

Driverless technology and the issue of liability: Who's responsible?

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***This article first appeared in Inside Counsel on March 14, 2014: <http://bit.ly/1uHhrm8>**

It seems like every week, another high-tech company or car manufacturer announces that it will “soon begin road-testing” their version of an autonomous vehicle (AV). In fact, companies such as Audi have been testing self-driving cars for years. In one particular [demonstration](#), a fully automated Audi TTS ascended Pikes Peak in Colorado at near-racing speeds.

Now, four states — Nevada, Florida, California and Michigan — have legalized the testing of AVs on public streets. Does this mean that we will soon be sharing the highway with robot cars like those seen in the movie *Total Recall*? Not likely. The issue of accident liability is a big bump in the road on the way to becoming a driverless society, and resolving this problem is going to take a long time.

Are we there, yet?

Driverless technology is quickly becoming a reality. Many of us are already driving cars that utilize some form of “semi-autonomous” technology — including rear-collision prevention, pedestrian alerts, adaptive cruise control, lane assist, and automated parallel parking. And researchers, such as those at Carnegie Mellon University (which has had an AV program since 1984), appear to be very close to developing a [fully functional self-driving vehicle](#).

The advantages of driverless technology

Proponents believe that once AVs advance beyond the testing stage, society will enjoy many benefits, chief among which are improved safety and convenience:

Improved safety

The Eno Center for Transportation, an independent research group, estimates that 40 percent of the 2.2 million car crashes that cause death or injury involve alcohol, inattention, drugs or fatigue. Since driverless vehicles will never be distracted, drunk or drowsy, proponents argue that accident statistics should drastically improve. In fact, self-driving cars may be able to react to hazards faster than most *attentive* drivers, especially if such a vehicle is equipped with a [LIDAR](#) (“light/radar” or “laser

radar”) system and [thermal heat sensing technology](#) that enhances night-vision. If this technology does reduce accidents, the entire nation could enjoy lower insurance rates and healthcare costs.

Convenience

AV operators effectively become passengers and can thus do the same things that normally only passengers can do — such as read a text message or take a nap. All the while, the self-driving vehicle will maintain a safe driving distance and speed, thereby reducing tailgating and traffic congestion. Further, people who are elderly, handicapped or otherwise unable to drive will no longer be dependent on others for their transportation needs. In [this video](#), Google demonstrates how a man who has lost 95 percent of his eyesight is able to use an automated car to transport himself all over town.

Liability

If driverless technology is to ever advance beyond the testing stage, legislators will need to determine who will be held responsible in an accident involving an AV.

Operator liability

If legislators determine that strict liability should adhere to the person behind the wheel of a driverless vehicle (if there even is a wheel) then consumers may find the prospect of purchasing a self-driving vehicle to be too risky (think about an AV having a software glitch or being infected with a computer virus while traveling on a mountain road or in a crowded city). If owners will be expected to take over manual control of the AV in the event of an emergency, then they will need to remain just as vigilant as the driver of a regular vehicle. Such a requirement would seem to defeat the whole purpose of buying an autonomous car. After all, the biggest selling point for self-driving cars is that operators can relax and let the AV do all the work.

Perhaps regulators will adopt rules similar to those observed by airline pilots. While flying, pilots can engage the autopilot when the surroundings are rather free from risk, but they must be able to regain control at a moment’s notice when they enter crowded airspace. The difference is that, when flying, one has a far larger safety margin than when driving. An automobile traveling at 70 MPH is moving at 100 feet-per-second, and is always within a hair’s breadth of hitting another object — a median, another vehicle, a roadside obstacle, etc. This means that a driver only has about 160 thousandths of a second to respond to an unforeseen hazard.

Manufacturer liability

On the other hand, if liability shifts to the manufacturer, auto makers may lose their incentive to produce self-driving automobiles. It is foreseeable that, in virtually every accident, manufacturers will blame the operator, and the operator will blame the manufacturer. Regulators may therefore require that all AVs be equipped with black box technology, like that used on commercial aircraft. A black box could act as an objective referee by helping to trace the causal factors of an AV-involved accident. But adding this technology will further increase the vehicle's price tag.

Further, if liability can be shifted to deep-pocket manufacturers, there is a risk that industry leaders could be sued into bankruptcy. Thus, legislators may need to reduce the potential financial liability for AV producers like they did for the makers of childhood vaccines. Lawmakers did this through the enactment of the National Childhood Vaccine Injury Act of 1986. This act made it more difficult to sue vaccine makers for big damage awards by establishing systems and programs for alternative dispute resolution.

Insurance

The issue of insurance is inseparably linked to the issue of liability, and this raises some interesting questions. For example, will an operator's insurance premiums still be determined by one's age, good driving history, etc.? Couldn't one argue that these factors are irrelevant when it comes to self-driving cars?

Additional concerns

Beyond the thorny issue of assigning liability in the case of an accident, there are additional concerns surrounding the adoption of driverless technology, such as the following:

- *Privacy.* Will it be considered a privacy violation for auto makers to keep track of every place that a self-driving car has ever been? And will vehicle-to-vehicle communication potentially open up AV owners to unwanted exposure?
- *Criminal liability.* To whom should a patrol officer issue a ticket for a moving violation? The operator, or the manufacturer who failed to update the car with a small town's new, lower posted speed limits?
- *Hacking.* Will owners be responsible if a hacker takes control of their car — perhaps in an attempt to steal it — and wreaks havoc? What if the owner is inside the car at the time of the

hacking, and the perpetrator demands a ransom? Will police have a kill switch to override self-driving cars that refuse to pull over?

Self-driving cars promise many wonderful benefits, but the transition to driverless technology is going to require a lot of pre-planning and problem-solving, and that will take years. But even though America will not be revving up for a robo-revolution anytime soon, it is still fascinating to contemplate what it will be like to be able to just jump in a car and say, “Take me home!” or “Take me to the beach!” Wait! That’s what kids say to their parents right now!

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