

The Driverless Car and the Legal System: Hopes and Fears as the Courts, Regulatory Agencies, Waymo, Tesla, and Uber Deal with this Exciting and Terrifying New Technology

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There are an astounding number of deaths and injuries resulting from car accidents each year. Since the development of the motor vehicle, societies and legal systems have considered vehicular deaths and injuries as an acceptable cost when compared to the benefits of the motor vehicle.

The development of the driverless car has the potential to reduce the carnage that result from motor vehicle accidents. Many of these unnecessary deaths and injuries will be prevented by the new technology. This paper will discuss how the legal system in pursuit of justice and corporations in pursuit of profits deal with this new technology.

HISTORY OF THE DRIVERLESS CAR

Carnegie Mellon University considers itself to be the birthplace of autonomous vehicle technology. Carnegie Mellon's first autonomous vehicle was constructed in 1984 and was called the terminator. It had a top speed of centimeters per second. By 1986 the autonomous Carnegie Mellon prototypes could reach 20 miles per hour. CMU indicates that they have continued to make progress on the autonomous vehicles with their latest models capable of going at 70 mph on the highway without human control ("From 0-70 in 30," n.d.).

At the same time that Carnegie was working on their autonomous vehicles, European carmakers also explored the possibility of a driverless car. Their goal was to reduce the deaths and injuries which were caused by automobile accidents. The Eureka PROMETHEUS (Program for European Traffic with Highest Efficiency and Unprecedented Safety) project was started on October 1, 1986. The Pan-European project was launched by then Daimler-Benz cooperation with several European manufacturers, electronics producers and suppliers, institutes, and universities (Oagana, 2016).

The Benz product used computer sensors and cameras to control the vehicle. I have viewed photos of the early Benz autonomous vehicle and it looks like a combination of a milk truck and a moving van. According to Benz, the milk truck style was selected because the equipment needed to control the vehicle was too bulky to fit inside a normal size sedan. Despite the clunky design, or perhaps because of it, the S-class W140 Robot car achieved a speed of 115 mph on the Autobahn and was able to pass other cars without or with minimal human intervention (Oagana, 2016).

Carmakers have been making other technological improvements over the years. Air bags, adaptive cruise control, and ABS brakes are all examples of the progress made toward making cars less susceptible to driver error. This paper will discuss the efforts being made to make cars fully autonomous.

THE CARNAGE OF AUTOMOBILE ACCIDENTS

Each year thousands of Americans are killed in car accidents. The National Safety Council estimated that 40,100 Americans died in traffic accidents in 2017. There was a seven percent increase in fatalities in 2015 and a six percent increase in 2016. This thirteen percent increase in fatalities is the highest increase in half a century (Bomey, 2018). This statistic is surprising considering the increase in drunk driving enforcement and improved safety devices on cars.

In addition to the fatalities, 2.3 million Americans are injured every year in automobile accidents. The economic cost of these road crashes is estimated to be 230 billion dollars every year (Association for Safe International Road Travel, n.d.) The death and injuries caused by accident is a worldwide problem. It is estimated that 1.3 million die each year in road crashes and additional fifty million are injured.

It seems every day we read about deaths or serious injuries caused by car crashes. This author recently read an article about the comedian Tracy Morgan (Hetter, 2015). Mr. Morgan was seriously injured in an accident with a Wal-Mart truck, and his friend was killed. The driver of the truck was alleged to have been fatigued. In another incident an employee of a government agency struck a cyclist with a government vehicle while off duty. The cyclist was severely injured. The employee indicated that he was blinded by the sun and did not see the cyclist (Knauss, 2015).

Last year one of my clients was stopped at a red light when a truck struck him. The driver of the truck was alleged to have been texting at the time. There was a notorious case in Syracuse where a Megabus driver ignored warning signs and crashed his 13 foot 1 inch high bus into a bridge 10 feet 9 inches in height. That crash resulted in the deaths of four passengers and injuries to other passengers (Hannagan, 2010). In all of these cases the cause of the accidents is blamed on driver error.

Drunk/Drugged Driving

What are the causes of car crashes? Drunk/drugged driving causes the deaths of about 10,265 Americans each year (National Highway Traffic Safety Administration, n.d.). That is an amazing statistic as about 1.1 million Americans are arrested each year for DWI/DUI. According to Mothers Against Drunk Driving (MADD) the number of deaths from drunk driving has been cut in half since that organization was formed in 1980 (“Saving lives, serving people”, 2018). That organization continues to raise the social awareness of the dangers of intoxicated driving.

Unfortunately, drunk/drugged driving continues despite the efforts of the police, the courts, and MADD. Why does this problem continue despite arrests, public humiliation, jail sentences, probation sentences, and fines? The simple answer could be that some American drivers are irresponsible and continue to defy the laws regarding drunk/drugged driving. Their actions clearly endanger other innocent drivers on the road.

Speeding: Another Cause of Car Crashes

According to the National Highway and Traffic Safety Administration, about thirty-one percent of all traffic fatalities are caused by speeding (“Speeding”, n.d.). Despite fines, insurance premiums and other penalties, American Drivers continue to speed. There does not appear to be a centralized center that calculates the precise number of speeding tickets issued each year. However, we can surmise that the number of speeders is significant. This is illustrated by a New York City article, which reported that 140 speed cameras issued over 1 million speeding tickets in 2015 (Furfaro & Sauchelli, 2015). Once again the cause is drivers acting irresponsibly.

Failure to Wear a Seat Belt

According to the Center for Disease Control and Prevention (2017) over half of those individuals who were killed in a car crash were not restrained at the time of the crash. Despite penalties, fines, and education, Americans continue to circumvent a safety measure. Again, the root cause for these deaths is an irresponsible driver.

The New Threat on the Highway: Texting While Driving

Those of us in the academic world are well aware of the widespread use of texting. This author has continually noticed that students have difficulty not texting during a class period. Texting is sometimes called being distracted or not being present. The problem is that someone who is texting is not paying attention to their surroundings with possibly fatal consequences.

In 2016 a distracted driver injured one of my clients. The distracted driver was texting and struck my client who was in a vehicle and was stopped at a red light. My client was injured, and a lawsuit was filed against the distracted driver for negligence. My client also brought a lawsuit against the distracted driver's employer under the legal theory of respondent superior (let the master answer).

The NHTSA ("Distracted driving", n.d.) defines distracted driving as any activity that diverts your attention from driving. This includes texting, eating, drinking and talking. The NHTSA is particularly concerned with texting. Sending a short text on the highway takes about five seconds. That distraction means that the driver would not be watching the road for one hundred yards. The NHTSA reports that 3,450 Americans were killed distracted driving accidents in 2016.

Could Driverless Cars be the Answer to the Carnage of Automobile Accidents?

The NHTSA (2017) concludes that ninety-four percent of all car accidents are caused by driver error. Two percent of the crashes were caused by the vehicles, the environment caused two percent and two percent were caused by unknown factors.

It is the contention of this writer that the switch to driverless cars technology could reduce traffic accidents by 94%. The members of this academy disagree on many social issues. However, I believe that we can all agree that human behavior is difficult to change. In my view it is easier to change technology than human behavior. A great example of this is the theft of automobiles. In 1990 147,000 cars were reported stolen in New York City. This was a serious problem. Some attributed this social problem to the breakup of the family, social decay, declining morals and/or the lack of religion. In 2013 New York City reported 7,400 cars reported stolen. This was a ninety-six percent decrease. Did society change human behavior with the head start program, taking a village to raise our children, or better police enforcement? No; the answer was the development of the microchip, which allows a dealer to individually program the locking system of the car (Barro, 2014).

Thieves continue to steal 55,000 Honda Accords per year. However, eighty-four percent of the Honda Accords stolen were made before 1997. This may be because in 1998 Honda installed the ignition immobilizer that improved anti-theft security. It seems unlikely that the thieves decided to become kinder to the owners of the Accords made after 1998.

CURRENT DEVELOPMENTS IN THE DRIVERLESS CAR TECHNOLOGY

There are numerous carmakers that are working on various technologies to make the driverless car a reality. This paper will discuss some of those companies.

Cadillac: a Division of General Motors

There have been numerous improvements in the driverless car technology. Ralph Teeter, a blind man in the 1940's, invented cruise control (The National Academies of Sciences, Engineering, and Medicine, 2018). It became available in the 1950's and is standard on many vehicles.

One recent development is the adaptive cruise control (ACC) (Wayland, 2015). Adaptive cruise control allows the driver to not touch the gas or brake during highway driving. This technology allows the

driver to sit back while the vehicle is automatically at a safe distance from the car in front of it. For example, the driver sets the cruise control at 65 mph. The car in front slows to 50 mph to get off at an exit. The system allows the car to send a radar beam to ascertain the distance between the ACC car and the vehicle in front of it. The radar then sends a signal back to the ACC car, which automatically slows the speed of the car to keep it at a safe distance. After the leading car exits the highway, the ACC system automatically returns the speed of the car to 65 mph.

Another safety feature is the rear camera mirror. Cadillac reports that this device allows the driver to improve their rearview capabilities by 300 percent (GM Authority, 2018). A nice part of this feature is that rear passengers do not block the view for the driver, as the camera is stationed in the rear trunk portion of the car.

In 2017 Cadillac released the CTS Sedan, which has the capability of allowing cars to talk to each other. This feature is called vehicle-to-vehicle communication and can provide better information about road, weather and traffic conditions (Marshall, 2017). Another advantage of this technology is that it would help cars avoid collisions with other vehicles. A criticism of this system is that it only has the capability of communicating with other Cadillac cars with the vehicle-to-vehicle communication. The federal government also supports safety technology and has committed to spending four billion dollars to facilitate the use of driverless cars (Gordon-Bloomfield, 2016).

Tesla, Inc.

Tesla Inc., formerly Tesla Motors, is an American carmaker that specializes in electric cars. The company started in 2003 and released an electric sports car in 2008.

(On a personal note, this author taught macroeconomics and microeconomics classes in the past. I remember stating smugly that there will never be another new American carmaker because of the large start-up costs and high fixed expenses related to building a plant, developing a supply chain and marketing an untested model. Tesla, Inc. has proved me wrong.)

Tesla has been so successful that its stock has been valued at fifty billion dollars, which is greater than Ford's stock valued at forty-five billion (Lee, 2017). Tesla has set a new standard as it sold only 76,000 cars with a loss of 675 million dollars on 2016. During the same time frame Ford sold 2.6 million cars and earned a profit of 4.6 billion dollars. The valuation of Tesla's stock defies conventional economics. However, the value of Tesla's stock is related more to its vision of an electric driverless car rather than its current profit and loss statement.

One of Tesla's aggressive moves was its introduction of the autopilot system. "The auto pilot allows the vehicle to match speed to traffic conditions, keep within a lane, automatically change lanes without the drivers' input, transition from one freeway to another, exit the freeway when your destination is near, self-park when near a parking station and the car can be summoned to and from your garage" (Tesla, 2018).

Tesla has installed this full self-driving technology on all of its newer vehicles. Tesla proudly states that its self-driving technology provides a level of safety that is substantially greater than that of a human driver (2018).

All Tesla vehicles now have eight cameras that monitor a 360-degree area around the vehicle. The forward camera monitors up to 250 yards in front of the vehicle. Although Tesla indicates that the new technology is effective now it realizes that it needs to obtain regulatory approval. The interaction between the autonomous technology and the regulatory agencies will be discussed later in this paper.

Are Tesla's Autopilot Claims Misleading?

Some consumer groups are concerned that the marketing of Tesla's autopilot feature are misleading and or deceiving and could place individuals at risk. The Center for Auto Safety and Consumer Watchdog has raised a complaint with the Federal Trade Commission (Levine & Simpson, 2018).

The consumer groups allege that Tesla's advertising indicates that the autopilot feature is more dangerous than Tesla claims. In particular they note that Tesla is the only level 2 car manufacturer to

market its car as self-driving. Furthermore Tesla notes on its website that all of its cars have “Full self-driving hardware” (The Tesla Team, 2016).

The consumer groups are concerned that Tesla’s autopilot advertising encourages the drivers to pay less attention to driving. This writer has observed numerous Tesla videos in which the driver is not touching the steering wheel as the car drives down a windy road while pedestrians walk along the side of the road. My own reaction was that the pedestrians walking on the side of the road have no idea that the Tesla passing them did not have anyone holding the steering wheel.

The video actually states that the “the driver is there only for legal reasons he is not doing anything; the car is driving itself.” The autopilot feature has been involved in three well-publicized accidents. Two of those accidents resulted in the death of the driver while the third resulted in injuries. I will review those three accidents.

Tesla Autopilot Accident #1 May 2016 Tesla Fatal Car Accident, Florida

On May 7, 2016 forty-year-old Joshua Brown operated a Tesla Model S on highway 27 near Williston Florida. The car was moving at 74 miles per hour when a tractor-trailer turned in front of it. Brown was using the semi-autonomous autopilot at the time of the accident. The Tesla struck the trailer portion and went under the trailer. It did not stop for another 900 feet. Mr. Brown was killed in the accident.

The NHTSA conducted an investigation and concluded that the Tesla technology was not at fault in that accident. The Tesla involved was not fully autonomous and the driver could have pressed the brakes. The brakes on the Tesla were not engaged before the accident. The NHTSA concluded that the driver must be fully aware when using driver assist technology (National Transportation Safety Board, 2017). The estate of Mr. Brown did not bring a lawsuit against Tesla.

Tesla Autopilot Accident #2 March 23, 2018 Tesla Fatal Car Accident, Mountain View, California

On March 23, 2018, Mr. Walter Huang was operating a Tesla Model X on Route 101 in Mountain View, California. The autopilot was engaged at the time of the incident. The autopilot warning system was activated three times. Those warnings informed the driver that he should put his hands on the steering wheel. The driver did not have his hand on the steering wheel for six seconds prior to the crash.

The autopilot was set at 75 mph prior to the crash. It is typical in adaptive cruise control that the car will automatically slow to keep a safe distance between itself and the car ahead of it. The Tesla slowed to 65 mph and then accelerated to 71 after the lead car was no longer in front of it. The Tesla then crashed into a highway barrier, which killed the driver. The driver was removed from the car prior to the car being engulfed by fire (National Transportation Safety Board, 2018).

The family of Mr. Huang does not appear to have filed a lawsuit against Tesla as of the date of this paper. The family has obtained an attorney Mr. Mark Fong. According to Mr. Fong, “The autopilot system should never have caused this to happen.” (Higgins & Spector, 2018).

Tesla Autopilot Accident #3 May 11, 2018 Tesla Personal Injury Car Accident, South Jordan, Utah

On May 11, 2018, a Tesla model 3, which had engaged autopilot, struck a stopped fire truck in South Jordan Utah. According to the driver she had engaged autopilot and was looking at her phone at the time of the accident. The driver suffered a broken ankle, and the driver of the fire truck also suffered an injury (South Jordan Police Department, 2018).

One concern with the Utah crash was that the car, in autopilot mode, sped up to about 60 mph prior to the collision. Elon Musk thought it was “messed up” that the media focused its attention on an accident which resulted in a broken ankle instead of discussing the 40,000 killed each year in car accidents. Furthermore he was impressed that a 60 mph crash, which involved one of his vehicles, resulted in an ankle injury rather than a death (Stauffer, 2018).

The Google V. Uber Saga: It Could Be a Mini Series

Act 1: Levandowski and Google

Anthony Levandowski attended the University of California at Berkley. He was involved in the development of a self-driving motorcycle in 2004. Levandowski began to work at Google in 2007 where he worked in the autonomous car division, which is now called Waymo. Levandowski is talented in the area of autonomous vehicles. He was so talented that he produced his own self-driving Prius on his personal time (Harris, 2017). Levandowski was frustrated by the slow pace of government approval and the Google bureaucracy. He wanted to push the use of driverless cars.

Uber was also pushing the limits and placed some self-driving taxis on the streets of San Francisco until the California Department of Motor Vehicles pulled their registrations. At the same time, Levandowski was also pushing the limit on the regulations of driverless cars.

Act 2: Levandowski Leaves Google in January 2016 and Starts his Own Company Otto

Frustrated by the slow pace at Google, Levandowski started his own company Otto. Otto filmed a promotional video of a truck driving itself near Reno, Nevada, with no one in the front seat. Levandowski wrote at the time that he was “driven by an urgency and deep obligation to accelerate the future” (Marshall, 2017). Levandowski angered the Nevada regulators because Otto had not gotten a testing permit and did not have the required insurance. The State of Nevada believed that Levandowski’s actions placed the citizens of Nevada at risk.

Act 3: Uber Buys Otto for \$680 Million in August 2016

It seemed like the perfect marriage. Levandowski the engineer who pushed the limits of regulators in Nevada and Uber who pushed the limits in San Francisco’s ride sharing world. In August of 2016 Uber bought Otto for \$ 680 million dollars. Although it seemed like destiny, it appears (through discovery of documents) that this was not a coincidence and that Levandowski was communicating with Uber prior to his leaving Google.

In October of 2016 Otto did a beer delivery for Budweiser during which the driver of a tractor-trailer left the steering wheel and read a magazine in the back seat of the truck. The Otto truck drove itself on a Colorado highway for two hours. It is the opinion of this writer that that video signals a new era in truck transportation (Uber Advanced Technologies Group, 2016).

The collaboration of Uber, Otto, and Budweiser seemed like a sure bet. Budweiser could see cost savings and safety improvement by using the new technology. Otto and Uber had a proven technology that was on the verge of opening a new market. However, a new lawsuit may have changed those plans.

Act 4: Google Files a Lawsuit Against Uber and Otto

On February 23, 2017 Waymo sued Uber and Otto in the United States District Court San Francisco. Waymo alleged that Uber and Otto violated its patents and stole trade secrets from Waymo. In particular, Waymo alleged that Levandowski, while still employed at Waymo, took 14,000 files from Waymo. He placed those files on an external drive and then wiped his company issued laptop clean to hide his actions (Waymo Team, 2017). Waymo requested a court order that the stolen files be returned. Furthermore, Waymo requested an injunction, which would prohibit Otto and Uber from using the stolen technology.

Act 5: Uber Fires Levandowski

The court granted an injunction prohibiting Uber from using the Waymo technology and ordered that the stolen files be returned. In May of 2017 Uber fired Levandowski after he refused to provide information in regards to the Waymo case (Cava & Swartz, 2017). Uber was ordered by the court to provide the records allegedly taken from Waymo. Levandowski refused to cooperate with that order. Levandowski pled his Fifth Amendment rights in the case. He could have faced criminal charges in regards to his alleged taking of the trade secrets.

Act 6 February 2018 Uber and Waymo Settle Case

The trial of the Waymo v. Uber was expected to be a long and detailed case of trade secrets. In a surprise move, the parties reach a settlement five days into the trial with Waymo accepting a small ownership in Uber (value about \$245 million). Uber also agreed to not use Waymo's confidential secrets in regards to driverless car technology (Wakabayashi, 2018).

It is interesting that the former adversaries are now involved in business as Waymo now has a small ownership share in Uber. It is perhaps more interesting that Waymo has also made an agreement with Lyft, Uber's competitor, to collaborate on self-driving cars (Isaac, 2017).

This author believe that the Waymo v. Uber case will become a classic example for intellectual property students. It provides a great example of a patent and trade secret dispute. It also shows why the hiring firm needs to do due diligence before hiring an individual from a competing company. The hiring firm must ensure that the intellectual property they are buying is not the property of another company.

First Fatality Between a Driverless Car and a Pedestrian on March 19, 2018, Tempe, Arizona. The Car Was Being Tested By Uber

On March 19, 2019 an Uber Volvo was in autonomous mode when it struck and killed 49 year old Elaine Herzberg in Arizona. Ms. Herzberg was walking a bicycle across a highway at night when she was struck by the Uber vehicle. There was an Uber driver behind the steering wheel at the time, but the driver was unable to prevent the collision (Wakabayashi, 2018). Uber stopped testing its self-driving car program in Arizona after the accident.

The performance of the Uber self-driving program has not been up to the standards of their competitor Waymo. The State of California requires that the self-driving car companies report the frequency of interventions. An intervention occurs when a driver needs to intervene or override the self-driving vehicle. Google reported that its Google drivers needed to intervene about every 5,600 miles while the Uber drivers needed to intervene about every 13 miles (Wakabayashi, 2018).

To add insult to injury, Waymo's CEO, John Krafcik publicly commented on the Uber accident. Mr. Krafcik acknowledged that the Uber accident was a tragedy. He further stated that they were "very confident that their car could have handled the situation" (Ohnsman, 2018). One can see why a plaintiff's attorney would have loved to call Mr. Krafcik as an expert witness.

Uber settled the case within two weeks of the fatal accident. This proves that the wheels of justice do not always turn slowly. It appears that payments were made to Ms. Herzberg's daughter and husband. The attorney for the family made no further statements about the settlement (Siddiqui, 2018). It appears likely to this writer that the family signed a nondisclosure agreement as part of the settlement.

One can understand why Uber did not want this case to go to trial. The family could have raised such legal issues as respondent superior, strict liability, product liability, negligence and comparative negligence. Uber executives would have had to testify as to why their self-driving technology is so inferior to Waymo. Lastly Waymo engineers could have been brought to court in order to testify about the superiority of their product. They could also testify that the death of Ms. Herzberg was preventable if the car involved had used Waymo technology instead of Uber technology.

LIABILITY ISSUES OF THE DRIVERLESS CAR

The first question normally asked in a car crash case is who is liable? The plaintiff's lawsuit is normally based on negligence. The plaintiff will argue that the defendant was negligent by striking the defendant's car. The plaintiff could also argue that the defendant was negligent per se by speeding, drunk driving, running a stop sign, etc.

The driver of a car is not liable for a defective car barring negligence on the driver's part. From a practical point of view the manufacturer has deeper pockets than the driver and the carmaker's liability provides the company with an incentive to produce a safe car.

The courts have long held that carmakers are liable for defective cars under the legal principal of strict liability. A recent example is the settlement of Yinling v. General Motors United States District

Court Western District of Pennsylvania 3:14-cv 116. (39) In that case General Motors agreed to a 2016 settlement in regards to an extensive recall of defective ignition switches.

The *Grimshaw v. Ford Motor Company* (119 Cal.App.3d 757, 174 Cal.Rptr. 348) (40) was a noteworthy case where Ford was liable for the placement of a gas tank knowing that the gas tank had insufficient crash space. In another recent case Toyota was forced to pay over \$ 1 billion dollars for producing cars with an acceleration problem (Ross, Rhee, Hill, Churchmach, & Katersky, 2014).

Volvo has made the statement that they will be liable from crashes resulting from their driverless car technology. Although this seems like an altruistic move by Volvo it is consistent with the current product liability laws. It is clear from a liability point of view that the manufacturers will be held liable for any defects in the driverless car technology (BBC News, 2015).

THE FUTURE OF GOVERNMENT REGULATIONS

There has been significant progress in the technology of the driverless car. However, regardless of the improvements with the technology, the government has the final word on when and if they will be released onto the American roads.

Each state regulates car insurance. Decisions such as the minimum coverage, the rights of the consumer, and the solvency of the insurance companies are made by the states. Each of our fifty states will need to come up with a standard for the insurance of driverless car.

Insurance companies will not be disinterested parties in these regulations. The introduction of driverless cars could reduce car accidents by ninety percent. They will certainly have an impact on the insurance companies in that field.

Cars are registered by the Department of Motor Vehicles in each state. There is a need for a national plan as a car driving from New Jersey thorough New York and to Connecticut would be under the jurisdiction of three states. It is untenable that driverless cars could be legal in some states and not others. What if California requires a steering wheel and Nevada does not? The delivery of the Otto technology would be untenable if a truck needed to stop at each state border. States that refused to allow driverless trucks within their border could be viewed as interfering with interstate commerce and thereby in violation of the commerce clause.

Ford, Lyft, Uber, Volvo, and Waymo established the “Self-Driving Coalition for Safer Streets in April 2016 to work with lawmakers, regulators, and the public to realize the safety and societal benefits of self-driving vehicles. The Coalition is also dedicated to working collaboratively with civic organizations, municipalities, and businesses to bring the vision of fully self-driving vehicles – that is, vehicles that don’t require a driver – to America’s roads and highways” (Self-Driving Coalition for Safer Streets, 2018). Daniel Strickland is the organization’s counsel and spokesperson. He was the NHTSA’s Administrator from 2010 to 2014.

The NHTSA has stated that they it sees a benefit to driverless cars. “The U.S. Department of Transportation has projected that fully self-driving vehicles could significantly reduce the severity and frequency of crashes and fatalities. According to the NHTSA, there were 35,000 fatalities on America’s roads in 2015. An estimated 94% of road accidents are caused by human error, and motor vehicle crashes are the leading cause of death among young people, aged 15-29 years. Self-driving technology has the great potential to enhance public safety and mobility for the elderly and disabled, reduce traffic congestion, improve environmental quality, and advance transportation efficiency.”

It is this writer’s hope that the NHTSA and the states would be able to enact some uniform standards. Unfortunately the NHTSA has not set specific overriding rules at this time (Rogers, 2016). There is no question that there is a delineation of the state and federal government jurisdiction on cars. The states set the speed limits, driver’s test, car inspection regulations, and numerous other regulations. The federal government regulates the Federal Motor Vehicle Safety Standards, FMVSS, which include such things as lights, air bags, etc., and the general safety standards on each vehicle.

The FMVSS is critically important to the commercial climate in the United States. This allows a carmaker to sell the same car in New Jersey as it does Alaska. It is difficult to overestimate the impact

this has on car sales. If the federal government failed to set safety standards, then each state would set its own safety standards. This would create what some economists would call balkanization. In other words carmakers would have to comply with 50 different safety regulations.

The NHTSA has not, as of this writing, established a national standard for autonomous vehicles. These are exciting times as numerous states currently have enacted autonomous vehicle legislation. As a result the states are leading the way in allowing the driverless car onto American highways.

The governor of Arizona was criticized after he welcomed Uber to that state after San Francisco placed restrictions on Uber testing self-driving cars. The Uber accident there, which was discussed above, may prove the need for national standards (Neuman, 2018).

Weather is a problem and different states have different conditions. One of the reasons why Uber and Waymo elected to test in Arizona was because of more liberal regulations and a sunny climate. Phoenix averages 299 days of sunshine per year. The driverless car will have fewer environmental obstacles in Phoenix, Arizona which averages 0 inches of snow per year while Syracuse, NY averages over 100 inches of snow per year. The driverless car will have to confront these geographical variances.

CONCLUSION

There is no question that there have been major improvements in the driverless car technology in last few years. Numerous companies are investing large amounts of time, money and capital into improving this technology. The federal government has also invested heavily into this technology. The motivation for this investment could be profit and/or public safety.

The technology appears to be available now and the restrictions on the technology are government regulation. Mr. Levandowski's statement that he wanted to push the technology may have a human as well as a profit motive. Each year that the technology is delayed costs 40,000 lives and 2 million injuries nationwide with the worldwide death toll at 1.3 million and fifty million injured.

There is an obvious reluctance to adapt any new technology which has a risk of causing death or injury. If the sole benefit of the autonomous cars were increased efficiency and higher profits the current delays would be more understandable. There is no question that there will be deaths caused by failures of the new technology. However, those risks appear to pale in the face of the ongoing carnage of traffic accidents worldwide.

Although there have been current improvements in car safety with adaptive cruise control, air bags etc. The death toll from car crashes continues to rise. Despite millions of arrests, Americans and others continue to drive while under the influence of alcohol and or drugs. Despite education and fines, people still refuse to wear their seat belts. Despite arrests and fines, drivers continue to speed. We are currently in a society where young people and others have been warned about the dangers of texting and driving. If the students in my classes are any example, many find it difficult to avoid texting for more than ten minutes at a time. The driverless car could be the answer to driver irresponsibility. That answer should be allowed on the roads as soon as possible to prevent the millions of deaths and injuries that occur in car crashes each year.

This paper has discussed the growing pains of how the legal system is dealing with this disruptive new technology. The Waymo v. Uber case demonstrated how the courts are placed to resolve intellectual property disputes.

The Waymo case also was an example of how Uber tried to compete against Waymo in the self-driving car arena. Waymo has years of experience in this area while Uber saw an opportunity to acquire a former Waymo employee's expertise to jump start their self-driving technology. Waymo presented a threat to Uber as the new technology would eliminate a major expense of their system. The Waymo rideshare program scheduled to begin in Phoenix, Arizona in 2018 does not have the expense of a driver. The Uber crash in Arizona on March 19, 2018 showed the risk that Uber took with placing cars on the road with a technology that was inferior to Waymo's. Waymo has a far superior performance record with its driverless technology. In some areas of technology, an inferior technology may result in delays and/or

customer dissatisfaction. In the Uber crash, the variation between the Uber and Waymo technologies may have been the difference between life and death.

This writer recently spoke to a Tesla employee about the Waymo versus Tesla autopilot technology. The employee freely stated that the Waymo technology is more advanced than the Tesla autopilot technology. However, Tesla advertisements in regards to the autopilot could be inconsistent with their legal position.

Tesla's advertisement indicates that the car drives itself while the driver is not doing anything. This clearly implies that the car is driving itself. On the other hand Tesla claims that the driver must keep his hands on the steering wheel. Tesla is not backing down on its claims for autopilot. While this paper was being written, Tesla announced that will have full self-driving hardware installed on its cars in 2018. They continue to promote the autopilot system despite the pending accidents in Utah and Mountain View, and do not appear willing to change the name of "autopilot" as has been requested by the consumer groups. Tesla does not consider autopilot to be a misleading term.

The public, the courts, and regulatory agencies will continue to deal with the issues of intellectual property, product liability, licensing, and misleading advertising as the driverless car makes its inevitable entrance into the American landscape. Waymo has received permission to begin a fully autonomous ride sharing system in 2018 in Phoenix Arizona. This service could be the beginning of the solution to the deaths of the nearly 1,000,000 individuals that are killed in automobile accidents worldwide each year. We should all hope so.

One last postscript. On November 30, 2018 on Route 101 near Palo Alto California, a Tesla was driving at 70 mph when police noticed the driver was asleep. The police attempted to awaken the driver with lights and sirens but to no avail. The vehicle continued to drive itself for about 7 miles until a police car placed itself in front of the Tesla and slowed down. This caused the autopilot system to slow down and pull over. The driver was subsequently arrested for DUI (Kelleher, 2018). It is the opinion of this writer that this may have been a watershed moment in the area of driverless cars.

Since the advent of the automobile any instance where an automobile was moving at 70 mph and the driver is incapacitated has resulted at minimum in a crash and frequently death or injury. In this instance the new technology resulted in the arrest of the driver without any personal injuries or property damage. The driverless technology may have saved that driver's life and others on Route 101 in California that day. This technology seems destined to save many more lives in the future.

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