. Stokes v. Saltonstall, 38 U.S. 181 (1839).

83. *See, e.g.*, California Civil Code § 2100 (setting out a duty of "utmost care and diligence" owed by common carriers to passengers).

84. Railroad Co. v. Lockwood, 84 U.S. 357 (1873).

85. Pennsylvania Co. v. Roy, 102 U.S. 451 (1880); Lewis v. City Of Shreveport, 985 So. 2d 1249 (La. Ct. App. 2008), *writ denied*, 992 So. 2d 1018 (La. 2008). Some have even argued that strict liability should be applied to common carriers, since passive passengers play no role in the decision-making that leads to an accident involving a carrier. Howard A. Latin, *Problem-Solving Behavior and Theories of Tort Liability*, 73 CAL. L. REV. 677 (1985).

86. Commerce Ins. Co. v. Ultimate Livery Serv., Inc., 897 N.E.2d 50 (Mass. 2008).

87. Commerce Ins. Co. v. Ultimate Livery Serv., Inc., 897 N.E.2d 50 (Mass. 2008).

88. Doe v. Rockdale School Dist., No. 84, 287 Ill. App. 3d 791 (Ill. App. Ct. 1997); Browne v. SCR Medical Transp. Servs., Inc., 356 Ill. App. 3d 642 (Ill. App. Ct. 2005); Hostettler v. Cmty. Care Ambulance, No. 2004-A-0001, 2004 WL 2697376 (Ohio Ct. App. Nov. 26, 2004).



*D. Autonomous Vehicle Manufacturers Should Be Held to Owe the Same Duty of Care as Common Carriers*

1. Autonomous Vehicle Manufacturers Are Similar to Common Carriers of Passengers

Although autonomous vehicle manufacturers do not fit the standard definition of a common carrier of passengers, most of the factors courts assess to determine if an entity is a common carrier of passengers are likewise applicable to autonomous vehicle manufacturers. A passenger carrier is an entity that undertakes, as its primary function, to transport persons from place to place.<sup>89</sup> A common carrier of passengers indiscriminately serves all persons who apply, holds itself out as ready and willing to serve indifferently, and offers service to all who choose to employ the carrier and pay the applicable charges.<sup>90</sup> Even assuming (as we are) that an autonomous vehicle manufacturer is analogous to a carrier operator, the manufacturer would not be holding itself out as open to the public; only those who purchased the autonomous vehicles would have the right to ride in them, and no passengers would be under the illusion that they are being transported by the manufacturer itself.

Further, the entity must first have been acting as a common carrier within the meaning of the applicable state law for common carrier liability to apply.<sup>91</sup> The common-law classification of a carrier as a common carrier, rather than a definition in a regulatory scheme, dictates the applicable standard of care in a negligence case.<sup>92</sup> As way of example, courts have held that railroads,<sup>93</sup> streetcars,<sup>94</sup> buses,<sup>95</sup> taxicabs,<sup>96</sup> airlines,<sup>97</sup>

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89. *Mitchell v. New York Life Ins. Co.*, 75 F.2d 107 (7th Cir. 1934).

90. *Id.*

91. *Simon v. Walt Disney World Co.*, 114 Cal. App. 4th 1162 (Cal. Ct. App. 2004).

92. *Hunt ex rel. Gende v. Clarendon Nat. Ins. Serv., Inc.*, 691 N.W.2d 904 (Wis. Ct. App. 2004) (involving common carrier of passengers).

93. *Crane v. Railway Express Agency*, 12 N.E.2d 672 (Ill. Ct. App. 1938), *judgment modified on other grounds*, 15 N.E.2d 866 (1938).

94. *North Chicago Elec. Ry. Co. v. Peuser*, 190 Ill. 67 (1901); *In re Curtailment of Bus Serv.*, 252 N.W. 407 (Neb. 1934).

95. *Dresser v. City of Wichita*, 96 Kan. 820 (1915); *Brown v. Homer-Doyline Bus Lines*, 23 So. 2d 348 (La. Ct. App. 1945); *Hinds v. Steere*, 209 Mass. 442 (1911); *Kloran v. Drogin*, 99 N.J.L. 422 (N.J. Ct. Err. & App. 1924); *Public Serv. Commission, Second Dist., v. Booth*, 170 A.D. 590 (N.Y. App. Div. 1915); *City of Memphis v. State*, 133 Tenn. 83 (1915); *Riggsby v. Tritton*, 143 Va. 903 (1925); *Cushing v. White*, 101 Wash. 172 (1918).

96. *Hamid v. Metro Limo, Inc.*, 619 So. 2d 321 (Fla. Dist. Ct. App. 1993); *Brinkmoeller v. Wilson*, 325 N.E.2d 233 (Ohio 1975); *Jenkins v. General Cab Co. of Nashville*, 175 Tenn. 409 (1940); *Carlton v. Boudar*, 88 S.E. 174 (Va. 1916); *Cushing v. White*, 101 Wash. 172 (1918); *Scales v. Boynton Cab Co.*, 223 N.W. 836 (Wis. 1929).

97. *Arrow Aviation, Inc. v. Moore*, 266 F.2d 488, 490 (8th Cir. 1959).

amusement rides,<sup>98</sup> ski lift operators,<sup>99</sup> and elevators<sup>100</sup> are all common carriers.

Yet, when we look at the factors courts have used to determine whether an entity is a common carrier, the picture becomes more complex. Many of the factors courts have used to determine whether an entity is a common carrier of passengers, or a common carrier in general, are applicable to autonomous vehicle manufacturers.

First, to determine whether an entity is a common carrier (of passengers or things), courts have held that the method of operation, not the representations of the company, are most relevant.<sup>101</sup> Thus, just because autonomous vehicles are not common carriers under our previously understood characterizations, it is not dispositive that their manufacturers do not identify themselves as common carriers.

Second, courts look to an entity's primary function and to whether that function is public transportation or whether transportation is only incidental to the entity's primary business.<sup>102</sup> Autonomous vehicle manufacturers are not engaged in public transportation services. But it cannot be said that "transportation" is only incidental to their primary purpose. Unlike a manufacturer of a traditional (manually operated) vehicle, autonomous vehicle manufacturers will be selling, in a significant part, a product that engages in transportation services, requiring minimal interaction from the driver. That there is no human driver may be irrelevant—would there be any dispute that a vehicle manufacturer engages in "transportation" if it provided a human driver, paid for by the manufacturer, with every vehicle it delivered? While the "human driver" hypothetical is limited (for instance, the autonomous vehicle does not remain an agent of the manufacturer), it can be instructive, and suggests that, in a way, the autonomous vehicle is engaged in "transportation," a factor that suggests an entity is a common carrier.

Third, an entity is more likely to be found to be a common carrier if it serves the public indiscriminately and does not make individualized decisions as to whether and on what terms it transports persons or property.<sup>103</sup> Again, this factor is murky when applied to autonomous vehicles.

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98. *Harlan v. Six Flags Over Georgia, Inc.*, 297 S.E.2d 468 (Ga. 1982); *Speed Boat Leasing, Inc. v. Elmer*, 124 S.W.3d 210 (Tex. 2003).

99. *Platzer v. Mammoth Mountain Ski Area*, 104 Cal. App. 4th 1253 (Cal. Ct. App. 2002).

100. *Simon v. Walt Disney World Co.*, 114 Cal. App. 4th 1162 (Cal. Ct. App. 2004).

101. *See McDonald v. Irby*, 445 P.2d 192 (Wash. 1968); *Kvalheim v. Horace Mann Life Ins. Co.*, 219 N.W.2d 533 (Iowa 1974).

102. *See Speed Boat Leasing, Inc. v. Elmer*, 124 S.W.3d 210 (Tex. 2003); *Cormier v. Central Mass. Chapter of Nat. Safety Council*, 620 N.E.2d 784 (Mass. 1993).

103. *See Brockway v. Travelers Ins. Co.*, 321 N.W.2d 332 (Wis. Ct. App. 1982); *American Orient Exp. Ry. Co., LLC v. Surface Transp. Bd.*, 484 F.3d 554 (D.C. Cir. 2007).

Autonomous vehicles, when owned by a private party, would not be serving the public indiscriminately. But autonomous vehicle manufacturers, unlike private carriers, cannot make individualized determinations as to whom they decide to carry, when to carry them, and to where they will be delivered. Similar to a common carrier, which casts its net of responsibility out to the general public by providing transportation service indiscriminately, an autonomous vehicle manufacturer has little or no control over who ultimately becomes a passenger. This uncertainty, shared by both common carriers and autonomous vehicle manufacturers, is one justification for holding common carriers to a higher duty of care.<sup>104</sup>

Fourth, an autonomous vehicle manufacturer does not solicit passengers for transportation from the public. An entity that solicits patronage from the public but reserves the right to accept or reject the offered business arbitrarily or on an individualized basis is not a common carrier.<sup>105</sup> But the manufacturer does not have the power to reject passengers on an individual basis once the vehicle is sold. Control over who rides in the vehicle, and thus which persons are potentially relying on the autonomous vehicle's safe operation, will rest solely with the owner of the vehicle. This indiscriminate (from the manufacturer's perspective) passenger population is a hallmark of common carriers.

Fifth, autonomous vehicle manufacturers do not fit within the definition of private carriers. Private carriers are entities that do provide transportation services, but do not hold themselves out as open to serving the public indiscriminately.<sup>106</sup> Private carriers are not held to the same high duty of care as public (common) carriers are, because they have full control over the terms of the service offered: who they transport, when they provide the transportation, and to what destinations.<sup>107</sup> As discussed above, autonomous vehicle manufacturers retain none of these limiting factors.

Autonomous vehicle manufacturers do not fit into most traditional definitions of common carriers. They do not hold themselves out as a publicly available mode of transportation, their primary purpose is not to provide public transportation, and the vehicles will not be serving the public indiscriminately. Autonomous vehicle manufacturers, however, do fit some of the factors courts use to determine whether an entity is a common carrier. They have exclusive control over the vehicle's opera-

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104. See *Coghlan v. Beta Theta Pi Fraternity*, 987 P.2d 300 (Idaho 1999).

105. *Fla. Power & Light Co. v. Fed. Energy Regulatory Comm'n*, 660 F.2d 668 (5th Cir. 1981); *Erwin Mills, Inc. v. Williams*, 238 Miss. 335 (1960); *Weaver v. Public Serv. Comm'n of Wyoming*, 40 Wyo. 462, (1929).

106. *Doe v. Rockdale School Dist.*, No. 84, 287 Ill. App. 3d 791 (Ill. App. Ct. 1997).

107. *Central of Georgia Ry. Co. v. Lippman*, 110 Ga. 665 (1900).

tion, but little control over the terms of conveyance (who, what, when, and where).

## 2. Autonomous Vehicle Manufacturers Are Similar to Common Passenger Carriers

Additionally, factors that courts have used to assess whether an entity is a common carrier of passengers suggests that autonomous vehicle manufacturers are analogous to such carriers.

Again, the general characteristics of common carriers of passengers do not explicitly apply to autonomous vehicle manufacturers. The companies would not be holding themselves out to the public as a service for hire like traditional common passenger carriers. However, the other two factors implicate a consideration of autonomous vehicle manufacturers as common carriers of passengers: (1) whether the operator controls the manner of transportation; and (2) whether the passenger places himself or herself in the operator's care.<sup>108</sup>

At minimum, the manufacturer of an autonomous vehicle would have control over the software and hardware that controls the vehicle while in automatic mode. The owner of the vehicle, while likely responsible for the maintenance and general upkeep of the vehicle, will not be expected (or perhaps even able) to maintain the software and hardware related to the autonomic operation of the vehicle. The algorithms that dictate which lane the vehicle is in, how much space to leave before the car ahead, and at what speed to navigate a particular on- or off-ramp will be in complete control of the manufacturer. In that sense, control of the manner of transportation will be entirely within the control of the manufacturer.

Additionally, passengers of autonomous vehicles will be placing their faith in those algorithms and the accompanying cameras, lasers, and satellite positioning systems—in other words, they will be placing themselves in the care of the manufacturers that design those systems.

Although autonomous vehicle manufacturers do not fall within the traditional definition of common carriers, they are characterized by many of the same traits as common carriers. We next look to the public policy behind holding common carriers of passengers to owe the highest duty of care to determine whether autonomous vehicle manufacturers should be held to a similarly high standard.

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108. *Hunt ex rel. Gende v. Clarendon Nat. Ins. Serv., Inc.*, 691 N.W.2d 904 (Wis. Ct. App. 2004).

*D. Policy Justifications for Holding Autonomous Vehicle Manufacturers to the Same High Duty of Care as Common Carriers of Passengers*

As discussed above, autonomous vehicle manufacturers are not common carriers of passengers, primarily because they will not be holding themselves out as open to the public. However, we have also discussed how many of the factors relevant to whether an entity is a common carrier can be applied to manufacturers of autonomous vehicles. The similarities between common passenger carriers and autonomous vehicle manufacturers suggest that many of the policy reasons behind holding common carriers of passengers to a higher duty of care are applicable to autonomous vehicle manufacturers. We next discuss why the justifications for holding common passenger carriers to a higher duty of care apply similarly to autonomous vehicle manufacturers, and thus, why they should be held to the same high standard of care even though they do not fit the traditional definition of common carriers.

Courts have held that the obligation of a common carrier arises out of considerations of public policy, independent of contract, either express or implied.<sup>109</sup> This is because the justifications for holding common carriers of passengers to a high standard of care exist regardless of the nature of the relationship between the parties.<sup>110</sup>

Common passenger carriers are held to a high standard of care because passengers have little control over the means of conveyance.<sup>111</sup> In *Indianapolis Traction & Terminal Co. v. Lawson*, the 7th Circuit held that a street car operator owed a heightened duty of care to its passengers when it took, for free, a group of conference attendees on a tour of Indianapolis, even though the trial court had held that the streetcar operator was a private carrier for purposes of the free tour.<sup>112</sup> The court commented that the basis for the heightened duty was not affected by the fact that the passengers were not paying customers, but that the heightened duty arose from considerations of public policy.<sup>113</sup> The justification behind the rule, the court said, was that passengers turn over control of their own safety and rely on the carrier for their safe delivery:<sup>114</sup>

All the [passengers] did, or could do, was to direct *when* to go and *where* to go; the very important *how* to go was necessarily left to the

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109. *McNeill v. Durham & C.R. Co.*, 135 N.C. 682 (1904); *See also Bradburn v. Whatcom Cnty. Ry. & Light Co.*, 88 P. 1020 (Wash. 1907) (holding that a police officer was a passenger even though the law requiring the railway to grant him free passage was invalid).

110. *McNeill*, 135 N.C. 682.

111. *Indianapolis Traction & Terminal Co. v. Lawson*, 143 F. 834 (7th Cir. 1906).

112. *See generally id.*

113. *Id.* at 837.

114. *Id.*

motormen and conductors. All the skill and experience were with the company, all the inexperience with the [passengers]. . . . The company was charged with the custody and care of human lives in a service voluntarily assumed, and it is of no importance whether it was in the technical relation of common carrier or not.<sup>115</sup>

Similarly, passengers in an autonomous vehicle will be able to direct the car *when* to go and *where* to go, but will have no control over “the very important *how* to go.”<sup>116</sup> The skill and expertise that will impact the safety of the voyage, instead of residing with the operator of the public carrier, will be in the hands of the programmers, engineers, and manufacturers that dictate the autonomous vehicle’s capabilities and limitations.

Another justification for holding common passenger carriers to a higher standard is that passengers cannot use their own faculties for protecting themselves.<sup>117</sup> In addition to relinquishing the “how” aspect of the transportation, passengers in autonomous vehicles will be relinquishing their normal abilities to protect themselves. With autonomous vehicles, unlike a typical passenger carrier, the passenger-driver could intervene and take control of the vehicle in emergency situations. As discussed above, however, it may be advantageous (or even necessary) to incentivize the driver of an autonomous vehicle to *not* intervene (by reducing the driver’s level of responsibility for the vehicle while in automatic mode). For example, a driver who is passively being transported by an autonomous vehicle will not likely be paying as close attention to the driving situation as if she were in manual control of the vehicle. Even if the driver is not engaged in some other task, the driver is unlikely to be fully engaged in their surroundings (such as monitoring his blind spots). Incentivizing a driver to intervene in a perceived emergency could lead to a more dangerous situation if the driver responds without full comprehension of his surroundings. While a driver of an autonomous vehicle may be able to reestablish manual control with the push of a button, it may not be wise to require her to do so. Thus, like a passenger of a common carrier, the driver of an autonomous vehicle may have a reduced ability to intervene and avoid accidents. This factor is a justification for holding common carriers of passengers to a higher standard of care, and is applicable to autonomous vehicles as well.

Finally, another basis of the heightened duty is found in the inherent regard the law has for human life and personal safety.<sup>118</sup> Similar to passenger carriers, the functionality of autonomous vehicle technology

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115. *Id.* at 836 (emphasis added).

116. *Id.* (emphasis added).

117. *Lopez v. Southern Cal. Rapid Transit Dist.*, 40 Cal.3d 780 (1985).

118. *Gillespie v. Brooklyn Heights R. Co.*, 178 N.Y. 347 (1904).

will be protecting or risking both the lives of passengers and the lives and safety of others navigating the same highways.

Because the public policies behind holding common carriers of passengers to the highest standard of care are similarly applicable to autonomous vehicle manufacturers, those manufacturers should be held to that same high standard.

#### V. CONCLUSION

Autonomous vehicles, cars that can drive themselves with limited or no human interaction, are currently under development. The impending proliferation of this technology will present unanswered legal questions. Primarily, and the question this Comment answers, is the question of how liability will be assessed when an autonomous vehicle is in an accident while under automatic operation.

For the reasons set forth above, autonomous vehicle liability should be assessed under the traditional products liability scheme. However, because autonomous vehicles share many traits with common carriers, and common carriers owe the highest duty of care to their passengers, autonomous vehicle manufacturers should be held to the same standard. This conclusion is further reinforced by the fact that many of the policy justifications for holding common carriers of passengers to the highest standard are applicable to autonomous vehicle manufactures.

Autonomous vehicle technology presents the most significant transportation transformation in recent time. The full benefits of the technology, however, can only be achieved if the law adopts an approach to apportioning liability that holds manufacturers to a high standard, but also allows the technology to flourish. Holding autonomous vehicle manufacturers to the same high standard that common passenger carriers are held will achieve this goal.

Hopefully, soon we will all have access to safe, autonomous transportation. Because didn't we all grow up wanting to be Michael Knight?<sup>119</sup>

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119. *See* Knight Rider, Glen A. Larson Productions & Universal TV, NBC (1982) (starring David Hasselhoff and the autonomous Knight Industries Two-Thousand (KITT) vehicle).