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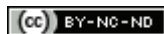
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Embracing the Imminent: Proposed Legislation for Automated Cars in Pennsylvania

Katelyn Sheinberg*

INTRODUCTION

It is a strange but inevitable fact of life that what is deemed to be pure fantasy in one generation can transmute into reality by the next. We have seen this countless of times—the radio, airplanes, advancements into space, the Internet—instances where make-believe became truth, where fiction became science. But before such new technology so wholly integrates itself into daily routine, such that any notion of its once-thought-of impossibility has been long forgotten amongst even the aged, there is a period of time in which lawmakers and policymakers must figure out just what exactly to do with it. During this chaotic transition period, it is essential to get the new technology off the ground as smoothly, safely, and efficiently as possible. While it is the job of inventors to create, lawmakers have the necessary task of assimilating the creation into our complex, modern society.

As fully automated cars increasingly become a possibility, and as each day brings us one step closer to this future, we find ourselves poised at the edge of such a moment. Once only present in futuristic, robotic-themed films, we must now deal with a myriad of ethical questions and real-life issues that will inevitably arise with the coming of the driverless car; the question no longer is “how might it be feasible?” but “now that it is feasible, how should we regulate it?”

In Pennsylvania, along with the majority of states, driverless car legislation is not yet on the books.¹ This is similarly true at the federal level.² Yet several states are beginning to tackle the issues associated with this up-and-coming technology.³ It would be wise for Pennsylvania to follow this lead, by initiating the process of

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¹ Gabriel Weiner & Bryant Walker Smith, *Automated Driving: Legislative and Regulatory Action*, THE CENTER FOR INTERNET AND SOCIETY, http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action (last visited Mar. 20, 2015).

² *Id.*

³ *Id.*

drafting statewide legislation relating to autonomous cars. The following is an analysis detailing why Pennsylvania should do so, as well as a proposal as to what the legislative scheme should look like. Although some predict that fully autonomous vehicles will not be ready for widespread consumption for another decade or so,⁴ it would be quite advantageous for Pennsylvania to embrace this life-altering innovation at the current moment.

I. WHY PASS SUCH STATE LEGISLATION IN PENNSYLVANIA?

First proposed in the 1940s, driverless cars, often dubbed “automated vehicles” (AV), would captivate the minds of researchers for decades; however, it would take until the 1980s with the onset of sophisticated computing and sensing for AV technology to truly become a reality.⁵ At first, this research was conducted primarily through university research centers,⁶ but more recently private companies such as Google have recognized the potential of AV technology and have dedicated resources to its development.⁷ In reality, a number of cars on the market currently incorporate some level of automated technology (e.g., electronic stability control, anti-lock brakes, adaptive cruise-control); however, it is the prospect of entirely autonomous vehicles, able to be purchased on the market and used by the public, that has been garnering significant attention, including the attention of policymakers who are looking to the horizon. Great strides have been made as of late. Google, through its Driverless Car Initiative, has created and tested its own fully autonomous vehicles; these cars have driven over 500,000 miles without an accident related to the automated technology.⁸

Amidst such developments in the AV arena, various states’ interests have been peaked. Currently, only California, Michigan, Nevada, Florida and the District of Columbia have enacted AV legislation of some form.⁹ However, other

⁴ *Carnegie Mellon Prof.: Driverless Cars on the Horizon*, INDIA WEST (Sept. 23, 2014, 10:00 AM), http://www.indiawest.com/news/global_indian/carnegie-mellon-prof-driverless-cars-on-thehorizon/article_6583b1d2-4341-11e4-a04f-4b69114ea718.html.

⁵ Sven A. Beiker, *Legal Aspects of Autonomous Driving*, 52 SANTA CLARA L. REV. 1145, 1146 (2012).

⁶ James M. Anderson et al., *Autonomous Vehicle Technology: A Guide for Policymakers*, RAND: TRANSPORTATION, SPACE, AND TECHNOLOGY PROGRAM, xviii, http://www.rand.org/content/dam/rand/pubs/research_reports/RR400/RR443-1/RAND_RR443-1.pdf (last visited Mar. 19, 2015).

⁷ *Id.* at xix.

⁸ *Id.* at 57–58.

⁹ Weiner & Smith, *supra* note 1.

states' legislatures have similarly been exploring this issue.¹⁰ The legislation enacted by these four states and D.C. concern the testing of AV technology, as opposed to the public consumption of this product.¹¹ For the rest of the states, however, the lack of legislation does not necessarily mean the preclusion of driverless cars in the state in question. Legal scholars have noted that driverless vehicles, despite being unmentioned by the legislature, are still legal—in all likelihood.¹² This is because it is up to the states to decide whether or not to allow this type of vehicle, not the federal government.¹³ Since there is a presumption that everything is permitted unless prohibited, the lack of laws banning automated vehicles logically leads to the conclusion that they are permissible.¹⁴ However, this cannot be said with certainty for each state without further clarification from the government. Additionally, it is important to note that state vehicle codes as they are currently written will undoubtedly complicate automated driving, as such codes often impose obligations upon a “driver” who “drives” or “operates” the vehicle.¹⁵ Further, autonomous vehicles do not appear to violate the 1949 Geneva Convention on Road Traffic, to which the United States is a party,¹⁶ nor the National Highway Traffic Safety Administration's (NHTSA) regulations, which seem to assume, but do not explicitly require, a human driver.¹⁷

Thus, this Article proposes that Pennsylvania join the states that have chosen to elucidate this rather ambiguous legal territory by enacting legislation explicitly allowing for the testing of driverless cars; further, Pennsylvania would benefit from drafting legislation that looks to a future when autonomous cars may be spotted on the road during a daily commute, perhaps even ubiquitously. The following portion of this section details why this would prove to be an advantageous move.

First, the enactment of AV legislation by various states is almost certainly not due solely to those legislatures' fascination with the latest trends in the

¹⁰ *Id.*

¹¹ Anderson et al., *supra* note 6, at 41.

¹² Bryant Walker Smith, *Autolaw 3.0*, THE CENTER FOR INTERNET AND SOCIETY, <http://onlinepubs.trb.org/onlinepubs/conferences/2012/Automation/presentations/WalkerSmith.pdf> (last visited Mar. 19, 2015).

¹³ Nick Statt, *Are Driverless Cars Legal?*, READWRITE (May 31, 2013), <http://readwrite.com/2013/05/31/so-wait-are-driverless-cars-legal>.

¹⁴ Bryant Walker Smith, *Automated Vehicles Are Probably Legal in the United States*, 1 TEX. A&M L. REV. 411, 413 (2014).

¹⁵ *Id.* at 463.

¹⁶ *Id.* at 413.

¹⁷ *Id.* at 458.

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technological field. Rather, these legislatures likely recognize the supreme societal benefits that are likely to result from this innovation and aspire to be on the forefront of these possibilities. John Villasenor, professor of electrical engineering and public policy at UCLA, has stated, “We can’t afford not to take advantage of vehicle automation technologies.”¹⁸ Professor Villasenor was likely referring to the enormous life-saving potential of autonomous cars.¹⁹ Indeed, in the United States, 30,000 people are killed and over 2,000,000 are injured annually in automobile crashes, and the vast majority of these accidents are caused by human error.²⁰ AV technology is predicted to significantly reduce these devastating numbers.²¹ By replacing human error with sophisticated technology that will not be prone to incompetence, distractedness, tiredness, drunkenness or the like, many crashes can be avoided, lives saved, and billions of dollars in private and social costs spared.²² Although some express hesitation at a hurried acceptance of such novel technology, others counter that waiting patiently for researchers to absolutely perfect this innovation is a risk unto itself, as it would mean the “needless perpetuation of the risks posed by human drivers.”²³

In 2012, in Pennsylvania alone, there were 124,092 reported car accidents, resulting in 87,846 injuries and 1,310 deaths.²⁴ One out of 44 Pennsylvanians were involved in a car accident that same year.²⁵ Statistics such as these are frightening and give weight to the fact that automobile accidents have been labeled by some as a “hidden epidemic.”²⁶ It is imperative that Pennsylvania takes the necessary steps to work towards eradicating this disease from our lands by not shying away from AV technology’s cure.

¹⁸ John Villasenor, Op-Ed., *Automation Has Already Saved Lives*, N.Y. TIMES (Jan. 29, 2015, 3:30 AM), <http://www.nytimes.com/roomfordebate/2015/01/29/are-we-ready-for-driverless-cars/automation-has-already-saved-lives>.

¹⁹ *Id.*

²⁰ Nidhi Kalra, Op-Ed., *To Hit the Road, Driverless Cars Must Be Safe, Not Perfect*, N.Y. TIMES (Jan. 29, 2015, 3:30 AM), <http://www.nytimes.com/roomfordebate/2015/01/29/are-we-ready-for-driverless-cars/to-hit-the-road-driverless-cars-must-be-safe-not-perfect>.

²¹ Anderson et al., *supra* note 6, at xiv.

²² *Id.*

²³ Kalra, *supra* note 20.

²⁴ *Car Accident Statistics*, EDGAR SNYDER & ASSOCIATES, <https://www.edgarsnyder.com/car-accident/no-injuries/car-accident-statistics.html> (last visited Apr. 6, 2015).

²⁵ *Id.*

²⁶ Lauren P. Giles, Elisabeth S. Hayes & Mark L. Rosenberg, *Road Traffic Injuries: Can We Stop a Global Epidemic?*, THE DOCTOR WILL SEE YOU NOW, <http://www.thedoctorwillseeyounow.com/content/emergencies/art2104.html> (last visited Apr. 6, 2015).

Apart from the safety benefits, numerous other advantages resulting from autonomous vehicles have been articulated. For instance, AV technology would be able to increase the mobility for those who are unable or prefer not to drive, including the disabled, elderly, and those under the age limit.²⁷ Just a few of the benefits that would inure to these groups include heightened independence, lessened feelings of isolation, and access to important services.²⁸ Further, for young adults below the driving age, driverless cars could help ease the transition between “not driving” and “driving,” as well as potentially relieve their guardians of the burden of having to continually chauffeur them to and from activities.²⁹

Additionally, driverless cars could reduce the cost of congestion.³⁰ Although the effects on actual congestion are uncertain, because car occupants will no longer be an active participant in driving, the opportunity cost of travel time should be reduced, since the driver would then be free to engage in other more productive or enjoyable activities.³¹ It has even been posited that AVs might lead to a decrease in energy consumption.³² One way this might occur is as a consequence of an improved fuel economy by allowing cars to accelerate and decelerate more smoothly than a human would.³³

Thus, because of the numerous potential personal and societal benefits stemming from driverless cars, it would be wise for Pennsylvania to join the various other states that have taken it upon themselves to create legislation in anticipation of this new technology. By enacting legislation that explicitly allows for the testing of autonomous cars, private entities working to get this innovation on the market will be provided a clear indication that Pennsylvania allows for the use of AVs, sparing them the guesswork that they must undergo for other states. In other words, Pennsylvania will be a less risky choice for these developers, who will then be encouraged to set up shop in this state. Carnegie Mellon University, located in Pittsburgh, has already been making massive strides in the AV arena by

²⁷ Anderson et al., *supra* note 6, at 16–17.

²⁸ *Id.* at 17.

²⁹ Beiker, *supra* note 5, at 1151.

³⁰ *Id.* at 24.

³¹ *Id.*

³² *Id.* at xvi.

³³ *Id.*

partnering with Google.³⁴ Beyond the walls of academia, Western Pennsylvania in particular has been emerging as a hotbed for transportation-related technology,³⁵ as it is home to a variety of companies that are responsible for high-tech transportation equipment and development, such as Bombardier, the world's leading provider of automated people movers,³⁶ and Thales, a top global supplier of state-of-the-art transportation systems, equipment, and services.³⁷ Pennsylvania should solidify its position as a forefront state in this exciting field, and consequently reap the benefits that coincide with AV technology.

Further, many experts have predicted the imminence of driverless cars on the horizon—that is, being sold commercially and utilized on a public scale. Ragnathan “Raj” Rajkumar, George Westinghouse Professor in the Department of Electrical and Computer Engineering at Carnegie Mellon University, has expressed his belief in the inevitability of the coming of driverless cars in the United States, as well as the rest of the world.³⁸ According to a recent Cisco report, 60 percent of U.S. consumers trust driverless cars.³⁹ Statistics like this show that companies such as Google have succeeded in convincing a majority of the consuming population that AV technology is safe, primarily through their lobbying of states to enact AV laws.⁴⁰ As people become increasingly more comfortable with the idea of driverless cars, this will lead to an even greater acceleration to this innovation's full potential.

Thus, due to the likelihood of this technology's widespread gain in popularity, and the probability that an increasing number of states will soon begin to form their own legislation on the subject, Pennsylvania should use this opportunity to draft AV legislation that looks to a not-so-distant future when this technology will likely become increasingly prevalent. Such legislation would not only have the potential to serve as a model for other states as they begin to explore this idea, but would

³⁴ *Uber, Carnegie Mellon partnering on driverless car research*, THE MORNING CALL (Feb. 3, 2015, 2:14 PM), <http://www.mcall.com/news/nationworld/pennsylvania/mc-pa-uber-carnegie-mellon-driverless-car-20150203-story.html>.

³⁵ Debra Diamond Smit, *Pittsburgh emerging as a hub for future transportation technology*, POP CITY (June 30, 2010), <http://www.popcitymedia.com/innovationnews/PSII063010.aspx>.

³⁶ *Rail Vehicles*, BOMBARDIER, <http://www.bombardier.com/en/transportation/products-services/rail-vehicles.html> (last visited Apr. 6, 2015).

³⁷ *Transportation*, THALES, <https://www.thalesgroup.com/en/worldwide/transportation/what-we-do> (last visited Apr. 5, 2015).

³⁸ *Carnegie Mellon Prof.: Driverless Cars on the Horizon*, *supra* note 4.

³⁹ *Statt*, *supra* note 13.

⁴⁰ *Id.*

also give Pennsylvania policymakers the opportunity to tackle the plethora of intricate, novel issues that will inevitably result from driverless cars.

II. WHAT TO INCLUDE IN THE PENNSYLVANIA LEGISLATION

The following section focuses on what important aspects of such legislation should look like as well as what should be included. As described in the prior section, preliminary legislation will likely follow Michigan, Florida, California, Nevada, and D.C.'s lead relating to the testing of driverless cars in the state. Such a statute would make clear that Pennsylvania supports the development of this new technology and that it is indeed legal in this state. This in turn will in all likelihood lead to the expansion of the AV industry in Pennsylvania, already a hub of AV technology thanks to the work of Carnegie Mellon University's team, thus enabling the state to reap the benefits of this valuable advancement in the automobile industry.

However, besides issues related to the testing of driverless cars, there are a variety of other significant matters that will need to be addressed—especially when looking to a future where these vehicles might proliferate among the public—in order to solve relevant issues and avoid potential problems. For instance, a common vocabulary should be developed at the onset, one that both regulators and those on the industry side of automobile automation can share. A single vocabulary is essential in a situation such as the present one, where it is clear that legislators will be working closely with manufacturers and developers in the industry in order to establish appropriate regulations and standards.⁴¹ Such a common language would ideally be useful in both the legal and technical sphere.⁴² Additionally, common definitions would help bring a level of consistency to various states' AV legislation, which would be favorable as some experts worry that various states' attempts at AV regulation might result in an amorphous bundle of incompatible requirements, making it difficult to operate a driverless vehicle in multiple states.⁴³ Although having a common or similar vocabulary will certainly not solve the problem of a potential patchwork of differing requirements across the country, it is one important step in the direction of unification. Therefore, the Pennsylvania legislature should look to the language of the statutes enacted in Nevada, Michigan, Florida, California, and D.C. in drafting its own AV legislation.

⁴¹ Smith, *supra* note 14.

⁴² *Id.*

⁴³ Anderson et al., *supra* note 6, at xxiv.

Another issue of particular importance is that of liability. There will almost certainly be significant alterations in terms of the liability scheme for situations where driverless vehicles are involved in a crash, and consequently the legislature will be faced with important questions involving this matter. The current areas of law governing car accidents are state tort law and state financial responsibility law, the latter of which requires that all drivers possess automobile insurance.⁴⁴ Although in the AV context, the liability arena relating to *drivers* will likely not change significantly, as individual drivers will still be held liable when they themselves act negligently, the liability of *manufacturers* is expected to change considerably.⁴⁵ This will be a result of the shift in responsibility, and, consequently, of liability as well, from drivers to manufacturers, as driver negligence becomes less of a factor in accidents compared with product defects in the autonomous vehicles themselves.⁴⁶ This is not to suggest that drivers will never be liable; on the contrary, this Article postulates that drivers should indeed be held to a negligence standard, to be applied in cases where they unreasonably fail to prevent a risk.⁴⁷ Yet the nature of a system in which the human driver is deprived of most responsibility, which is then put into the hands of manufacturers and their products, is that, inevitably, this will result in a large number of product liability cases following car accidents. Some predict that this shift in liability for manufacturers will make them hesitant to develop and eventually sell this new technology, or that it will be made up for with exorbitantly high prices.⁴⁸ This Article posits that in any Pennsylvania AV legislation, it should be mandated that manufacturers of driverless cars will be held to a strict liability standard in such product liability suits. Unlike in a negligence scheme, strict liability would disregard whether or not the manufacturer exercised all reasonable care, and instead simply focus on the question as to whether the product was sold in a “defective condition unreasonably dangerous to the user.”⁴⁹ This defect might be a design defect or a manufacturing defect.⁵⁰

It is not difficult to imagine why manufacturers of AVs might not be too keen on the possibility of being held strictly liable. Some posit that manufacturers’

⁴⁴ *Id.* at 112.

⁴⁵ *Id.* at 118.

⁴⁶ *Id.*

⁴⁷ *Id.* at 112.

⁴⁸ *Id.* at 118.

⁴⁹ Anderson et al., *supra* note 6, at 121–22.

⁵⁰ *Id.* at 123–24.

weariness about such impending liability, leading to higher prices and an inefficient delay in the adoption of AV technology, is such that they should be held to a lesser standard in suits or else provided with statutory defenses.⁵¹ For instance, manufacturers could instead be held to a “reasonableness” products liability regime, where the manufacturer could attempt to prove that it had acted reasonably,⁵² or else a “cost-benefit” products liability regime, where the carmaker could argue that the overall benefits of a particular AV feature outweigh the costs (i.e., perhaps they could argue that a particular feature works 90 percent of the time).⁵³ Another possibility is that state policymakers could pass legislation that simply limits or eliminates tort suits in state court for this area.⁵⁴ Finally, the state legislature could make an irrebuttable presumption of driver control of the vehicle, meaning that the “driver as the ultimately responsible party” scheme would be retained, regardless of the level of automation.⁵⁵ However, despite the fact that these options might solve the dreaded problem of exorbitant prices to offset manufacturer liability, as well as delayed adoption of this technology, strict liability with no defenses should be employed in this context. Driverless car technology is simply too new and the stakes too high to hold manufacturers to a lesser standard. It would appear to be a proper tradeoff to encouraging the introduction of this technology by drafting legislation before it has been entirely perfected—that is, manufacturers are given the message: develop it, put it on the market, but do so at your own risk. The result is that such manufacturers will have the appropriate incentives in place to put forth the safest product possible. Further, it will be properly left to the market to decide whether or not to accept this new technology, despite the high price caused by manufacturers compensating for their increased liability.

Additionally, another factor for the Pennsylvania legislature to consider is the safety regulations surrounding autonomous vehicles. Although it is traditional for a state’s department of motor vehicles (“DMV”) to regulate drivers by issuing licenses, while the federal government regulates and ensures the safety of vehicles through NHTSA, driverless cars will unavoidably blur the line between vehicle and driver.⁵⁶ Thus, this Article posits that the Pennsylvania legislature should take upon itself the task of supplementing its own safety regulations with those of the federal

⁵¹ *Id.* at xxii–xxiii.

⁵² *Id.* at 119.

⁵³ *Id.*

⁵⁴ *Id.* at 131.

⁵⁵ Anderson et al., *supra* note 6, at 144.

⁵⁶ *Id.* at 7.

government, if and when the federal government chooses to do so. Scholars have emphasized the complexity and intricacies of the driverless vehicle realm, suggesting that the government work alongside industry as it delves into this unknown territory.⁵⁷ This appears to be the proper course for the government to take. Google itself has argued that state governments will have great difficulty in fully grasping the technology behind autonomous vehicles in order to properly regulate them.⁵⁸ Thus, it would be beneficial for Pennsylvania legislatures to consider directing the state DMV to create AV regulations, much as the Nevada legislature instructed its own DMV to do,⁵⁹ but to also form a committee whereby the DMV works alongside experts in the industry.

There are, of course, a variety of other issues that the state legislature will have to consider as it drafts its driverless car legislation. Yet many of these issues are premature in that, although it would be useful to begin discussions amongst state policymakers at the present moment,⁶⁰ we must simply wait for the technology to advance, for the federal government to decide whether to become involved, and for concerns now unknown to become apparent.

In the meantime, it might be useful to look to Florida's AV statute, enacted in April 2012, as an example of provisions that would be beneficial to include in a similar Pennsylvania statute concerning the testing of autonomous vehicles.⁶¹ Some notable features of the Florida statute are as follows: the vehicles must meet federal standards and regulations; the vehicles must comport with applicable Florida vehicle and traffic laws; the vehicles must have safety mechanisms for engaging and ceasing the automation feature; the vehicles must possess an indicator inside the car that notifies when the car is in autonomous mode; there must be an indicator inside the car to alert of any technology-related failure; and a human must be present to intervene if necessary.⁶²

Finally, if Pennsylvania were to embrace autonomous vehicle technology, it would need to examine how its vehicle codes would or should apply to driverless cars, including those that have a human operator, ready to take over if necessary,

⁵⁷ Beiker, *supra* note 5, at 1153.

⁵⁸ Allen Young, *Google warns DMV not to over-regulate self-driving cars*, SACRAMENTO BUS. J. (Jan. 27, 2015, 1:45 PM), <http://www.bizjournals.com/sacramento/news/2015/01/27/google-dmv-self-driving-cars-workshop.html?page=all>.

⁵⁹ Anderson et al., *supra* note 6, at 45.

⁶⁰ *Id.* at 139.

⁶¹ *Id.* at 45 (citing FLA. STAT. tit. XXIII, ch. 319, S 145).

⁶² *Id.*

and those that do not.⁶³ These vehicles codes may have to be modified, or else it might be necessary to clarify their applicability in light of the new AV legislation.

CONCLUSION

Only time will tell if driverless cars will become as ubiquitous, and perhaps one day even as routine, as other technology to which we have grown accustomed, or if they are merely a fleeting novelty that has caught the eyes of some policymakers. There are many factors that result in an innovation being accepted and utilized on a broad, public scale—it is never simply a matter of whether the gadget is neat, but how much it might cost, monetarily or otherwise, and what is truly to be gained. There are many uncertainties and quite a few risks with major consequences in the driverless car arena. Yet few can deny that it has the potential to save a great many lives, and so the question remains whether this prospect outweighs the possible detriments of this technology. Pennsylvania is in a position to become a frontrunner in this novel field, and the choice lies in the legislature's hands as to whether or not it will grasp the steering wheel and hit the accelerator.

⁶³ Smith, *supra* note 14, at 413.