

Note

**The Road Will Never Be the Same:
A Reexamination of Tort Liability
for Autonomous Vehicles**

John W. Zipp*

ABSTRACT

Fully autonomous vehicles will be available for public purchase within the next ten years. While several car companies are in the process of developing their own fully autonomous vehicle, Google is currently at the forefront of this veritable technological race. In fact, Google's self-driving vehicle has already logged over one million miles in full autonomous driving mode. While these vehicles promise to be significantly safer than their human counterparts, it is unrealistic to assume that they will not cause accidents. As a result, our courts will have to determine how the law should assign liability when one of these vehicles is involved in an accident. Unfortunately, there is a significant lack of precedent and laws

* B.A., 2014, *Franklin & Marshall College*; J.D. Candidate, May 2017, *American University Washington College of Law*. I would first like to thank my family for their constant love and encouragement. I would like to give a special thanks to my father and best friend, Peter Zipp, for his unwavering advice and support not just in writing this article, but also in law school and in life. I look to him for guidance and courage in all that I encounter. I am eternally grateful for all that he has done for me and the wisdom that he has bestowed upon me; he is an inspiration to me and to all who meet him.

addressing autonomous vehicles in general, let alone where liability should be placed in the event of an accident.

The task of assigning liability to the proper party for accidents caused by autonomous vehicles requires an in-depth analysis of our current tort doctrines, specifically products liability and negligence. This article concludes that the assignment of liability on either the autonomous vehicle’s manufacturer or owner under these standards is not only insufficient, but would incorrectly stretch these legal principles. Instead, this article proposes that liability should be placed on the vehicle itself and the correct tort standard to use is negligence. In essence, when the autonomous vehicle causes an accident, it will be treated the same as a human driver under a negligence analysis.

In order for plaintiffs to have a reasonable mechanism that would allow a claim to be brought against an autonomous vehicle, this article argues that the law should treat autonomous vehicles as new special business entities, and as such grant them artificial personhood. By analogizing these vehicles to corporations, it is possible to allocate liability on the proper party as well as create a package of protections for all parties interacting with autonomous vehicles. These vehicles will be required to have specific statutory defined rights and obligations that will ensure that injured parties are able to efficiently recover in the event of an accident.

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I. INTRODUCTION

Imagine a world where an accident that occurs today may never again occur tomorrow. The accidents that society has grown accustomed to hearing about, such as a distracted driver who is texting, playing with the radio, reading, falling asleep, or talking to other passengers, will vanish. Imagine a world in which drunk drivers will stop killing innocent people. Instead, we will live in a world dominated by autonomous, self-driving vehicles. This of course resembles science fiction rhetoric, but in reality, self-driving vehicles co-existing with human drivers on our roads are only a few years away.¹ In fact, both Google and Volvo predict that completely autonomous vehicles will become part of everyday life within the next five years.²

Google's autonomous vehicle prototype emerged from closed doors and drove on the streets alongside humans in the summer of 2015.³ The car had neither a steering wheel nor pedals.⁴ An onboard computer piloted the vehicle, while a Google technician sat in the backseat ready to

1. Although the technology discussed in this article has rapidly evolved, the legal framework proposed for tort liability is still relevant despite any technological changes. *See* discussion *infra* Section II.

2. Mike Murphy, *Volvo Wants to Put Self-Driving Cars on the Roads in Two Years, Ahead of Google and Ford*, QUARTZ (Nov. 19, 2015), <http://qz.com/554596/volvo-wants-to-put-self-driving-cars-on-the-roads-in-two-years-ahead-of-google-and-ford/> (discussing Volvo's plan to have self-driving cars made available to people by 2017).

3. Alex Davies, *Google's Plan to Eliminate Human Driving in 5 Years*, WIRED (May 18, 2015, 7:00 AM), www.wired.com/2015/05/google-wants-eliminate-human-driving-5-years/.

4. *Id.*

take over if something went astray.⁵ Google plans to have fully autonomous vehicles available for public purchase by 2020⁶ and unlike other car companies, does not want to build vehicles with autonomous features in a piecemeal fashion.⁷ Instead, Google wants “a completely autonomous vehicle, one that reduces ‘driving’ to little more than getting in, entering a destination, and enjoying the ride.”⁸

Since autonomous vehicles will be interacting with human drivers, it is inevitable that these vehicles will cause or be the victim of an accident. While it has been promised that these vehicles will be safer and significantly more attentive than human drivers, it is unrealistic to assume that accidents involving these vehicles will not occur. There is the possibility, as one commentator points out, that minor accidents may actually increase initially with the introduction of autonomous vehicles simply because they behave differently than the often unpredictable human drivers that they will be sharing the roads with.⁹ Accordingly, one of the main issues our courts will have to face with the proliferation of these vehicles is where to assign liability when an autonomous vehicle is involved in an accident.

Currently, there is a dearth of laws addressing autonomous vehicles in general, let alone the issues that will arise when one of these vehicles’ is involved in an accident. Five states have enacted legislation that allows autonomous vehicles to operate in their state,¹⁰ but not one has allowed autonomous vehicles to be sold within the state boundaries. The majority of remaining states that have not enacted legislation are concerned with the release of fully autonomous vehicles; among their major concerns are safety, performance, accountability, and, most importantly, who is liable

5. See Davies, *supra* note 3.

6. *Id.*

7. *Id.* (noting that lane departure warnings, automatic braking, assisted parallel parking, and pedestrian detection are all examples of autonomous features that are released in a piecemeal fashion).

8. See Davies, *supra* note 3.

9. Keith Naughton, *Humans Are Slamming into Driverless Cars and Exposing a Key Flaw*, BLOOMBERG TECHNOLOGY (Dec. 17, 2015, 7:01 PM), <http://www.bloomberg.com/news/articles/2015-12-18/humans-are-slamming-into-driverless-cars-and-exposing-a-key-flaw?cmpid=BBD121815> (arguing that initially as more autonomous cars share the road with humans, crashes may increase, and while the injuries will be minor, the potential for an increase in crashes is a direct result of the fact that they behave differently than humans).

10. *Autonomous — Self-Driving Vehicles Legislation*, NAT’L CONFERENCE OF STATE LEGISLATURES (Nov. 11, 2016), <http://www.ncsl.org/research/transportation/autonomous-vehicles-legislation.aspx> (stating California, Nevada, Michigan, Florida, Tennessee, Washington D.C. all allow autonomous vehicles to operate within their state). However, for purposes of this paper, I am analyzing the proper tort standard with the assumption that by the time autonomous vehicles are ready for purchase, all states will have enacted legislation allowing them to operate within their state.

when an accident occurs.¹¹

The task of assigning liability on the proper party for accidents involving these vehicles requires an examination of our current tort standards. The two principle tort standards that would likely be used are (1) products liability, under which the autonomous technology manufacturer would be held strictly liable for the accident because the vehicle, a manufactured product, has been involved in an accident, and (2) negligence, where the owner or autonomous vehicle manufacturer would be held liable for a failure to reasonably eliminate any unreasonable risk of foreseeable injury. Critics and scholars alike have proposed numerous variations to these standards, none of which is satisfactory.¹² Assignment of liability on either the autonomous vehicle manufacturer or the vehicle owner is insufficient. Further, these standards would greatly inhibit an injured party from recovering or would create a situation in which the autonomous vehicle manufacturer is perpetually liable. Overall, both standards, when applied to either the driver or the autonomous vehicle manufacturer, would incorrectly stretch legal doctrines and significantly reduce the benefit of having autonomous vehicles on the road.

This article posits that in order to satisfactorily address the tort liability issues that will arise from having autonomous vehicles on the road, the law should treat them not as products but as the equivalent of a human driver. In essence, the onboard computer will be, in the constructs of the law, the human driver and the vehicles themselves would then be liable for negligence. Recently, the U.S. vehicle safety regulators issued a statement declaring that the artificial intelligence system contained within the autonomous vehicle can be treated as the driver under federal law.¹³

To be sure, in order for a plaintiff to recover, he or she would have to file a claim against the autonomous vehicle itself. These vehicles will be required to have insurance as a feature of the vehicle and will be included

11. Dan Strumpf, *Liability Issues Create Potholes on the Road to Driverless Cars*, WALL ST. J. (Jan. 27, 2013, 8:10 PM), <http://www.wsj.com/articles/SB10001424127887323854904578264162749109462>.

12. See Andrew P. Garza, Note, “*Look Ma, No Hands!*” *Wrinkles and Wrecks in the Age of Autonomous Vehicles*, 46 NEW ENG. L. REV. 581, 583 (2012) (postulating that product liability law can handle autonomous vehicles and that autonomous vehicle manufacturers will be able to adopt a system of loss spreading); Jeffrey K. Gurney, *Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles*, 2013 U. ILL. J.L. TECH. & POL’Y 247, 271 (2013) (arguing that the autonomous vehicle manufacturer should be liable in certain instances where the vehicle is in autonomous driving mode, and that the driver of the vehicle be liable for most accidents caused by the autonomous vehicle); Orly Ravid, *Don’t Sue Me, I Was Just Lawfully Texting and Drunk When My Autonomous Car Crashed into You*, 44 SW. L. REV. 175, 189 (2015) (proposing a negligence per se standard for autonomous vehicles).

13. David Shepardson & Paul Lienert, *Exclusive: In Boost to Self-Driving Cars, U.S. Tells Google Computers Can Qualify as Drivers*, REUTERS (Feb. 10, 2016, 1:14 PM), <http://www.reuters.com/article/us-alphabet-autos-selfdriving-exclusive-idUSKCN0VJ00H>.

with the purchase price. Making the vehicle liable ensures that victims of accidents will have an opportunity to adequately recover if liability is established.

Once the proposition that autonomous vehicles could potentially be negligent is accepted, it is then necessary to determine the legal framework that would allow a plaintiff to bring a claim against the autonomous vehicle. Accordingly, this article further proposes that the law should treat autonomous vehicles as new special business entities, and as such, grant them artificial personhood similar to what our laws have done for centuries when they conferred personhood rights to non-human entities, such as corporations. While a “product” has yet to be considered a person under the law, treating these vehicles solely as products misconstrues what they actually are. The purpose of analogizing these vehicles to corporations is to appropriately allocate the liability on the proper party and create a bundle of protections for all parties interacting with autonomous vehicles on the roads. These new special business entities will have specific statutory rights and obligations that a vehicle must meet in order to be allowed to drive on the streets. Some of these obligations will resemble frequent software updates and scheduled mechanical services to ensure that the vehicle is operating as safely as possible.

As discussed in detail below, conceptualizing these vehicles as persons not only supports using a negligence standard, but also greatly limits the use of a strict product liability regime when determining which tort standard should apply. If one were to consider these vehicles “beings”, i.e. a “person” for purposes of the law, a strict liability regime is inapplicable because it would require the vehicle, a “person,” to be sued for an inherent defect. If this were allowed, it would be analogous to finding a human strictly liable for simply possessing a slower reaction time¹⁴ that was in part responsible for causing an accident. Moreover, a strict liability regime would not allow the vehicle to defend itself, because under Restatement (Second) of Torts 402A duty of care is not a defense to a claim of design defect.¹⁵

Technology is imperfect; computers can make mistakes.¹⁶ This arti-

14. Notwithstanding the fact that the human reaction time would be slower than that of the autonomous vehicles.

15. RESTATEMENT (SECOND) OF TORTS: SPECIAL LIAB. OF SELLER OF PRODS. FOR PHYSICAL HARM TO USER OR CONSUMER § 402A (AM. LAW INST. 1965) (“The rule is one of strict liability, making the seller subject to liability to the user or consumer even though he has exercised all possible care in the preparation and sale of the product.”).

16. See Mike Masnick, *Dear World: Self-Driving Cars Will Get into Accidents Too (Though, This One Wasn't the Computers Fault)*, TECHDIRT (Aug. 5, 2011, 1:49 PM), <https://www.techdirt.com/articles/20110805/12233315407/dear-world-self-driving-cars-will-get-into-accidents-too-though-this-one-wasnt-computers-fault.shtml> (arguing that autonomous vehicles inevitably will get into accidents).

cle addresses the need for our laws to assign liability on the proper party before autonomous vehicles are made available to the public. Part I of this article will provide a brief overview of the current state of autonomous vehicles, as well as their technological advances and benefits. This Part will also examine the current legal frameworks that a plaintiff would likely use to recover damages after an accident with an autonomous vehicle. Lastly, this Part will offer a brief description of corporate law and the foundation upon which individuals can choose a corporate structure that adequately and fairly represents their interests. Part II will assert that the current legal framework of assigning liability on the autonomous vehicle's manufacturer or owner is inappropriate and insufficiently addresses the issues presented by autonomous vehicles. This Part will propose that the autonomous vehicle itself should be treated the same as a human driver and thus be held liable under the doctrine of negligence. Additionally, this Part will further argue that autonomous vehicles should be granted artificial personhood under the law, and in doing so form a new special business entity that accurately and efficiently allocates liability onto the vehicle itself. This Part will also analogize our current insurance programs with a possible new insurance regime that will cover the cost of liability when plaintiffs attempt to recover. Part III will conclude by explaining why these vehicles should not be treated as products, and why the current legal framework needs to adapt to these new business entities.

II. BACKGROUND

A. AN OVERVIEW OF AUTONOMOUS VEHICLES

Autonomous technology is certainly not anything new. Many of the vehicles on the road today have already been equipped with autonomous features. For example, self-parking, autopilot, automatic braking, and lane departure warnings are all types of autonomous technology. However, while autonomous features are present in many of today's cars, a fully autonomous vehicle has not been made available for the public to purchase.¹⁷ Several car companies are currently in the process of building a fully autonomous vehicle.¹⁸ While Google is at the forefront, Volvo has recently announced their plans to have autonomous vehicles on the streets of Sweden by 2017, three years ahead of Google's plan to release their self-driving car.¹⁹ Ford's CEO, Mark Fields, believes that fully au-

17. Mark Bergen, *Ford CEO Mark Fields Says Fully Autonomous Cars Could Hit Roads in Four Years*, RECODE (Nov. 18, 2015, 2:46 PM), <http://recode.net/2015/11/18/ford-ceo-mark-fields-is-trying-to-keep-one-foot-in-today-one-in-tomorrow/>.

18. *Id.*

19. *See* Murphy, *supra* note 2.

onomous vehicles will be available for mass distribution in four years.²⁰ He believes that Ford should be able to release fully autonomous vehicles with high-definition maps.²¹ As a result, “[a] veritable arms race has broken out in recent years between traditional car manufacturers and Silicon Valley, with a plethora of companies committing to bringing self-driving cars to the roads.”²² Some of the other companies that have initiated programs with autonomous features are Volkswagen,²³ GM²⁴, Lexus,²⁵ and Tesla.²⁶

In 2009, Google launched its self-driving car initiative; since that time its cars have autonomously driven over one million miles and accumulated the equivalent of ninety years of driving experience on the road.²⁷ Currently, there are safety drivers in the car with temporary controls that enable them to regain control of the vehicle if needed.²⁸ In the past year and a half, Google’s safety drivers had to take over several times to prevent an accident.²⁹ Google hopes that with further develop-

20. See Bergen, *supra* note 17.

21. See *id.* (explaining that initially these vehicles will only be on roads that have been fully mapped).

22. Murphy, *supra* note 2; see Joseph B. White, *Mercedes Makes Driverless Ride*, WALL ST. J. (Sept. 10, 2013), <http://www.wsj.com/articles/SB10001424127887324549004579065541926070378>; see also *Your Autopilot Has Arrived*, TESLA (Oct. 14, 2015), <https://www.teslamotors.com/blog> (explaining that their newest feature, “autopilot” allows the car to steer, change lanes, and manage speed while on the highway).

23. *Park Assist*, VOLKSWAGEN, http://en.volkswagen.com/en/innovation-and-technology/technical-glossary/parklenkassistent_park_assist.html (describing the self-parking ability of their vehicles) (last visited Mar. 25, 2016).

24. GM Authority Staff, *GM’s Lane Departure Warning and Lane Keep Assist Tech: Features Spotlight*, GM AUTH. (Nov. 18, 2014), <http://gmauthority.com/blog/2014/11/gms-lane-departure-warning-and-lane-keep-assist-tech-feature-spotlight/> (discussing several of their newest model cars have lane departure warning and lane keep assist features which actively prevent unintentional lane departures).

25. See Lee Hawkins, *The Skinny on Self-Parking*, WALL ST. J. (March 18, 2010, 7:27 PM), <http://www.wsj.com/articles/SB10001424052748703734504575125883649914708> (noting that Lexus was one of the first auto-makers to release a self-parking vehicle).

26. See Todd Frankel, *Tesla Self-Driving Software Updated*, WASH. POST (Jan. 12, 2016), <http://www.pressreader.com/usa/the-washington-post/20160112/281865822464855/TextView> (commenting on Tesla’s unveiling of new software updates that enable owners to “summon” their unoccupied vehicle).

27. *Monthly Report*, GOOGLE SELF-DRIVING CAR PROJECT MONTHLY REPORT [hereinafter *Monthly Report: Sept. 2015*] (Sept. 2015), <https://static.googleusercontent.com/media/www.google.com/en/selfdrivingcar/files/reports/report-0915.pdf>.

28. See *FAQ*, GOOGLE SELF-DRIVING CAR PROJECT [hereinafter *FAQ*], <https://www.google.com/selfdrivingcar/faq/> (last visited Mar. 25, 2016) (answering a question about how these vehicles will behave on the road and what people should expect).

29. See Kirsten Korosec, *Humans Saved Google’s Self-Driving Cars from 13 Accidents*, FORTUNE (Jan. 13, 2016, 3:55 PM), <http://fortune.com/2016/01/13/google-self-driving-car-accidents/> (observing that had it not been for the safety drivers Google’s self-driving car would have been in thirteen accidents, ten of which would have been its fault); see also *Google Self-driving Car Testing Report on Disengagements of Autonomous Mode*, GOOGLE (Dec. 2015), <https://>

ments these cars will require little to no human oversight.³⁰ Google wants to transform mobility by ensuring an easier, safer, and a more enjoyable ride.³¹ Google's overall goal is to create a vehicle that will bring people from point A to point B with the push of a button and zero human interaction.³²

At first, Google designed its self-driving cars to strictly follow the rules of driving.³³ Now it is actively trying to make the cars drive more like humans.³⁴ One of the biggest issues that has prompted Google to begin making its cars behave more like human drivers is that the autonomous vehicles were braking too frequently while driving, thus causing other drivers to stop abruptly.³⁵ Chris Urmson, the former head of Google's self-driving car project stated in response to this and other issues, "[w]e are trying to make them drive more humanistically."³⁶ Incorporating human flexibility and interpretation into these cars will enable the cars to perform and react to inconceivable situations.³⁷

In addition, Google is attempting to make the cars drive more like humans for two main reasons. First, they want to facilitate an environment in which the car will be able to co-exist with other human drivers.³⁸ A purely rule-bound vehicle will never be able to function in a world of human drivers who are constantly committing driving infractions. Raj Rajkumar, a Co-Director of the General Motors-Carnegie Mellon Autonomous Driving Collaborative Research Lab, recently test-drove an auton-

static.googleusercontent.com/media/www.google.com/en/selfdrivingcar/files/reports/report-annual-15.pdf (announcing that out of the sixty-nine reportable disengagements, only thirteen of them were actually required to prevent an accident).

30. See *FAQ*, *supra* note 28.

31. *Id.*

32. See *generally id.* (explaining that Google's goal is to making driving a more enjoyable experience).

33. Alistair Barr & Mike Ramsey, *Google Tries to Make its Cars Drive More Like Humans; Autonomous Vehicles are Learning to Edge into Intersections, Cut Corners*, WALL ST. J. (Sept. 28, 2015, 2:05 PM), <http://www.wsj.com/articles/google-tries-to-make-its-cars-drive-more-like-humans-1443463523>.

34. *Id.*

35. See Naughton, *supra* note 9 (discussing that autonomous vehicles stop in situations when human drivers would not, and thus autonomous vehicles catch human drivers behind them off guard).

36. See Barr & Ramsey, *supra* note 33 (as a result, Google's self-driving car will now cut corners when making turns, will move forward into intersections to indicate to other drivers that it intends to proceed, and will cross double yellow lines when appropriate).

37. See *id.* (recognizing that there will be instances for which the autonomous vehicle program is not prepared for; by installing humanistic features in these vehicles, the program will allow them to react to these types of unforeseeable situations).

38. See *id.* (providing examples of Google's self-driving car braking too frequently, causing other drivers to rear-end it, and thus supporting the need to design these vehicles with the ability to co-exist with human drivers).

omous vehicle that is illustrative of this point.³⁹ The car performed perfectly until it was required to merge onto a highway where other drivers were driving above the speed limit.⁴⁰ The car's camera and laser sensors correctly determined that there was traffic but they did not trust other drivers to make enough room for the car to merge onto the highway safely, and as a result, the car would not merge onto the highway.⁴¹ The operator of the vehicle had to disengage the autonomous mode in order to enter the highway.⁴²

Secondly, a vehicle that is programmed to only follow rules will not be a very successful vehicle because there are several occasions where people are required to violate traffic rules.⁴³ As a result, an autonomous vehicle will be able to act like a human while maintaining all of the safety benefits of a machine.⁴⁴ Google is not merely treating self-driving cars as just another feature to assist with driving, as is the policy of all other semi-autonomous vehicles.⁴⁵ Rather, Google is treating them as the new future driver, something that is the equivalent of a very experienced human driver. As autonomous vehicle technology advances it is highly probable that these cars will replace the need for human interaction while driving.

In an attempt to fully address all of the concerns that arise during the development of autonomous vehicles, Google releases monthly reports summarizing its vehicles' current activity within the public sphere.⁴⁶ By February 2016, almost seven years into the project, Google's self-driving car, while driving in full autonomous mode, logged 1,452,177 miles and was involved in seventeen minor accidents.⁴⁷ On February 14, 2016,

39. See Naughton, *supra* note 9.

40. *Id.*

41. See *id.* (highlighting that programming an autonomous car to always obey the law will not allow the car to exist with human drivers who are constantly breaking traffic laws).

42. *Id.*

43. Some of these may include a car's need to cross a double yellow line to avoid a parked car, when, for example, a police officer is replacing a traffic light and redirecting traffic; or its need to swerve to avoid pot holes.

44. See Naughton, *supra* note 9 ("Google is working to make the vehicles more 'aggressive' like humans—law abiding, safe humans—so they can naturally fit into the traffic flow, and other people understand what we're doing and why we're doing it.").

45. Matt O'Brien, *Google, Tesla, Others Wait for DMV's Self-Driving Rules*, SAN JOSE MERCURY NEWS (Oct. 26, 2015, 5:56 PM), http://www.mercurynews.com/business/ci_29027362/google-tesla-others-wait-dmvs-self-driving-rules (recognizing that California categorizes Tesla's new autopilot as Level 2 technology, which simply means "it is just helping drivers make better decisions").

46. See *Monthly Report*, GOOGLE SELF-DRIVING CAR PROJECT, <https://www.google.com/selfdrivingcar/reports/> (last visited Mar. 25, 2016).

47. See *Monthly Report*, GOOGLE SELF-DRIVING CAR PROJECT (Feb. 2016) [hereinafter *Monthly Report: Feb. 2016*] (explaining that Google's self-driving car wrongly assumed that a bus would yield to it, because it was attempting to move back into the center lane and it was in front

Google's self-driving car caused its first accident.⁴⁸ Google is constantly trying to test the capabilities of its self-driving car by creating new scenarios and analyzing the self-driving car's response.⁴⁹ Google even admits that there will be situations that have not been thought of and the self-driving car will need to know how to handle them.⁵⁰ In one of Google's monthly reports, Google responded to a question about how its autonomous vehicle would handle extremely rare and unpredictable situations.⁵¹ According to Google, "rather than teaching the car to handle very specific things we give the car fundamental capabilities for detecting unfamiliar objects or other road users, and then we give it lots of practice in a wide range of situations."⁵² Google continued to explain that since these vehicles will have 360-degree visibility, they are always attentive and should be able to respond effectively to tricky situations.⁵³

i. Benefits of Autonomous Vehicles

Autonomous vehicles are the future of driving. They provide a multitude of benefits for people, most important of which is the increased road safety. "Driver error is by far (95 [percent]) the most common factor implicated in vehicle accidents."⁵⁴ It has been argued that "[a]utonomous vehicles could significantly reduce traffic fatalities and crashes by reducing or eliminating driver error . . . These crashes cost the United States economy over \$200 billion per year in medical, property, and productivity losses . . . Crash reduction would also have the added benefit of reduced congestion since a high percentage of congestion is due to vehicle crashes."⁵⁵ Autonomous vehicles will be able to reduce the number of accidents because they will react faster and with more precision than humans.⁵⁶ Elon Musk, the founder of Tesla Motors, believes

of the bus); see also Aaron Tilley, *Google's Self-Driving Car Caused its First Accident*, FORBES (Feb. 29, 2016, 3:16 PM), <http://www.forbes.com/sites/aarontilley/2016/02/29/googles-self-driving-car-caused-its-first-accident/#1831c31b1755> (noting that even though Google's self-driving car caused an accident, statistically these vehicles are safer than human drivers in many situations).

48. *Id.*

49. See *Monthly Report: Sept. 2015*, *supra* note 27.

50. *Id.*

51. See *Monthly Report*, GOOGLE SELF-DRIVING CAR PROJECT (Aug. 2015) [hereinafter *Monthly Report: Aug. 2015*].

52. *Id.*

53. *Id.*

54. Jeffrey K. Gurney, *Driving into the Unknown: Examining the Crossroads of Criminal Law and Autonomous Vehicles*, 5 WAKE FOREST J.L. & POL'Y 393, 402 (2015) [hereinafter *Driving into the Unknown*] (footnote omitted) (internal quotations omitted).

55. See press release from Chairman Petri, *Statement on Hearing on Autonomous Vehicles* (Nov. 19, 2013) [hereinafter *Press Release*], <http://transportation.house.gov/news/documentsingle.aspx?DocumentID=362052> (addressing the role autonomous vehicles will play in shaping surface transportation).

56. *Id.*

that a Tesla that has been equipped with simple self-driving capabilities is already better on certain roads than a person driving a car.⁵⁷ He believes that within the next 24-36 months “Tesla will be able to drive virtually all roads at a safety level significantly better than humans.”⁵⁸ Recently, John Hall, an owner of a Tesla equipped with an auto-braking feature, was saved from a dangerous head-on collision when his Tesla stopped itself just before colliding with the oncoming car.⁵⁹ Hall recalled that by the time he noticed the oncoming car, his vehicle had already stopped.⁶⁰ In another recent example, a Google’s self-driving car detected that another vehicle was moving too fast to successfully stop at an upcoming stop sign.⁶¹ In response to this, the self-driving car began to apply the brakes; however, the human driver, unaware of the other vehicle’s inability to stop, disengaged the autonomous vehicle and took manual control.⁶² The human in the other vehicle then ran the stop sign and hit the autonomous vehicle.⁶³

In addition to the increased safety that these cars will provide for society, autonomous vehicles will also enable people to engage in other activities. “Every day, Americans spend an average of fifty-one minutes commuting to work, with eight percent of the work force having a one-way commute of over an hour.”⁶⁴ Autonomous vehicles will allow people to increase their productivity while in the car. For example, it will allow individuals the opportunity to prepare for work, send emails, make phones, and sleep during their morning commute. Autonomous vehicles will also provide mobility to a large portion of the population who are

57. See Frankel, *supra* note 26.

58. *Id.*

59. See Kevin Roose, *Watch a Self-Driving Tesla Save Its Owner From a Head-on Collision*, FUSION (Nov. 2, 2015, 4:28 PM), http://fusion.net/story/225801/ban-driving-exhibit-a/?utm_source=facebook&utm_medium=social&utm_campaign=fusionnetwork (illustrating an example of an autonomous feature reacting faster and more safely than a human); see also Editorial Board, *The Tesla Didn’t Really Crash Itself*, WASH. POST (July 4, 2016), https://www.washingtonpost.com/opinions/the-tesla-didnt-really-crash-itself/2016/07/04/88756584-3fc3-11e6-84e81580c7db5275_story.html?utm_term=.7ca3ff7b5fbd (correcting the accusations that it was Tesla’s autonomous driving feature that caused the accident). Tesla’s semi-autonomous autopilot must be distinguished from fully autonomous vehicles, because Tesla never intended that drivers cease paying attention and rely solely on their autopilot while driving. Fully autonomous technology, not semi-autonomous, is intended to allow the driver to zone out while driving.

60. *Id.*

61. Daniela Hernandez, *All of the Accidents Self-Driving Cars Have Had in California Were Caused by Humans*, FUSION (Oct. 9, 2015, 2:36 PM), <http://fusion.net/story/212208/california-dmv-self-driving-car-accident-reports/> (asserting that these vehicles have a superior ability to predict and prevent an accident compared to a human).

62. See Hernandez, *supra* note 61.

63. *Id.*

64. *Driving into the Unknown*, *supra* note 54, at 403 (footnote omitted).

normally restrained in their movements.⁶⁵ Elderly and disabled individuals who are not allowed to drive will have the freedom to travel by using an autonomous vehicle.⁶⁶

B. EMERGING NATIONAL DEVELOPMENTS AND A REVIEW OF EXISTING LAWS REGARDING AUTONOMOUS VEHICLES

The Department of Transportation (“DOT”) released a policy on automated vehicle development in September of 2016 through the National Highway Traffic Safety Administration (“NHTSA”).⁶⁷ NHTSA defines vehicle automation based on the level of driver control: Level 0-Level 3 requires that the driver still monitor the environment and road conditions while driving, even if some automated function is driving the vehicle; Level 4 requires that the vehicle be able to handle almost all road conditions (a driver under this level is not expected to regain control at any time during the trip, and the vehicle itself can only operate in certain environments and conditions); and Level 5 allows the autonomous vehicle to perform all driving tasks under any condition.⁶⁸

In early 2016, the Obama administration proposed to invest four billion dollars over a ten-year period for the development and improvement of the current transportation system.⁶⁹ The U.S. Transportation Secretary Anthony Foxx stated in response to the unveiling of President Obama’s proposal that “[t]oday’s actions and those we will pursue in the coming months will provide the foundation and the path forward for manufacturers, state officials, and consumers to use new technologies and achieve their full safety potential.”⁷⁰ In response to President Obama’s proposal, the DOT and NHTSA spent the next seven months formulating and developing its policy on automated vehicles.⁷¹ The Guidance was intended to create the initial regulatory framework upon which states and other entities could build and formulate a uniform national policy.⁷² The main thrust of NHTSA’s Guidance is a 15-point safety assessment that

65. See *FAQ*, *supra* note 28 (explaining that people who are currently unable to drive will be able to benefit from fully autonomous vehicles).

66. *Id.*

67. NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., FEDERAL AUTOMATED VEHICLES POLICY: ACCELERATING THE NEXT REVOLUTION IN ROADWAY SAFETY 9 (2016) [hereinafter *Roadway Safety*].

68. *Id.*

69. Press Release, Nat’l Highway Traffic Safety Admin., Secretary Foxx Unveils President Obama’s FY17 Budget Proposal of Nearly \$4 Billion for Automated Vehicles and Announces DOT Initiatives to Accelerate Vehicle Safety Innovations (Jan. 14, 2016) [hereinafter *DOT Vehicle Safety Initiatives*] (on file at https://www.nhtsa.gov/About-NHTSA/Press-Releases/dot_initiatives_accelerating_vehicle_safety_innovations_01142016).

70. See *DOT Vehicle Safety Initiatives*, *supra* note 69.

71. See *Roadway Safety*, *supra* note 67, at 34.

72. *Id.*

encourages and promotes the safe and effective development and deployment of autonomous vehicles.⁷³ The Guidance signaled to auto industry that federal safety regulators would not be over-regulating the development and deployment of autonomous vehicles, and overall was well received by automakers.⁷⁴

While the NHTSA released their policy concerning autonomous vehicles, currently only six states and the District of Columbia have enacted legislation concerning autonomous vehicles.⁷⁵ Eight other states are in the process of enacting legislation regarding autonomous vehicles.⁷⁶ Additionally, ten states have attempted to pass legislation regarding the use of autonomous vehicles but have failed.⁷⁷ Some of the states that have passed legislation concerning autonomous vehicles limit the testing of them to certain geographical areas.⁷⁸ All six of the statutes roughly defined “autonomous technology” to mean technology that, when installed on a motor vehicle, enabled the vehicle to drive without the active control or assistance of a human operator.⁷⁹ Nevada specifically noted that parking assistance, adaptive cruise control, lane keeping assistance, crash avoidance, blind spot detection, and other autonomous features did not constitute “autonomous technology, unless such a system in combination with other systems allows the vehicle to operate without the control of a human.”⁸⁰

73. See *Roadway Safety*, *supra* note 67, at 34.

74. *Id.*

75. CAL. VEH. CODE. §38750 (2012); D.C. CODE § 50-2351 (2013); FLA. STAT. § 316.85 (2012); MICH. COMP. LAWS § 257.663 (2013); NEV. REV. STAT. § 482A.025 (2012); H.B. 1065, 64th Leg. Assemb. (N.D. 2015); S.B. 598, Gen. Assemb. (Tenn. 2015); S.B. 1186 (Fla. 2015); EXEC. ORDER NO. 2015-09 (Ariz. 2015) (Arizona governor passed an executive order allowing for the testing and use of autonomous vehicles in specifically designated locations in Arizona).

76. S.B. 113 Gen. Assemb., Reg. Sess. (Ga. 2015); H.B. 632 Gen. Assemb., Reg. Sess. (Haw. 2015); H.B. 3136 Gen. Assemb., Reg. Sess. (Ill. 2015); H.B. 2977 Gen. Assemb., Reg. Sess. (Mass. 2015); S.B. 600 Gen. Assemb., Reg. Sess. (N.C. 2015); H.B. 2106 Gen. Assemb., Reg. Sess. (Wash. 2015); A.B. 31, 236th leg., Gen. Assemb., Reg. Sess. (N.Y. 2015); S.B. 734 Gen. Assemb., Reg. Sess. (N.J. 2014).

77. *Autonomous — Self-Driving Vehicles Legislation*, NAT’L CONFERENCE OF STATE LEGISLATURES (Nov. 11, 2016), <http://www.ncsl.org/research/transportation/autonomous-vehicles-legislation.aspx> (stating that Connecticut, Georgia, Hawaii, Idaho, Maryland, Mississippi, Missouri, Oregon, Tennessee, and Texas failed to pass autonomous vehicle legislation).

78. See NEV. REV. STAT. § 482A.100 (restricting the testing of autonomous vehicles to specifically designed geographical areas); *but see* CAL. VEH. CODE. §38750 part b (allowing for testing on all public roads, as long as the person operating the vehicle has been designated by the manufacturer).

79. See NEV. REV. STAT. and CAL. VEH. CODE, *supra* note 78.

80. *Id.* at NEV. REV. STAT. § 482A.025.

C. WHO IS AT FAULT WHEN AN ACCIDENT OCCURS WITH AN AUTONOMOUS VEHICLE?

During a hearing on how autonomous vehicles will shape the future, Tom Petri, the Chairman on the Subcommittee on Highways and Transit, raised the question of who is at fault when an accident occurs between an autonomous vehicle and a vehicle driven by a human.⁸¹ The answer to this question requires a determination of which tort standard should apply to these vehicles since “fault” cannot be evaluated in the abstract. As such, it is necessary to have an understanding of our current tort standards and how they could potentially be applied to accidents involving these vehicles. There are two potential tort standards that a theoretical plaintiff may seek to use to recover if an accident occurs involving an autonomous vehicle: (1) product liability standard under the strict liability doctrine and (2) negligence.

i. Product Liability Under the Doctrine of Strict Liability

Conceivably, a party injured in an accident involving one of these vehicles could claim that the seller or manufacturer of the autonomous vehicle is liable for damages under the doctrine of strict product liability.⁸² Strict product liability makes the seller or manufacturer of a defective product liable to the person injured by that product, regardless of whether the defendant took every precaution possible to prevent an injury.⁸³

Justice Robert Traynor’s concurrence in *Escola v. Coca Cola Bottling Co.* set forth the standard for strict liability in products liability cases.⁸⁴ For a plaintiff to recover on a claim of strict products liability, he or she must prove two elements: (1) that the defendant (manufacturer) sold a product in a defective condition that was unreasonably dangerous, and (2) that the defect caused the plaintiff’s harm.⁸⁵ Justice Traynor famously argued that even if there is no negligence on the part of the manufacturer, public policy requires that the manufacturer be responsible because he or she has the ability to most effectively reduce the hazards that are inherent in a defective product.⁸⁶ This holding paved the way for the

81. *How Autonomous Vehicles Will Shape the Future of Surface Transportation: Before the Subcomm. on Highways and Transit of the H. Comm. on Transp. and Infrastructure*, 113th Cong. 42 (2013) (statement of Rep. Thomas Petri, Chairman, S. Comm. on Highways and Transit).

82. See Garza, *supra* note 12, at 583 (arguing that despite all the concerns about increased liability on manufacturers, the appropriate standard is product liability law).

83. RESTATEMENT (SECOND) OF TORTS: SPECIAL LIAB. OF SELLER OF PROD. FOR PHYSICAL HARM TO USER OR CONSUMER § 402A (AM. LAW INST. 1965).

84. 150 P.2d 436, 440 (Cal. 1944) (Traynor, J., concurring).

85. See *Escola*, 150 P.2d at 440; RESTATEMENT (SECOND) OF TORTS § 402A.

86. *Id.* at 440-41.

“standard of liability that would make the manufacturer guarantee the safety of his product even when there is no negligence.”⁸⁷

After Justice Traynor’s concurrence in *Escola*, the Restatement (Second) of Torts promulgated the standard plaintiffs can use to bring product liability claim.⁸⁸ The Restatement (Second) adopted Justice Traynor’s concurrence and set forth the consumer’s expectations test for product defect claims, under which a product is defective if it fails to meet a reasonable person’s expectations. There are three categories of product defects that an injured party can assert: (1) a manufacturing defect, (2) a design defect, and (3) a warning defect.⁸⁹ If product liability law were the appropriate standard, then it seems very likely that a party injured by an autonomous vehicle will attempt to claim design defect instead of manufacturing or warning defect.⁹⁰

When proving a design defect, the consumer expectations test does not require that the plaintiff demonstrate a safer way to design the product; instead, the plaintiff only needs to prove that the product was less safe than a reasonable consumer would expect.⁹¹ A product may be found defective in design if the plaintiff is able to demonstrate that the product failed to perform as safely as an ordinary consumer would expect when used in an intended or reasonably foreseeable manner.⁹² There-

87. See *Escola*, *supra* note 85, at 442.

88. See RESTATEMENT (THIRD) OF TORTS: CATEGORIES OF PROD. DEFECT § 2 (AM. LAW INST. 1998) [hereinafter *Categories of Prod. Defect*]. A manufacturing defect is when the “product departs from its intended design even though all possible care was exercised in the preparation and marketing of the product.” A product is defective in design “when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller . . . and the omission of the alternative design renders the product not reasonably safe.” A product is defective because of insufficient warnings “when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller.” *Id.*

89. See *id.* A manufacturing defect is when the “product departs from its intended design even though all possible care was exercised in the preparation and marketing of the product.” A product is defective in design “when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller . . . and the omission of the alternative design renders the product not reasonably safe.” A product is defective because of insufficient warnings “when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller.” *Id.*

90. See *id.* cmt. d. The reason why it would be a design defect claim instead of a manufacturing defect is because, “a manufacturing defect consists of a products unit’s failure to meet the manufacturers design specifications, a product asserted to have a defective design meets the manufacturers design specifications but raises the question whether the specification themselves create unreasonable risks.” *Id.* For a similar discussion of why warning defect claims are inappropriate, see *infra* part II. A. 2 (providing a reason why failure to warn would not be appropriate in a negligence claim; the same analysis can be transposed onto a strict liability claim).

91. See *Categories of Prod. Defect*, *supra* note 88.

92. *Barker v. Lull Eng’g Co.*, 573 P. 2d 443, 444 (Cal. 1978).

fore, the injured plaintiff has the burden of proving that the product was not altered or mishandled and was indeed defective prior to reaching the injured party.⁹³

A plaintiff, presenting his or her case through the lens of an ordinary consumer would simply argue that the product, here the autonomous vehicle's algorithm, should perform safely in most, if not all, situations and thus should not be involved in any accidents. Design defect claims have been brought against car manufacturers in the past. In *Soule v. General Motors Corp.*,⁹⁴ the plaintiff's ankles were badly injured when her GM vehicle collided with another vehicle, and the front left wheel broke free causing the floorboard to smash into her feet.⁹⁵ The plaintiff argued that the vehicle's performance fell below the safety expectation of an ordinary consumer.⁹⁶ The defendant attempted to defend the claim by presenting expert evidence of the design and relative risks and benefits.⁹⁷ The court held that a consumer's expectations test should be used "for cases in which the everyday experience of the product's users permits a conclusion that the product's design violated minimum safety assumptions, and is thus defective regardless of expert opinion about the merits of the design."⁹⁸ The court held that "where the minimum safety of the product is within the common knowledge of lay jurors, expert witnesses may not be used to demonstrate what an ordinary consumer would or should expect."⁹⁹ It is not difficult to imagine an injured party presenting a similar argument i.e. that he or she expected the vehicle's algorithm to avoid the accident. Courts applying this test would be left with two possible outcomes: (1) either the manufacturers of these vehicles will be held liable for the accidents regardless of whether they might have been completely unpredictable, unavoidable or, even, accidents that were caused by a feature in the program that is not a defect at all; or (2) the court will deny imposing liability on the manufacturers, finding that the minimum safety of the algorithm is not within the common knowledge of ordinary individuals, that the expert testimony demonstrated the safety of the design and therefore bars recovery of the injured party.

The vast majority of states adopted the Restatement (Second) of Torts standard.¹⁰⁰ However, in 1998, the Restatement (Third) of Torts

93. RESTATEMENT (SECOND) OF TORTS § 402A cmt. g. (AM. LAW INST. 1978) (the seller of a product "is not liable when he delivers the product in a safe condition, and subsequent mishandling or other causes make it harmful by the time it is consumed").

94. 882 P.2d 298 (Cal. 1994).

95. *Id.* at 301.

96. *Id.* at 301-03.

97. *Id.* at 311.

98. *Id.* at 308.

99. *Soule v. Gen. Motors Corp.*, 882 P.2d 298, 308 (Cal. 1994).

100. Spencer H. Silverglate, *The Restatement (Third) of Torts Product Liability: The Tension*

revised the Restatement (Second) of Torts standard concerning design defects and set forth a different standard known as the risk utility calculus.¹⁰¹ This standard requires plaintiffs to demonstrate the existence of a reasonable alternative design when proving a design defect.¹⁰² Under this standard, the evidence must show that the suggested alternative is not only technically feasible but is also feasible in terms of cost and the overall operational design of the product.¹⁰³ The plaintiff must prove that such a reasonable alternative was, or reasonably could have been, available at the time of sale or distribution.¹⁰⁴ Consequently, under the Restatement (Third), if the plaintiff is unable to demonstrate a reasonable alternative design that would eliminate the product's risk, and would be practicable in terms of cost and overall design, then the product is not defective.¹⁰⁵ Subsection (b) of the Restatement (Third) specifically rejects the consumer expectations test, because it does "not take into account whether the proposed alternative design could be implemented at reasonable cost, or whether an alternative design would provide greater overall safety."¹⁰⁶

The risk-utility test is often confusing and can be very difficult to apply.¹⁰⁷ Further, even when a risk-utility test is employed, jurors can often be hostile to the concept of balancing risks with benefits.¹⁰⁸ This is only exacerbated for plaintiffs in design defect cases, because courts often require proof of an alternative design, which can seriously impede a plaintiff's case.¹⁰⁹ Additionally, "[w]hen a defendant demonstrates that its product design was the safest in use at the time of sale, it may be difficult for the plaintiff to prove that an alternative design could have been practically adopted."¹¹⁰

Between Product Design and Product Warnings, 75 FLA BAR J. 11 (2001), <https://www.floridabar.org/divcom/jn/jnjournal01.nsf/Author/724E6E593279D39085256B0B00560F54>.

101. RESTATEMENT (THIRD) OF TORTS: CATEGORIES OF PROD. DEFECT § 2(b) (AM. LAW INST. 1998).

102. *Id.*

103. *Wilson v. Piper Aircraft Corp.*, 577 P.2d 1322, 1327 (Or. 1978) (en banc).

104. RESTATEMENT (THIRD) OF TORTS § 2 cmt. d.

105. *Id.*

106. *Id.* at cmt. g.

107. See David G. Owen, *Risk-Utility Balancing in Design Defect Cases*, 30 U. MICH. J.L. REFORM 239, 243 (1997).

108. See W. Kip Viscusi, *Corporate Risk Analysis: A Reckless Act?*, 52 STAN. L. REV. 547, 563 (2000).

109. See, e.g., *Whitted v. Gen. Motors Corp.*, 58 F.3d 1200, 1206 (7th Cir. 1995); *Williams v. Bennett*, 921 So. 2d 1269, 1274-77 (Miss. 2006); *Smith v. Keller Ladder Co.*, 645 A. 2d 1269, 1271-72 (N.J. Super. Ct., App. Div. 1994).

110. RESTATEMENT (THIRD) OF TORTS § 2 cmt. d.

ii. *Claims Brought Under a Negligence Theory*

As an alternative to strict product liability, plaintiffs may also attempt to hold the car manufacturer or owner liable under a negligence theory. Negligence is defined by the Restatement (Second) of Torts as “conduct which falls below the standard established by law for the protection of others against unreasonable risk of harm.”¹¹¹

For a successful negligence claim, the plaintiff has to prove four elements by a preponderance of the evidence: (1) duty, (2) breach, (3) causation, and (4) harm.¹¹² The court in *Blyth v. Proprietors of the Birmingham Waterworks*¹¹³ held, “[n]egligence is the omission to do something which a reasonable man, [sic] guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man [sic] would not do.”¹¹⁴ A successful “cause of action in negligence requires proof that the defendant failed to exercise ordinary care and that the act or omission complained of was the cause of the plaintiff’s injury.”¹¹⁵ Courts have defined ordinary care to include an element of foreseeability.¹¹⁶

Not all injuries give rise to a claim of negligence. In *Adams v. Bullock*,¹¹⁷ the defendant, a trolley company, was sued for negligence when a twelve-year-old boy was shocked and burned by a swinging wire that was hung under a bridge.¹¹⁸ The court found that the defendant took care to ensure that no individual standing on the bridge or even leaning over the bridge could reach the wire, and only by some extraordinary causality, outside the purview of foreseeability, would make the wire dangerous.¹¹⁹ The court concluded that the trolley company should not be liable for failing to foresee such an unpredictable event.¹²⁰ As a result, for a party to be liable for negligence, the harm caused must have been reasonably foreseeable.¹²¹

When an individual causes an accident, he or she can be held liable for his or her negligent driving. More specifically, “[a] driver is negligent if he operates a vehicle at a greater speed than will permit him to bring it

111. RESTATEMENT (SECOND) OF TORTS: STATEMENT OF THE ELEMENTS OF A CAUSE OF ACTION FOR NEGL. § 281 (AM. LAW INST. 1965); see RESTATEMENT (SECOND) OF TORTS: NEGL. DEFINED § 282 (AM. LAW INST. 1965).

112. RESTATEMENT (SECOND) OF TORTS § 281.

113. 156 Eng. Rep. 1047 (1856).

114. *Id.* at 1049.

115. *Fisher v. Cleveland Punch & Shear Works*, 280 N.W.2d 280, 283 (Wis. 1979).

116. *Id.*; *Greiten v. La Dow* 235 N.W.2d 677, 685 (Wis. 1975).

117. 125 N.E. 93 (N.Y. 1919).

118. *Id.*

119. *Id.* at 93-94.

120. *Id.*

121. *Id.*

to a stop within the distance between his motor vehicle and a discernible object obstructing his path or line of travel.”¹²² In *Johnson v. Phillips*,¹²³ the court found the driver negligent for rear-ending the plaintiff’s vehicle.¹²⁴ The court held that drivers have a duty to exercise reasonable care under the circumstances to avoid an accident.¹²⁵ Drivers are constantly creating instances that warrant a finding of negligence. For example, when a driver causes an accident because he or she failed to stop,¹²⁶ was exhibiting excessive speed, failed to apply the brakes,¹²⁷ and was talking on the cell phone¹²⁸ all constitute negligence.

It is reasonable to assume that a party involved in an accident with an autonomous vehicle will seek to recover not only from the vehicle owner but also from the car manufacturer.¹²⁹ There are two competing negligence theories that could arguably allow such a claim. The first comes from *Evans v. General Motors Corp.*,¹³⁰ in which the court held that the manufacturer was not liable because the “intended purpose of an automobile does not include its participation in collisions with other objects, despite the manufacturers ability to foresee the possibility that such collision may occur.”¹³¹ The court went on to hold that “[a] manufacturer is not under a duty to make his automobile accident-proof or fool-proof.”¹³² Several courts have applied the *Evans* holding and found “that an automobile manufacturer has no duty to design the vehicle so as not to increase unreasonably the risk of injury following a collision.”¹³³

The second, and more widely followed theory gains its foundations

122. *Norris v. Ohio Standard Oil Co.*, 433 N.E.2d 615, 618 (Ohio 1982) (Brown J., dissenting) (quoting another source).

123. 690 N.Y.S.2d 545 (N.Y. App. Div. 1999).

124. *Id.* at 547-48.

125. *Id.* at 547; see *Mart v. Hill*, 505 So. 2d 1120, 1123 (La. 1987) (imposing liability on the driver when he caused an accident).

126. See *People v. Hickox*, 751 P.2d 645, 646 (Colo. App. 1987) (a semi-tractor driver’s inability to stop constituted simple negligence).

127. See *Red Top Taxi Co v. Snow*, 452 S.W.2d 772, 773-74 (Tex. App. 1970) (holding that a failure to stop at a stop sign, excessive speed, and failure to apply the brakes, all constituted negligent actions by the defendant).

128. See *Progressive Am. Ins. Co. v. Starling*, 57 Va. Cir. 110, 114 (Va. Cir. Ct. 2001) (finding that tuning the radio or talking on the cell while driving can constitute negligent actions).

129. Plaintiffs’ attorneys will encourage injured plaintiffs to seek recovery against larger companies that have more money also referred to as the “deep-pocket” defendants. For a discussion of how prevalent this is within the current tort system, see Robert MacCoun, *Is There a “Deep-Pocket” Bias in the Tort System? The Concern Over Biases Against Deep-Pocket Defendants*, 130 RAND 4 (1993), https://www.rand.org/content/dam/rand/pubs/issue_papers/2006/IP130.pdf (examining whether deep-pocket biases exist and showing that there are deep-pocket biases in decisions by plaintiffs’ attorneys in terms of which cases to pursue).

130. 359 F.2d 822 (7th Cir. 1966).

131. *Id.* at 825.

132. *Id.* at 824.

133. See generally *McClung v. Ford Motor Co.*, 333 F. Supp. 17 (S.D.W. VA. 1971), *aff’d per*

from the holding in *Volkswagen of America, Inc. v. Young*.¹³⁴ In *Young*, the court held that under the traditional principles of negligence, an automobile manufacturer is liable for “a defect in design which the manufacturer could have reasonably foreseen would cause or enhance injuries on impact, which is not patent or obvious to the user, and which in fact leads to or enhances the injuries in an automobile collision.”¹³⁵ The court reiterated that the vehicle manufacturer does not have to design a crash-proof car, but rather must use only “reasonable care in the design of [a] vehicle [in order] to avoid subjecting [a] user to an unreasonable risk of injury . . . [in] a collision.”¹³⁶ This duty of reasonable care in the design of the vehicle is supported by sound public policy that manufacturers should use reasonable care in designing and producing vehicles so as to reduce and eliminate any unreasonable risk of foreseeable injury.¹³⁷

Regardless of the theories used to support a claim of liability, the question of who is the liable party will have to be assessed every time an autonomous vehicle is involved in an accident. Initially, it appears that there are only two potential parties, i.e. the manufacturer and/or the owner. Such a simplistic view, however, ignores the real possibility that the autonomous vehicle itself could be treated the same as a human driver, and thus be held liable for the accident. By analogizing the vehicle to a person, such as a business entity, it is possible to assign liability on the party, in this instance the algorithm that actually caused the accident.

D. GRANTING CORPORATIONS PERSONHOOD

i. History of Corporate Personhood

For over a century and a half, the law has recognized non-human entities as persons. Corporations are one example of a non-human entity that enjoys this designation of personhood under the law. In *Trustees of Dartmouth College v. Woodward*,¹³⁸ Chief Justice Marshall noted, “a corporation is an artificial being, invisible, intangible and existing only in contemplation of law . . . it possesses only those properties which the charter of its creation confers upon it . . . the most important are immortality, and . . . individuality . . . and may act as a single individual.”¹³⁹ Not long thereafter, the Court in *Santa Clara County v. Southern Pacific Rail-*

curiam 472 F.2d 240 (4th Cir. 1973); *Shumard v. Gen. Motors Corp.*, 270 F. Supp. 311, 314 (S.D. Ohio 1967); *Gen. Motors Corp. v. Howard*, 244 So. 2d 726, 728 (Miss. 1971).

134. 321 A.2d 737 (Md. 1974).

135. *Id.* at 745.

136. *Id.* at 746.

137. *Larsen v. Gen. Motors Corp.*, 391 F.2d 495, 502-03 (8th Cir. 1968).

138. 17 U.S. (4 Wheat.) 518 (1819).

139. *Id.* at 636.

road Co.,¹⁴⁰ before the oral argument commenced, expressed the opinion that corporations are “persons” within the meaning of the Fourteenth Amendment.¹⁴¹

Since *Trustees of Dartmouth College*, corporations have been treated as artificial persons and today a typical corporation holds property, enters into contracts, executes conveyances and conducts litigation in a legal capacity separate and distinct from its shareholders.¹⁴² As such, corporations are entitled to many of the protections and guarantees that are afforded to natural persons.¹⁴³ Corporations enjoy the protection of the provisions contained within the Fourth, Fifth, and Fourteenth Amendments, such as the Fourth Amendment’s protection against unlawful searches and seizures of its property,¹⁴⁴ and the Fifth’s Amendment’s protection against double jeopardy.¹⁴⁵ As a result of these decisions granting corporations personhood, the Supreme Court has consistently refused to reconsider the Fourteenth Amendment protection of corporate personhood.¹⁴⁶

Courts have established that a corporation is a legal entity that is separate and distinct from the shareholders or members who own it.¹⁴⁷ In addition, case law sheds light on the fact that the law adapts to chang-

140. 118 U.S. 394 (1886).

141. See *Santa Clara Cty. v. S. Pac. R.R. Co.*, 118 U.S. 394, 396 (1886) (Waite, C.J., commenting prior to oral argument) (noting that the court did not wish to hear any argument on the question of whether the Fourteenth Amendment applied to corporations, because the Court was of the opinion already that it did apply).

142. JAMES D. COX & THOMAS LEE HAZEN, *CORPORATIONS* 3-4 (2nd ed. 2003).

143. See *NAACP v. Button*, 371 U.S. 415, 428 (1963) (holding that corporations enjoy the protections embodied in the first amendment); *Ross v. Bernhard*, 396 U.S. 531, 533-34 (1970) (finding that a corporation is entitled to sue and be sued, and a corporation carried the right to a jury trial as proscribed by the Seventh Amendment); *Van Allen v. Assessors*, 70 U.S. 573, 584 (1865) (holding that “the corporation is the legal owner of all of the property. . . and . . . can deal with the corporate property as absolutely as a private individual can deal with his own”); *Bank of Augusta v. Earle*, 38 U.S. 519, 587 (1839) (concluding that a contract made by a corporation is a contract of the legal entity, not the contract of the individual members); *San Mateo v. S. Pac. R.R.*, 13 F. 722, 740-44 (C.C.D. Cal. 1882) (arguing that it is well established “that whenever a provision of the constitution, or of a law, guarantees to persons the enjoyment of property, or affords to them means for its protection, or prohibits legislation injuriously affecting it, the benefits of the provision extend to corporations”); *Minneapolis & St. Louis R.R. v. Beckwith*, 129 U.S. 26, 28 (1889) (finding “that corporations can invoke the benefits of provisions of the Constitution and laws which guarantee to persons the enjoyment of property, or afford to them the means for its protection, or prohibit legislation injuriously affecting it”).

144. *G. M. Leasing Corp. v. United States*, 429 U.S. 338, 353 (1997); See *v. City of Seattle*, 387 U.S. 541, 543 (1967).

145. *United States v. Martin Linen Supply Co.*, 430 U.S. 564, 565-67 (1997).

146. See *Wheeling Steel Corp. v. Glander*, 337 U.S. 562, 574 (1949) (noting that it has consistently been held that the Fourteenth Amendment “assures corporations equal protection of the laws”).

147. See COX & HAZEN, *supra* note 142, at 3.

ing tides within American economic, social and politic culture. In order to fulfill the economic reality of the industrial revolution and expansion of capital within the U.S., corporate law progressed in a way that enabled corporations to be treated as separate legal entities, “persons”, under the law.¹⁴⁸ The industrial revolution brought with it a need for more capital for businesses, more public investment within private corporations, and a significant rise in financial scandals.¹⁴⁹ As a result, corporate law adapted to protect its investors, as well as to promote certain interests.¹⁵⁰

ii. *Choice of Form*

In creating a business, owners of the company have the option of choosing a variety of forms: corporations, sole proprietorships, partnerships, limited partnerships, and limited liability companies.¹⁵¹ After deciding which corporate form to choose, the owners next decide in which state they would like to incorporate the business. In forming a corporation, at least one individual must act as the incorporator.¹⁵² He or she is solely responsible for filing the Articles of Incorporation.¹⁵³ An incorporator can chose which state to incorporate the business depending on which state’s corporation statute is more appropriate for the purposes of the business.¹⁵⁴ While every state has a corporation statute, states differ on the requirements and restrictions of corporations.¹⁵⁵ The Uniform Partnership Act is one example of a statute that provides states with guidance on how to devise laws about partnerships.¹⁵⁶ Under the Uniform Partnership Act, a “person” is defined as “an individual, corporation . . . instrumentality, or any other legal or commercial entity.”¹⁵⁷

The allocation of liability is one of the most important factors when deciding which corporate form to choose.¹⁵⁸ One of the most common

148. ARTHUR R. PINTO & DOUGLAS M. BRANSON, UNDERSTANDING CORPORATE LAW 5 (3rd ed. 2009).

149. *Id.*

150. *Id.*

151. *Id.*

152. *Id.* at 13-14.

153. ARTHUR R. PINTO & DOUGLAS M. BRANSON, UNDERSTANDING CORPORATE LAW 13-14 (3rd ed. 2009).

154. *Id.* at 14.

155. See DEL. CODE ANN. TIT. 8, § 398 (2016); ARIZ. REV. STAT. § 10-2202 (2016).

156. NATIONAL CONFERENCE OF COMMISSIONERS ON UNIFORM STATE LAWS, UNIFORM PARTNERSHIP ACT (1997), http://www.uniformlaws.org/shared/docs/partnership/upa_final_97.pdf.

157. WILLIAM T. ALLEN ET AL., COMMENTARIES AND CASES ON THE LAW OF BUSINESS ORGANIZATION 59-60 (2012).

158. See Ryan Shaening Pokrasso, *Factors to Consider When Choosing a Business Entity*, ELEVATE (Nov. 15, 2014), <http://legalelevation.com/incorporation/choosing-business-entity/>; see also *Factors to Consider When Choosing a Business Structure*, FIN. PLAN. & MGMT. CTR., INC., <http://www.fpmc.com/files/17187/factors.pdf> (last visited Mar. 15, 2016) (providing another ex-

forms is a limited liability company (“LLC”).¹⁵⁹ An LLC is not restricted as to the number of shareholders¹⁶⁰ and it “is a separate juridical person and as such, is liable for its own debts.”¹⁶¹ This potentially provides protection for the shareholders, the owners of the company, from creditors who may in a lawsuit against the LLC try to acquire the shareholder’s home, bank account, and other personal assets.¹⁶²

While the shareholders are typically protected, there are instances when it is appropriate to pierce the corporate veil, and as a result impose personal liability on the individual shareholders of an LLC.¹⁶³ This is typically permitted only when it is necessary “to prevent fraud or achieve equity.”¹⁶⁴ Unless the board is attempting to further their own benefits rather than the corporation’s business, a court will not allow a plaintiff to reach the boards assets.¹⁶⁵ In *Walkovsky v. Carlton*, the court determined the appropriate conditions under which courts may pierce the corporate veil.¹⁶⁶ The owner of several taxi cabs, Carlton, had vested the ownership of his taxi fleet in many corporations owning only one or two cabs in an attempt to shield himself from liability.¹⁶⁷ The plaintiff was injured by one of the taxicabs and he attempted to impose liability on Carlton, the defendant, because one of the taxicab’s liability insurance did not adequately enable him to recover.¹⁶⁸ The court held that the “corporate form may not be disregarded merely because the assets of the corporation, together with the mandatory insurance coverage of the vehicle which struck the plaintiff, are insufficient to assure him the recovery sought.”¹⁶⁹ The court went on to say “[t]he law permits the incorporation of a business for the very purpose of enabling its proprietors to escape personal liability.”¹⁷⁰

In cases when the corporate veil is not pierced, the court will enforce various procedures to punish a corporation for failing to meet the requirements under the state statute. For example, in *Bryant Construction Co. v. Cook Construction Co.* the court held that a corporation that had

ample of a list that includes liability as one of the main factors to consider when choosing a business form).

159. See PINTO & BRANSON, *supra* note 148, at 5-12.

160. *Id.* at 11.

161. See PINTO & BRANSON, *supra* note 148, at 35.

162. *Id.* at 7.

163. 223 N.E.2d 6, 7 (N.Y. 1966).

164. *Int'l Aircraft Trading Co. v. Mfrs. Tr. Co.*, 79 N.E.2d 249, 252 (N.Y. 1948).

165. See PINTO & BRANSON, *supra* note 148, at 39-40.

166. 223 N.E.2d 6, 7 (N.Y. 1966).

167. See *id.* (creating several different corporations by incorporating each taxi with one asset).

168. *Id.*

169. *Id.* at 9.

170. *Id.* at 7.

failed to pay annual franchise fees did not cease to exist but was only suspended pursuant to Mississippi law.¹⁷¹ Suspension meant that, “though it . . . exists, [the suspended corporation] has been deprived of all power by the state.”¹⁷² As a result, the corporation’s right to perform any right acquired by its status as a corporation was also suspended.¹⁷³ Additionally, if a company fails to fulfill its requirements under state law, the state may find the company not in “good standing.”¹⁷⁴

III. ANALYSIS

This Part begins by examining which tort standard should be used when an autonomous vehicle causes an accident. Specifically, this Part explains that products liability’s application is problematic because it will either significantly inhibit an injured plaintiff from recovering or it will impose liability on autonomous vehicle manufacturers in most situations. Additionally, the proliferation of product liability claims could potentially deter innovation, increase the cost of litigation, and may allocate liability on an improper party.

Asserting negligence, on the other hand, is the proper tort standard; however, the current argument postulating that liability would be placed on the car manufacturer or owner is not appropriate. Rather, this Part will illustrate that the autonomous vehicle itself should be the party that bears liability in the event of an injury. Parties will likely recover more efficiently, under a negligence standard, when liability is placed on the vehicle itself. Once it has been accepted that an autonomous vehicle is not a product in the ordinary sense and that negligence is the appropriate standard, it becomes necessary to provide a foundation upon which a plaintiff can bring a suit against the vehicle. By analogizing these vehicles to corporations and LLCs, it is possible to grant them artificial personhood under the law. In doing so, a new special business entity is created, similar to an LLC, one in which the vehicle itself is the business, and its sole asset is the vehicle.

171. 518 So. 2d 625 (Miss. 1987).

172. *Id.* at 629.

173. Bryant Constr. Co. v. Cook Constr. Co., *supra* note 171, at 629.

174. See *Certificate of Good Standing*, INVESTORWORDS, http://www.investorwords.com/19261/certificate_of_good_standing.html (last visited Mar. 2, 2016) (defining certificate of good standing as, “a legal status conferred by a state on a company incorporated within its jurisdiction that allows it to conduct business legitimately”).

A. ASSIGNMENT OF LIABILITY IS INAPPROPRIATE UNDER BOTH
PRODUCT LIABILITY AND NEGLIGENCE STANDARDS

i. *Product Liability*

a. An Autonomous Vehicle is Not a Typical Product

A power-saw, microwave, lawnmower, and tractor, are all examples of deterministic products¹⁷⁵ that have a predesigned outcome; they do not make decisions on their own, nor do they factor in the surrounding environment to influence their actions. An autonomous vehicle is not a deterministic product. To be clear, the brakes, airbags, and seatbelts are all deterministic products that make up the vehicle, but the element that distinguishes an autonomous vehicle from a non-autonomous vehicle is the programmed algorithm that enables it to drive. Even though an autonomous vehicle has been programmed with rules and solutions to millions of different scenarios, it is not a deterministic product because the autonomous vehicle still factors in the surrounding area and makes a decision as to the appropriate¹⁷⁶ response through the use of probabilistic calculations and inductive reasoning.¹⁷⁷

Autonomous vehicles are not products for purposes of product liability law because they can make independent decisions without human intervention.¹⁷⁸ While it is true that a human may be present in the vehicle, his or her involvement in vehicle's decision-making capabilities is arguably de minimis.¹⁷⁹ Aside from turning the car on and then inputting the final destination, these vehicles make decisions on their own. They decide how to get from point A to point B and everything that could happen in between is left open for the car to decide how to respond.¹⁸⁰

The vehicle's algorithm does not contain just a simple equation that

175. Dinesh Thakur, *Differentiate Between Deterministic and Probabilistic Systems*, COMPUTER NOTES BLOG, <http://ecomputernotes.com/mis/information-and-system-concepts/differentiate-between-deterministic-and-probabilistic-systems> (last visited Mar. 20, 2016) (explaining that "a deterministic system is one in which the occurrence of all events is know with certainty").

176. See *Monthly Report: Aug. 2015*, *supra* note 51 (commenting on the possibility that there will be situations that have not been conceived of yet when the car will be able to determine what the appropriate response should be).

177. Inductive reasoning is the process by which one begins solving the problem by testing solutions against one another, narrowing down the best solution. After testing thousands of solutions, the likelihood of finding a better solution is very small. This is the theory behind probabilistic calculations. See Norman Herr, *Activities for Inductive Reasoning*, CAL. STATE UNIV. NORTHRIDGE: REFERENCES AND RES. FOR SCIENCE TEACHERS, https://www.csun.edu/science/ref/reasoning/inductive_reasoning/inductive_reasoning.html (last visited Oct. 17, 2016).

178. See *FAQ*, *supra* note 28 (explaining that Google plans to create a car that will not need any human intervention).

179. *Id.*

180. See *id.* (noting that the only human intervention will be the push of a button telling the car where to go and to start).

can be modified for every scenario the vehicle may encounter. An equation has two known solutions;¹⁸¹ with an algorithm, the final solution is not known beforehand. Using algorithms, an autonomous vehicle operates on information that has been programmed within them, coupled with the information that the vehicle gathers from its surroundings.¹⁸² Even though these vehicles will be provided with solutions to several potential issues that may arise, the vehicles will not be programmed with a solution for every problem.¹⁸³ It will be virtually impossible for an autonomous vehicle manufacturer to conceive of every possible situation that may arise while driving. Thus, to be functional, these vehicles will need to have the ability to make decisions on their own.¹⁸⁴

Consequently, it is incorrect to view these vehicles as products in traditional sense. The autonomous vehicle manufacturer should not be held liable for an accident resulting from a decision that the vehicle has made. Moreover, the decision (or multiple decisions) that resulted in the accident does not necessarily mean there is a design defect. Rather, a feature of the vehicle, such as the algorithm, caused the accident. The law should not turn features into software glitches and consider them defective for purposes of strict liability and product liability law. If the law were to make features of these vehicles subject to product liability claims, the manufacturers would be required to conceive of every possible situation the vehicles might encounter prior to their release.¹⁸⁵ By treating autonomous vehicles as products, the law minimizes the significance of their independent decision-making capabilities. In fact, DMV spokeswoman Jessica Gonzalez, in response to Tesla's semi-autonomous features that raises their cars to a Level 2, stated that Level 3 or Level 4 cars would mean that the car itself is making the decisions.¹⁸⁶

181. See generally Eugene Miya, *Are Algorithms and Formulas Two Different, Mutually Exclusive Things? What is or isn't the Difference?*, QUORA (Sept. 9, 2013), <https://www.quora.com/Are-algorithms-and-formulas-two-different-mutually-exclusive-things-What-is-or-isnt-the-difference>; see C. Gaucherel et al., *Equation or Algorithm: Differences and Choosing Between Them*, 59 ACTA BIOTHEORETICA 67, 69-70, 75 (2011) (illustrating the differences between algorithms and equations, and finding that algorithms are complex codes that do not have specific rules and are used to solve a problem while equations are similar to formulas and without the exact rules and language do not work).

182. See *Monthly Report: Aug. 2015*, *supra* note 51, at 3 (explaining that these vehicles will process the information from its surrounding and then make a decision based on it).

183. *Id.* at 2.

184. *Id.* at 2-3.

185. See *Monthly Report*, GOOGLE SELF-DRIVING CAR PROJECT (July 2015) [hereinafter *Monthly Report: July 2015*], <https://static.googleusercontent.com/media/www.google.com/en/selfdrivingcar/files/reports/report-0715.pdf> (“[t]eaching a self-driving car to handle every possible situation it could encounter on the road is not feasible, as there’s an infinite number of possibilities. Instead, our technology gives it fundamental capabilities to respond correctly to unexpected situations as they happen. . .”).

186. See O'Brien, *supra* note 45.

b. Recovery Under Restatement (Second) of Torts is Nearly Impossible When the Autonomous Vehicle is Considered a Product

Even if an autonomous vehicle's algorithm is considered a product, an injured plaintiff will likely have a very difficult time recovering in jurisdictions that follow the Restatement (Second) of Torts. Accordingly, a plaintiff would likely claim that the accident was a result of the defective design in the vehicle's algorithm. In order to claim defective design, the injured party, using a consumer expectation test, would have to argue that the autonomous vehicle's algorithm was in a condition not contemplated by the user.¹⁸⁷ The plaintiff could use the holding of *Soule v. General Motors Corp.* and argue that the vehicle's algorithm failed to perform as expected in that particular instance.¹⁸⁸ However, this argument would likely not succeed because the minimum safety of the vehicle's algorithm is not within the common knowledge of ordinary individuals.¹⁸⁹ Additionally, the consumer expectations test is generally inappropriate for defects in complex technical and mechanical components.¹⁹⁰ An injured plaintiff would be forced to use a risk utility test instead.¹⁹¹ Notably, the court in *Soule* further explained that "an injured person is not foreclosed from proving a defect in the product's design simply because he cannot show that the reasonable minimum safety expectations of its ordinary consumers were violated."¹⁹² But where there are complex issues, this determination involves "technical issues of feasibility, cost, practicality, risk and benefit,"¹⁹³ and thus "the issue of design defect cannot fairly be resolved by standardless reference to the 'expectations' of an 'ordinary' consumer."¹⁹⁴

Autonomous vehicles are marketed as safer alternatives to non-autonomous vehicles; however, they are not marketed as collision-proof vehicles.¹⁹⁵ An ordinary person unfamiliar with the autonomous vehicle's

187. RESTATEMENT (SECOND) OF TORTS: SPECIAL LIAB. OF SELLER OF PROD. FOR PHYSICAL HARM TO USER OR CONSUMER § 402A cmt. g (AM. LAW. INST. 1965).

188. 882 P.2d 298, 307-08 (Cal. 1994).

189. *Id.* at 308 (finding that the consumer expectations test should be used in cases where people's common knowledge of the product permits a conclusion that the product's design violated minimum safety expectations).

190. *Consumer Expectations Test*, LEGAL INFO. INST., https://www.law.cornell.edu/wex/consumer_expectations_test (last visited Feb. 16, 2016).

191. For a further discussion on the issue, see *supra* notes 102-04 and accompanying text.

192. 882 P.2d at 308.

193. *Id.*

194. *Id.*

195. Kirsten Korosec, *Feds Try to Hit the Gas on Self-Driving Cars*, FORTUNE (Jan. 14, 2016, 5:31 PM), <http://fortune.com/2016/01/14/self-driving-car-laws/> ("The federal government sees the opportunity to reduce vehicle fatalities through the widespread deployment of autonomous vehicles.").

complex algorithm would not be able to reasonably expect how the vehicle should perform in every situation.¹⁹⁶ The injured party will have the difficult burden of proving that the particular design of the algorithm,¹⁹⁷ which he or she has a limited knowledge of, did not meet his or her expectations as an ordinary person.¹⁹⁸ This may be an insurmountable burden.

The consumer expectations test is also problematic for defendants because it does not allow for the defense that there was no other alternative design.¹⁹⁹ This presents a serious theoretical dilemma because it is conceivable that the accident was not foreseeable and the design of the algorithm might not be defective at all. Further, there might not have been another way to design the algorithm to prevent the accident.²⁰⁰

Simply put, the consumer expectations test is unsatisfactory because it could lead to two negative results. First, it could be almost impossible for injured plaintiffs to recover because of their inability to prove that the autonomous vehicle did not meet their common knowledge of the complex algorithm. Second, the courts could find in favor of plaintiffs, thus resulting in autonomous vehicle manufacturers facing liability for the majority of accidents caused by the vehicle, without regard to whether it was even possible to produce a safer alternative design or any contrary expert opinion as to the merits of the algorithm's design.²⁰¹

c. Are Autonomous Vehicles Complex Technical and Mechanical Products?

It has been argued that for complex technical and mechanical cases the risk utility test is more appropriate than the consumer expectations test.²⁰² In conducting the risk utility calculus in a jurisdiction that has adopted the Restatement (Third) of Torts, an injured plaintiff must show that there is a reasonable alternative design in order to maintain a strict liability claim.²⁰³ In proving a reasonable alternative design, the injured

196. Some courts have held that instead of the consumer expectations test, the reasonable alternative design test should be used in cases in which the danger presented by the product was not obvious to the consumer nor was the mechanism simple. *See Hansen v. Baxter Healthcare Corp.*, 764 N.E.2d 35, 45 (Ill. 2002).

197. RESTATEMENT (SECOND) OF TORTS: SPECIAL LIAB. OF SELLER OF PROD. FOR PHYSICAL HARM TO USER OR CONSUMER § 402A cmt. g (AM. LAW. INST. 1965).

198. *Soule*, 882 P.2d at 308.

199. *Id.*

200. RESTATEMENT (THIRD) OF TORTS: PRODS. LIAB. § 2 cmt. g (AM. LAW. INST. 1998) (explaining why it rejected the consumer expectations test when it modified products liability law).

201. *See Soule*, 882 P.2d at 308 (finding that if the minimum safety of the vehicle is within the common knowledge of ordinary individuals, then the defendants are not allowed to use expert opinion to defend the merits of the design).

202. *See id.* at 310.

203. RESTATEMENT (THIRD) OF TORTS: § 2 cmt. d.

plaintiff is thus required to show that there is a better way to design the product.²⁰⁴ To prove that there is a reasonably alternative design, the plaintiff will have to hire an expert, who not only must show that the algorithm was designed poorly, but that a new alternative design is possible in terms of cost and overall functionality.²⁰⁵ While the law does not require the plaintiff to actually create the better design, judges often will not allow the plaintiff to recover if he or she has not shown any changes to the existing design.²⁰⁶

It will be exceedingly difficult for a plaintiff to find a reasonably alternative design for the vehicle's algorithm. To be clear, it is not the entire algorithm that would be at issue, but only the small aspect of the algorithm that caused the accident.²⁰⁷ An expert will have to examine the entire vehicle's complex computer code to determine where the error originated from, and then propose a solution to it.²⁰⁸ This difficulty is exacerbated by the extraordinary cost of experts in product liability litigation.²⁰⁹ Consequently, "many plaintiffs are turned away because, even if they were to recover, the prospective award would not cover the expense of litigating the claim."²¹⁰

Asserting that the algorithm was a defective product would place liability on the vehicle manufacturers.²¹¹ Narrowly, this approach rests upon the assumption that an accident that occurs while the vehicle is in autonomous mode is the result of a defect with the algorithm that led the vehicle to cause an accident.²¹² However, not only does this approach ignore the fact that some accidents might be inevitable and therefore not the fault of the manufacturer nor the algorithm, but more importantly, it

204. See *Wilson v. Piper Aircraft Corp.*, 577 P.2d 1322, 1327 (1978) (articulating that the alternative design likely has to not only fix the issue but be a more practical design).

205. See *id.* (finding that in order to prove a design defect it is required to offer evidence of that "the suggested alternatives are not only technically feasible but also practicable in terms of cost and the over-all design and operation of the product").

206. See *Gen. Motors Corp. v. Sanchez*, 997 S.W.2d 584, 592, 598 (Tex. 1999) (holding that the plaintiffs did not have to build a new automobile transmission, but had to prove that one was capable of being developed); but see *Dhillon v. Crown Controls Corp.*, 269 F.3d 865, 871 (7th Cir. 2001) (finding that the testimony of the expert witness was not sufficient since no tests were done to determine where it was both economically feasible and/or just as safe or safer than the previous model).

207. See *Monthly Report: Feb. 2016*, *supra* note 47 (providing an example in which a small aspect of the self-driving car's software needed to be refined to prevent another similar accident from occurring).

208. This will be a very expensive and extensive examination especially since Google, has been refining their software to remove any possibilities of errors within it.

209. See *Garza*, *supra* note 12, at 612.

210. *Id.*

211. See *Gurney*, *supra* note 12, at 271 (arguing that products liability should be used when the autonomous technology is the reason for the accident).

212. *Id.* at 271-72.

also ignores the possibility that there may not be an alternative way to design the algorithm.²¹³ Moreover, it does not allow the vehicle manufacturer to argue that they took every precaution possible to avoid the accident.²¹⁴

Product liability law simply is not an appropriate means of addressing liability for accidents involving autonomous vehicles. As illustrated above, both Restatements present immense difficulties for both the manufacturer and, more importantly, the injured parties. Finally, notwithstanding the potentially divergent results occurring in different jurisdictions, strict product liability would still not be the appropriate doctrine because these vehicles will make independent decisions and as a result are not products for purposes of product liability law.

d. Proponents of Product Liability

Proponents of using the product liability approach commonly argue that the primary purposes of product liability under the doctrine of strict liability is to ensure that manufacturers put safe products on the market and have an incentive to update and improve their products by holding them liable for any harm caused by defective products. The former goal, however, is still achievable by holding autonomous technology manufacturers liable for a defective product under the doctrine of negligence. In fact, this goal may be more achievable because a plaintiff is not required to specify the exact design defect in a claim for negligence.²¹⁵ Furthermore, the idea that autonomous technology manufacturers will not have any incentive to continue to update and improve the algorithm unless they were held strictly liable²¹⁶ is unpersuasive, and fails to recognize that these manufacturers will constantly improve the technology within these vehicles to encourage more people to purchase them.²¹⁷ Notably, autonomous vehicles will be regulated and required to meet certain safety standards set forth by the NHTSA.²¹⁸ Finally, some proponents of using a

213. The likelihood of manufacturers facing liability more frequently is only increased because the consumer expectations test does not allow for the possibility of expert testimony advocating for the merits of the design. See *Soule v. Gen. Motors Corp.*, 882 P.2d 298, 308 (1994).

214. RESTATEMENT (SECOND) OF TORTS: SPECIAL LIAB. OF SELLER OF PROD. FOR PHYSICAL HARM TO USER OR CONSUMER § 402A (AM. LAW. INST. 1965).

215. See DAN B. DOBBS, *THE LAW OF TORTS* 323 (West 2000).

216. See Gurney, *supra* note 12, at 272 (arguing that it is necessary to hold these autonomous vehicle manufacturers liable because that will ensure that they are putting only safe products on the market, and that they are constantly trying to make those products even safer).

217. See *Monthly Report: Feb. 2016*, *supra* note 47 (illustrating that after an accident, Google's technicians ran thousands of variations of the accident to ensure that the vehicle will be better prepared in the future).

218. For an example of current safety standards and regulations that are set forth by the National Highway Traffic Safety Administration, see FED. MOTOR VEHICLE SAFETY STANDARDS, 49 C.F.R. § 571 (2015).

strict products approach may suggest that a manufacturer could simply adjust the price of the self-driving cars “to compensate them for the cost of liability.”²¹⁹ Unfortunately, this may result in these vehicles being too expensive for consumers and ignores the threshold issue of allocating liability on the proper party.

ii. Holding the Driver or Vehicle Manufacturer Liable Under Negligence

Accepting the proposition that the strict product liability law is an insufficient standard for plaintiffs to use when attempting to recover when an autonomous vehicle causes an accident, the other alternative theory is to hold the autonomous vehicle manufacturer or owner of an autonomous vehicle liable under negligence. Using negligence as the correct standard, the next question is whether it is appropriate to assign liability on the vehicle manufacturer or owner of the vehicle.

Currently, an injured plaintiff could file a claim against the owner of an autonomous vehicle for negligence if their autonomous vehicle caused the accident. Such a claim would assign liability to the owner because the owner breached his or her duty to eliminate any unreasonable risk of foreseeable injury.²²⁰ However, such a claim is incorrect because the owner of the autonomous vehicle functions no more than a mere passenger; he or she does not have control over the vehicle’s actions. Courts have consistently held that the driver’s negligence cannot be imputed back on a passenger, even if the passenger is the owner of the vehicle.²²¹ Therefore, since the autonomous vehicle is actually the driver, the owner should not face liability for the negligence of the vehicle.

It does not seem plausible to place a duty of reasonable care on the owner of the vehicle, rendering him or her negligent, for the actions of the autonomous vehicle that were outside the owner’s control. The owner of the autonomous vehicle is not in a position to remove or eliminate unreasonable risks of foreseeable injury. As courts have held, there needs to be an element of foreseeability with negligence cases.²²² Unless the driver modified the vehicle in such a way as to inhibit its ability to

219. See FED. MOTOR VEHICLE SAFETY STANDARDS, *supra* note 218.

220. *Larsen v. Gen. Motors Corp.*, 391 F.2d 495, 502-03 (8th Cir. 1968).

221. See *Reeves v. Harmon*, 475 P.2d 400, 403 (Okla. 1970) (quoting another source) (“[w]here action is brought by the master or principal against the driver, the driver’s negligence is not imputed to the owner or principal merely because of his presence in the automobile at the time of the accident”); see also *Rader v. Fleming*, 429 P.2d 750, 752-53 (Okla. 1967).

222. *Larsen*, 391 F.2d at 502-03; *Volkswagen of Am., Inc. v. Young*, 321 A.2d 737, 745-46 (Md. 1974); see *McClung v. Ford Motor Co.*, 333 F. Supp. 17, 20 (S.D.W. Va. 1971), *aff’d per curiam*, 472 F.2d 240 (4th Cir. 1973); *Shumard v. Gen. Motors Corp.*, 270 F. Supp. 311, 313-14 (S.D. Ohio 1967).

function properly, he or she cannot be held liable for negligence.²²³ The owner of the autonomous vehicle is the wrong party to sue because he or she did not design nor change the vehicle's algorithm.²²⁴ To be sure, the owner with a very limited understanding of the algorithm and how it functions is in no position to foresee potential accidents thus, he or she does not have an ability to prevent against their occurrence.²²⁵

If the vehicle owner is not the appropriate party, plaintiffs will most likely attempt to file a claim against the autonomous vehicle manufacturer. Holding the autonomous vehicle manufacturer liable is also problematic, because, while they have programmed the vehicle, they likely adopted all reasonable precautions to minimize any foreseeable risk of injury.²²⁶ The vehicle manufacturer will be able to demonstrate that they attempted to reduce any unreasonable risk of injury by testing their vehicles to handle absurd and highly unlikely situations.²²⁷ Autonomous vehicle manufacturers place their autonomous vehicles in as many difficult situations as possible and teach the vehicles how to solve the issues,²²⁸ thus satisfying the standard that the manufacturers must eliminate any unreasonable foreseeable injury. Moreover, simply because vehicle did not operate as safely as possible, does not support the conclusion that the manufacturer's method lacked ordinary care.²²⁹ The autonomous vehicle

223. *E.g.*, *Young*, 321 A.2d at 745. To be clear, by placing liability on the vehicle itself, autonomous vehicle manufacturers or owners are not completely absolved from liability. If the injuries to another person were the result of a negligent condition created by some other entity such as the car manufacturer, or owner both negligent actors may be liable. Under the doctrine of contributory negligence, an owner or autonomous vehicle manufacturer could face liability for their breach of duty. It is conceivable for a situation to arise in which the autonomous vehicle manufacturer was negligent in their production of the vehicle, or the owner was negligent in their handling and maintenance of the vehicle. For example if the owner of the autonomous vehicle modified the vehicle in a way that fundamentally altered its ability to drive properly, then the owner may also be contributorily negligent. The same would be true if for example the autonomous vehicle manufacturer negligently installed the brake pads or air bags. *Id.* at 744-45.

224. Amy Levine, *Can I be Held Negligent if My Self-Driving Car Causes an Accident?*, INS. J. (Apr. 20, 2015), <http://www.insurancejournal.com/magazines/features/2015/04/20/364411.htm> (articulating that if the law were to hold an owner of an autonomous vehicle liable for negligence, "[i]t would be akin to saying that Driver 1 who recognizes the careless driving of Driver 2 would be negligent for Driver 2's behavior because Driver 1 acknowledged the dangerous behavior and did nothing to stop it").

225. Additionally, the ownership of a self-driving vehicle does not automatically confer liability on the owner.

226. *Larsen*, 391 F.2d at 502-03; *Young*, 321 A.2d at 745.

227. A recent example of an unpredictable situation that Google's self-driving car handled flawlessly was when a wild turkey sprinted in front of the vehicle, followed by a woman in a wheelchair wielding a broom, chasing the turkey. Alexis C. Madrigal, *Google's Self-Driving Cars Are Smart, but Can They Beat Murphy's Law?*, FUSION (Oct. 1, 2015, 1:03 PM), <http://fusion.net/story/206461/google-self-driving-robocar-prevent-car-crashes/>; see also *Monthly Report: Aug. 2015*, *supra* note 51.

228. *Id.*

229. For another reason why it might be very difficult for injured parties to recover when

manufacturer should not be liable when an autonomous vehicle is involved in an accident that was unpredictable, because such an accident would be beyond the scope of what a reasonable person could foresee.²³⁰ Accordingly, a claim against an autonomous vehicle manufacturer under the negligence standard will likely fail.

A plaintiff may also attempt to claim that the manufacturer negligently failed to warn about the harm of driving in an autonomous vehicle. However, “where the danger is obvious and known to the user, no warning is necessary and no liability attaches for an injury occurring from the reasonable hazards attached to the use of chattels or commodities.”²³¹ Autonomous vehicle manufacturers probably would not be held liable under this allegation because owners are aware of the potential danger that may result in driving in any vehicle, autonomous or not,²³² and by driving they assumed the risk of potentially being involved in an accident. Additionally, the car manufacturer would not have a duty to warn about very specific situations because it is very likely that these situations will be unpredictable.

In sum, there are multiple disadvantages in holding the autonomous vehicle manufacturer or owner liable. The first disadvantage of holding the autonomous vehicle’s manufacturer liable is that it could significantly deter development and innovation. It is inevitable that accidents will occur, and it is highly probable that manufacturers will not be willing to build these vehicles if courts hold manufacturers liable even though they took every precaution possible to prevent unreasonable risk of injury. Second, even if the manufacturers decided to build these vehicles despite this liability, they would be forced to increase the price of the vehicles to compensate for the cost of liability.

Placing liability on the owner of the vehicle is problematic because it results in a party incurring liability even though he or she is not in control of the vehicle nor responsible for its decisions. As a result, one of the major benefits of owning one of these vehicles, the luxury of not having to pay attention while driving is practically eliminated.²³³ Moreover, placing liability on the owner who does not have control over the actions

going against a vehicle manufacturer, see *Chaulk by Murphy v. Volkswagen of Am., Inc.*, 808 F.2d 639, 644-45 (7th Cir. 1986) (Posner, J., dissenting) (arguing that just because there might be another method to manufacture a product does not automatically lead to the conclusion that the current method was performed with a lack of ordinary care, or that the product itself was defective).

230. *Adams v. Bullock*, 125 N.E. 93, 94 (N.Y. 1919).

231. *Larsen*, 391 F.2d at 505.

232. If there was a latent defect within the vehicle then the car would likely not be available for purchase. For a further discussion on the issue, see *infra* notes 236-38 and accompanying text (articulating the rights and obligations that an autonomous vehicle must satisfy).

233. See *Driving into the Unknown*, *supra* note 54, at 415 (arguing that people would be

of the vehicle will discourage individuals from purchasing these vehicles. Individuals will not want to be held liable for something that they had no control over.

B. A RECONCEPTUALIZATION OF LIABILITY FOR AUTONOMOUS VEHICLES

In order to allocate liability on the proper party and thus allow injured parties to recover adequately, liability should be placed directly on the autonomous vehicle itself. The U.S. vehicle safety regulators have indicated that the artificial intelligence system contained within the autonomous vehicle could be considered the driver under federal law.²³⁴ The algorithm contained within the autonomous vehicle will function in the same manner as a human driver.²³⁵ Therefore, in accidents in which a human driver would be found negligent, the same analysis would apply for autonomous vehicles.²³⁶ As a result, when an accident occurs, an injured party simply has to prove that the autonomous vehicle negligently caused the accident.²³⁷ The same analysis would be conducted if a human caused a similar accident. For example, if an unavoidable accident occurred while a human was driving he or she would not be found negligent; the same would be true for the autonomous vehicle. Similarly, in instances in which a human driver would be found negligent, the same would be true for the autonomous vehicle.

Placing liability on the autonomous vehicle itself is dramatically different than attempting to impose liability on the autonomous vehicle manufacturer or the owner of the vehicle. As was illustrated above, “the determination of negligence liability and products liability causation will be muddled, making it harder for potential plaintiffs to assert their case and more complicated for courts to determine viable causes of action and appropriate jury instructions.”²³⁸ Imposing liability on the vehicle itself

more reluctant to purchase one of these vehicles if they knew they were liable for traffic violations).

234. See Shepardson & Lienert, *supra* note 13.

235. See *infra* Part II. D (discussing how the vehicle will pay for the damages).

236. See Johnson v. Phillips, 690 N.Y.S.2d 545, 547 (N.Y. App. Div. 1999) (finding the driver negligent for causing the accident); see also Norris v. Ohio Standard Oil Co., 433 N.E.2d 615, 618 (Ohio 1982) (Brown, J., dissenting) (citing another source) (explaining that a driver is negligent if he operates a vehicle in a greater spend than will permit him to operate it safely); Mart v. Hill, 505 So.2d 1120, 1122-23 (La. 1987).

237. E.g., Dreisonstok v. Volkswagenwerk, A.G., 489 F.2d 1066, 1071-73 (4th Cir. 1974) (in the event that an accident occurs, the injured party would be able to sue the vehicle itself for the negligent driving and for not meeting its intended use); see also Volkswagen of Am., Inc. v. Young, 321 A.2d 737, 745-46 (Md. 1974) (construing that the intended purpose of vehicles is to provide reasonable safe transportation and when that does not occur a claim for negligence is sufficient).

238. Ravid, *supra* note 12, at 189.

not only allows for a more efficient way for parties to recover, but also removes burdensome case-by-case analysis that courts would be required to conduct in assessing liability on either the autonomous vehicle manufacturer or owner.

There will be situations in which a plaintiff will be able to argue that the autonomous vehicle's algorithm either caused or should have been able to avoid an accident. The law should hold the vehicle liable for the incorrect decision that it made. This is different from a defective design claim, because the algorithm should be treated as a feature of the vehicle. The algorithm controls the vehicle, and it decides how to handle every situation the vehicle encounters. This feature, if it results in an accident, is not a defective product, but rather functions in the same manner as a negligent driver.²³⁹ An injured plaintiff would not have to prove a specific design defect; instead, he or she would only have to prove that the vehicle acted in a manner that is contrary to what a reasonable person would expect. Humans are not treated as defective if they are unable to avoid accidents, or if they cause accidents;²⁴⁰ but rather, a negligence analysis is conducted when a person is involved in an accident. The same approach should be applied when an autonomous vehicle causes an accident.²⁴¹ Additionally, if appropriate, a plaintiff may be able to argue that the algorithm not only caused the accident but also exacerbated the injuries.²⁴²

Opponents to holding the algorithm liable would likely contend that an autonomous vehicle manufacturer could just as easily be held liable under the same theory of negligence. As discussed above, this argument is without merit because manufacturers do not have to create collision free vehicles.²⁴³ Even if a plaintiff is in a jurisdiction that follows the theory

239. See Shepardson & Lienert, *supra* note 13 (articulating that under federal law the artificial intelligence within the autonomous vehicle can be considered the 'driver'); see also Phillips, 690 N.Y.S.2d at 547 (providing an example of when the court found the human driver liable for negligence); Norris, 433 N.E.2d at 617 (finding that a driver's failure to yield to another driver constituted negligence).

240. See Hammtree v. Jenner, 97 Cal. Rptr. 739, 740, 742 (Cal. Ct. App. 1971) (declining to hold the driver strictly liable for a defective health condition that caused him to have an accident).

241. See Red Top Taxi Co. v. Snow, 452 S.W.2d 772, 773-74, 780 (Tex. App. 1970) (finding that a failure to stop at a stop sign, excessive speed, and failure to apply the brakes, all constituted negligent actions by the defendant).

242. See Young, 321 A.2d at 743 (observing that every case presents a delicate balancing of several factors in order to accurately determine whether there was ordinary care in designing the car); see *id.* at 745 (applying the standard that even though a defect in the vehicle did not cause the accident in the first place, it "enhanced" the resulting injuries). By analogizing an autonomous vehicle with a human driver and treating the vehicle as the injuring party, it would be possible to hold the vehicle itself negligent for not upholding the expectations of ordinary people.

243. See *id.* at 745-46.

that automobile manufacturers must use reasonable care in designing the vehicle, these manufacturers will likely be able to demonstrate that they have taken every precaution possible to prevent injury.²⁴⁴

Opponents may still contend that autonomous vehicles are marketed to be safer than conventional vehicles and the utility of these vehicles is reduced when they are not as safe as promised or expected. Once again, this argument is unpersuasive because it is not as if the manufacturer is installing better airbags, stronger frames, or better seat alignments and those components, which were the basis for the claim that the vehicle was safer, failed, thus causing injury. Rather, an accident stemming from the autonomous vehicle would be because the vehicle itself made a wrong decision,²⁴⁵ not because the vehicle manufacturer defectively designed a safety feature.

C. GRANTING PERSONHOOD TO AUTONOMOUS VEHICLES

As discussed above, the appropriate tort standard to use is negligence and, in order to accomplish this, courts should impose liability on the vehicle itself when it causes an accident. To ensure that there is an adequate foundation upon which an injured party could recover when an accident occurs, autonomous vehicles should be granted artificial personhood rights as a matter of law. This can most easily be accomplished by creating a new business entity within the existing business organization law structures of state law. The law has been modified and adapted to fit the needs of investors and shareholders in many instances.²⁴⁶ It will be argued in this Part that by granting autonomous vehicles artificial personhood rights through the operation of the state business organizations law, it is simply another example of the need for the law to adapt to allocate the benefits and burdens of liability regimes among different actors in ways that accommodate both equity and efficiency.

Treating “artificial beings” as persons under the law has always been an attempt, in the history of corporation and business organization law, to accommodate not only changes within society, including changes in technology, but also society’s collective desire to assign liability on the most appropriate parties.²⁴⁷ Corporations exist in part to protect the personal

244. See *Larsen v. Gen. Motors Corp.*, 391 F.2d 495, 503 (8th Cir. 1968) (finding that if the defendant has taken sufficient precautions to eliminate any unreasonable foreseeable risk of injury, they are not liable for negligence); see also *Young*, 321 A.2d at 746 (holding that a manufacturer is under a duty to use “reasonable care in the design of a vehicle [to prevent] unreasonable risk of injury”).

245. See *Monthly Report: Aug. 2015*, *supra* note 51 (maintaining that Google’s self-driving vehicle instead of being taught how to handle specific situations it will be installed with “fundamental capabilities” that enable it make a decision based off of the surrounding area).

246. See PINTO & BRANSON, *supra* note 148, at 5.

247. *Id.* at 4-6.

assets of their shareholders from personal liability for the debts or actions of a corporation and therefore limit the personal liability of the shareholders.²⁴⁸

This need to protect shareholders supports the decision to extend artificial personhood to autonomous vehicles. Indeed, a legislative decision to treat autonomous vehicles as artificial persons by operation of law is arguably a natural progression of the legal entity law in an attempt to balance equities and efficiencies of new technologies and ways of doing business. Under the Uniform Partnership Act, for example, a “person” is defined as “an individual, corporation. . . instrumentality, or any other legal or commercial entity.”²⁴⁹ In drafting the Uniform Partnership Act, the drafters thus anticipated that in the future there would be a need to assign personhood to different forms of entities for the purpose of placing liability on the correct party.

It thus follows that treating these vehicles as artificial persons creates the opportunity for the vehicle itself to be liable for its own actions, fostering a legal environment that does not deter manufacturers from producing more autonomous vehicles and spreading their technological benefits through society, does not deter individuals from purchasing these vehicles; and yet allows injured parties an opportunity to place liability on the offending party.

i. A New Business Entity: The Autonomous Vehicle

An autonomous vehicle should be considered a new form of business entity, with specific statutorily enforced rights and obligations. Granting artificial personhood to autonomous vehicles under the law does not require a new body of law but rather simply a new category within the business organizations law. An autonomous vehicle entity would be created as a special category of existing corporate or LLC law. The individual who purchases an autonomous vehicle would be treated in a manner similar to a shareholder, or even as an individual board of directors, of a corporation or an LLC utilizing a limited liability privilege under state law.²⁵⁰ By purchasing the vehicle, the owner invests money into the vehicle, i.e. the corporation or LLC, and by operation of law brings the entity into legal existence.²⁵¹ At the moment a person purchases an autonomous vehicle, he or she incorporates or registers an LLC within some particular state, with the autonomous vehicle constituting the property of

248. *Id.* at 35 (discussing how a limited liability company protects personal assets of its shareholders).

249. See ALLEN, *supra* note 157, at 59-60.

250. See PINTO & BRANSON, *supra* note 148, at 131 (explaining how a board of directors and shareholders perform certain duties and interact).

251. See *id.* at 35 (discussing the pooling of capital to help create a corporation).

the entity.²⁵²

It is necessary to decide whether a generic corporation, a generic LLC or a specialized business entity that is tailored to the technological benefits and burdens of an autonomous vehicle is the most appropriate business entity category for autonomous vehicles. Clearly, corporations and LLCs exist to serve a variety of purposes beyond the ownership of a single asset such as the autonomous vehicle. The difference being that with a generic corporation or LLC, the autonomous vehicle would merely be the single asset of that business entity as opposed to a business entity that is specifically tailored to being the entity an “autonomous vehicle.” The latter appears to be the more desirable simply because the benefit of forming a specifically tailored, and legally required business entity ensures that the statutorily defined requirements and privileges of the vehicle will be tailored precisely to the issues of technology, accident liability, insurance, and liability imposed for failure to update the software as well as any other issues that are present with these types of vehicles. Moreover, the main purpose of designing a special business entity for autonomous vehicles is that it allows the legal characteristics of the entity as a consequence of law to be completely uniform. This means that any third parties that interact with it, voluntarily or not, including accident victims, will know exactly what the package of legal characteristics that state law both requires and confers upon the entity.

This is an important distinction because it would be easy to assume that a generic LLC is the most appropriate business entity. It is, after all, the most flexible business form available in state law in the United States.²⁵³ However the LLC, as distinguished from a special autonomous vehicle business entity, exists as a business form principally to allow the parties that own the LLC to establish terms for dealing with each other, such as, who provides capital and services, or how profits are distributed, while at the same time addressing the issue of how third parties deal with the LLC since the law confers limited liability on the LLC.²⁵⁴ This is fundamentally different from the primary purpose of the special business entity of autonomous vehicles. Instead of establishing terms for its owners, this special business entity presents questions as to how the entity

252. See PINTO & BRANSON, *supra* note 148, at 13-14. To this effect, when the purchaser of the vehicle signs the contract for the vehicle, he or she simultaneously incorporates the vehicle in that particular state. This enables each state to create their own corporate statute regarding autonomous vehicles.

253. See PINTO & BRANSON, *supra* note 148, at 11-13; *also see* Blechman v. Estate of Blechman, 160 So. 3d 152, 158 (Fla. Dist. Ct. App. 2015) (noting that some state statutes concerning LLC's are flexible).

254. See COX & HAZEN, *supra* note 142, at 9 (footnote omitted) (characterizing an LLC as “an aggregation of individuals operating the business as co-owners with individual rights and duties”).

relates to third parties in general, and accident victims in particular. While the limited liability of the owners in an LLC, generic corporation and special business entity is a shared characteristic of each, it is not the primary purpose of these business forms.

To be certain, limited liability is an important characteristic of the special business entity, but only as far as it is coupled with insurance requirements, software and hardware maintenance, upgrade requirements, and other essential features that protect third parties. In essence, the license plate on the autonomous vehicle will signify to other parties on the roads that the autonomous vehicle carries the same package of protections that all the other autonomous vehicles are legally approved and required to carry.

As a result of creating a special business entity for autonomous vehicles, each state's legislature would, as with other corporate and business organizations law statutes, list all of the obligations that the vehicle itself has to fulfill.²⁵⁵ These rights and obligations would be designed to ensure that autonomous vehicles are safely driving on the roads. While the legislature of each state will determine the composition of the rights and obligations, they should at a minimum include requirements to install software updates when made available by the manufacturer; perform regular maintenance checks to certify that the vehicle is operating in a safe manner; contain a device that records all of the actions of the vehicle;²⁵⁶ contain a mechanism that alerts the autonomous vehicle manufacturer and human owner when there is an issue with the vehicle;²⁵⁷ and have the statutorily established minimum liability insurance.

Allowing an autonomous vehicle to be its own business entity is not the same as allowing the shareholder, the person who purchased the vehicle, to do business in his or her own individual capacity.²⁵⁸ The owner of the vehicle will perform duties that are better analogized to the role of a board of directors in a corporation; ensuring that the autonomous vehicle

255. See 8 DEL. CODE ANN. § 371 (West 2010) (promulgating the requirements for a company to do business in a state); see also S.C. CODE ANN. § 33-3-101(a)-(b) (2016) (explaining that this section has been designed to preserve all the statutory requirements applicable to specialized business corporations).

256. See CAL. VEH. CODE §38750(c)(1)(G) (West 2012) (requiring that "the autonomous vehicle has a separate mechanism, in addition to, and separate from, any other mechanism required by law, to capture and store the autonomous technology sensor data for at least 30 seconds before a collision occurs between the autonomous vehicle and another vehicle, object, or natural person while the vehicle is operating in autonomous mode").

257. See 8 DEL. CODE ANN. § 371 (detailing the qualifications and requirements to do business in a particular state).

258. See PINTO & BRANSON, *supra* note 148, at 39-40 (presenting grounds in which courts will allow the corporate veil to be pierced); see also *Walkovszky v. Carlton*, 223 N.E.2d 6, 7-9 (N.Y. 1996) (explaining that when a stockholder is conducting business in his individual capacity, he personally will be liable).

entity performs or fulfills its statutorily designed rights and obligations.²⁵⁹ Under this theory, there should not be many instances to pierce the corporate veil and hold the shareholder (owner) liable for harms that the autonomous vehicle may cause.²⁶⁰ However, this does not mean that the owner is completely absolved from liability. For example, if the vehicle does not fulfill its required rights and obligations set forth by the relevant state law because its owner does not allow the business entity to do so, then that particular autonomous vehicle will lose its special business entity status, perhaps until the rights and obligations or other conditions have been adequately met.²⁶¹

Thus, if an autonomous vehicle fails to satisfy the statutorily defined rights and obligations, its business status will be removed. This is analogous to how a corporation or LLC in a given state might be held “not in good standing” for a violation of state corporate law.²⁶² Should a corporation or LLC fail to meet certain requirements, that corporation or LLC’s right to exercise the privileges of that business entity granted by the state might be suspended in whole or in part.²⁶³ Such treatment is not unknown for corporations or LLCs owning particular, regulated assets. Currently, a taxicab that is held as the single asset of a corporation or LLC²⁶⁴ can be suspended as a lawful vehicle on the road if it does not renew its insurance. However, a taxicab does not lose its status as the asset of the corporation or LLC if it does not renew its insurance, nor does the corporation or LLC find itself as a matter of state business organization law “not in good standing.”²⁶⁵

259. See PINTO & BRANSON, *supra* note 148, at 131 (detailing the role that the board of directors plays in a corporation).

260. *Walkovszky*, 223 N.E.2d at 10.

261. The enforcement of this will likely be legislatively created. To that effect though, it will likely come into play if and when the vehicle causes an accident. If at the time of the accident the vehicle had not fulfilled the requirements set forth by the legislature, the vehicle will lose its business entity status, shift liability to the owner, and as a result the owner of the vehicle will become contributorily liable for the injuries. This will add another layer of accountability upon the owner of the vehicle.

262. An example of a limited liability company that is considered ‘not in good standing’ is if the company “does not file all annual statements it has failed to file, and the applicable fees, within 60 days after the administrators notice is sent. . . . A limited liability company that is not in good standing is not entitled to issuance by the administrator of a certificate of good standing, the name of the company is available for use by another entity filing with the administrator and the administrator may not accept for filing any document submitted by the limited liability company other than a certificate of restoration of good standing.” See 16 MICH. CIV. JUR. LTD. LIAB. COS., Certificate of Good Standing § 12 (2016).

263. See *Bryant Constr. Co. v. Cook Constr. Co.*, 518 So. 2d 625, 629 (Miss. 1987); see also 16 MICH. CIV. JUR. LTD. LIAB. COS., Certificate of Good Standing § 12 (explaining that certain privileges that were conferred upon the company by the state will be suspended until the company fulfills the requirements of state law).

264. See *Walkovszky*, 223 N.E.2d at 9-10.

265. See 16 MICH. CIV. JUR. LTD. LIAB. COS., Certificate of Good Standing § 12 (explaining

However, suspension of the business entity's legal good standing, in addition to any other sanctions, is precisely what is needed in the case of autonomous vehicles. In order to protect third parties, and indeed for the protection of all stakeholders, including the occupant, it might be most effective to use not only the usual forms of insurance requirements and general obligations of the vehicle owner to maintain the vehicle in mechanical order, but additionally to impose these requirements on the entity such that failure to do so would shift liability to the owner.

D. CURRENT INSURANCE PROGRAMS AND AUTONOMOUS VEHICLES

Currently, when an individual causes an accident, their insurance company pays the repairs and damages to the injured party. With few exceptions, drivers in the U.S. are required to obtain car insurance.²⁶⁶ The insurance allows individuals to drive on the roads without fear that if an accident occurs they will not be able to recover. While autonomous vehicles are promised to significantly reduce accident rates, they will still need to have car insurance to protect against the inevitable accident.

As was indicated in the previous sections, injured parties will bring a claim against an autonomous vehicle for the damages that it caused. However, the autonomous vehicle does not have any assets or means to reimburse the injured party, or repair the damaged vehicle when there is an accident. Therefore, it is necessary to devise an insurance system that will enable these cars to compensate victims as well as repair the vehicle. The insurance process could function in a very similar manner as it currently operates; the only difference is that here the autonomous vehicle will function as the driver.

In 2012, over twelve percent of all drivers did not have insurance with some states such as Oklahoma, having an uninsured driver rate as high as twenty-six percent.²⁶⁷ To avoid this problem, a person will not be able to purchase an autonomous vehicle without also purchasing insurance. This will be achieved by incorporating the insurance for the vehicle within the purchase price of the vehicle.²⁶⁸ It will resemble a feature of the vehicle itself, and it will be predetermined by the state legislature as

that a limited liability company that is "not in good standing" still remains in existence and also may continue to transact business in that state).

266. See Mila Araujo, *Understanding Minimum Car Insurance Requirements, State-by-State Minimum Requirements*, THE BALANCE (Aug. 6, 2016), <https://www.thebalance.com/understanding-minimum-car-insurance-requirements-2645473> (outlining all 50 states respective requirements for insurance).

267. *Uninsured Motorists*, INS. INFO. INST., <http://www.iii.org/fact-statistic/uninsured-motorists> (last visited Oct. 28, 2016).

268. It could be arranged that the owner of the vehicle pays an annual fee for a predesigned amount of coverage, and if he or she sells the vehicle, then the next owner when purchasing the vehicle will simultaneously be paying for the insurance.

to what amount of coverage is required for autonomous vehicles to operate on the roads. This will prevent the situations when people choose not to buy insurance or instead opt for insurance that is often significantly lower than needed to allow potential victims to fully recover.

The requirement of having insurance factored into the purchase price of the vehicle raises the question of whether such a requirement will make the vehicle too expensive to purchase. Although it is premature to speculate on the outcome of such a requirement, it seems reasonable to predict that the insurance costs will not be prohibitive.

First, and most importantly, autonomous vehicles will cause far less accidents than human drivers do, thus over time pushing down the rates of insurance.²⁶⁹ With fewer and fewer accidents, the cost of insurance will be significantly reduced; therefore the cost to the purchaser, even when factored into the purchase price of the vehicle, will be greatly reduced. Some insurance analysts have argued that with autonomous vehicles on the road people can see a ninety percent decrease in costs.²⁷⁰

Secondly, there are currently several different factors that affect a particular individual's insurance rate.²⁷¹ Of the many different factors, an individual's age, gender and driving record are the most pertinent.²⁷² However, since an autonomous vehicle is a highly sophisticated experienced algorithm, it does not suffer from the same inexperience as does an eighteen-year-old male driver for example. The primary factors that increase insurance premiums are absent and simply are not necessary in the calculation of insurance premiums for these vehicles. Therefore, there can be a flat rate for autonomous vehicles, which will potentially lower the overall cost of insurance. If insurance is not factored in with the purchase of the vehicle but rather as something that the owner has to purchase separately, as it is with the current system, there then will be very little incentive for owners to purchase this insurance.²⁷³

269. Alex Davies, *Americans Want Self-Driving Cars for Cheaper Insurance*, WIRED (Apr. 23, 2015, 12:00 PM), <https://www.wired.com/2015/04/americans-want-self-driving-cars-cheaper-insurance/> (explaining that insurance companies are already offering discounts for vehicles with semi-autonomous features, and that when fully autonomous vehicles will be made available insurance rates will be significantly lower).

270. Greg Ferenstein, *Here's How Much a Self-Driving Car Could Save You on Car Insurance*, WASH. POST (July 17, 2015), <https://www.washingtonpost.com/news/innovations/wp/2015/07/17/heres-how-much-a-self-driving-car-could-save-you-on-car-insurance/>.

271. See Kira Botkin, *11 Factors That Affect Car Insurance Rates- How to Lower Your Costs*, MONEY CRASHERS, <http://www.moneycrashers.com/factors-affect-car-insurance-rates/> (last visited Feb. 26, 2016) (citing several different factors that affect an individual's insurance rates).

272. *Id.*

273. It could be argued that under the statutorily defined rights and obligations an owner of a vehicle must purchase insurance in order to satisfy the requirements set forth by the legislature. If the owner fails to do this, the vehicle will cease to be a business entity, and thus the liability will shift back on to the owner if an accident occurs.

IV. CONCLUSION

The inevitable release of fully autonomous vehicles carries with it the issue of where to assign liability when the vehicle causes an accident. The current tort standards of placing liability on the autonomous vehicle manufacturer or the owner of the vehicle are unsatisfactory. Under the product liability approach, there are two possible outcomes in the jurisdictions that follow either the Restatement (Second) or (Third) of Torts: (1) either an injured plaintiff's ability to recover will be significantly inhibited or (2) the autonomous vehicle manufacturers will face liability in most situations. These divergent results are not remedied simply by using a negligence standard.

Currently, an injured party attempting to place liability on either the vehicle manufacturer or the owner for negligence would likely fail. The owner is not in a position to eliminate or reduce any unforeseeable risk of injury, nor are they in a position to take ordinary care in designing the vehicle. On the other hand, it will be particularly difficult to prove that the autonomous vehicle manufacturer was negligent in designing the vehicle's algorithm because the manufacturer will be able to demonstrate that not only did they take steps to eliminate unreasonable risks of foreseeable injury, but that they acted in a manner consistent with what an ordinary person would expect.

Instead, liability should be imposed on the autonomous vehicle itself when it causes an accident. The vehicle's algorithm will be treated in the same manner as a human driver, and thus the vehicle will be liable for negligence. To this effect, an insurance regime quite similar to the current system will be required to enable victims to recover. Furthermore, in order to protect third parties that interact with these vehicles on the roads, the autonomous vehicles should be granted artificial personhood, and thus be considered a special form of business entity.

Each particular state will set forth a list of rights and obligations that an autonomous vehicle must fulfill in order to remain a business entity. If these rights and obligations are not fulfilled, the autonomous vehicle loses its privileges conferred upon it by the state and liability can shift back to the owner.