Individual Legal Memorandum
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The advent of autonomous vehicles

In an USA Today article[1] on September 14, 2012, Bill Ford talks about the future of the automobile and current trends. One trend he mentions is cars that can drive themselves. In April 2012, the car manufacturer Ford stated that the technology for autonomous vehicles already exists today, but that people are not ready to give up control of the car.[2] Besides the question of whether there is a market for autonomous vehicles, the legal question that comes to mind is, whether such cars would be legal in the U.S.?

The simple answer is that there is no such law that requires a human driver to operate a vehicle and thus it is not illegal.[3] But manufacturers want legal certainty. This is subject to state regulations. The questions to be asked in this memo are: how are autonomous vehicles regulated today? Who can be held responsible for accidents if no person is driving an autonomous vehicle?

The short answer is that currently three U.S. states have started to incorporate autonomous vehicles into their statutes, making it possible to license them for testing under certain restrictions. The only accident reported with an autonomous vehicle occurred while a human was driving.[4] For now there is no true answer to the question: who can be held responsible for accidents where no human was in control of the vehicle?

State and Federal Statutes governing the question of operating autonomous vehicles

Google has developed a fleet of autonomous vehicles and has been lobbying lawmakers to legalize them. Autonomous vehicles can drive without the driver actually doing anything. Up to now three U.S. states (Nevada[5], Florida[6,7], and California[8]) have passed bills which introduce autonomous vehicles into their statutes. In May 2012, Nevada became the first state to license an autonomous vehicle.[9] More states are working on legislation to allow autonomous vehicles as well. Since Californian is currently in the news, the focus in this memo will be on the Senate Bill No. 1298 that Governor Jerry Brown signed recently on September 25.

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[1] Woodyard, C. (2012, September 14). Cars won't fly, but they'll amaze; Ford's top executive says tech will drive the industry. *USA TODAY*. Pg 8F.
[2] Fitchard, K. (2012, April 9). Ford is ready for autonomous cars. Are drivers? Retrieved from: http://gigaom.com/mobile/ford-is-ready-for-the-autonomous-car-are-drivers/
[3] Miller, C. C. (2012, September 26). That empty driver's seat? Legal in California. *The International Herald Tribune*. Pg. 20.
[4] Klayman, B. (2012, August 24). Era of self-driving cars near, auto executives say. *National Post* (Canada). Section: Driving. Pg. DT13
[5] Assembly Bill 511, 76th Session (2011). http://www.leg.state.nv.us/Session/76th2011/Reports/history.cfm?ID=1011
[6] Vehicles with Autonomous Technology. Florida House of Representatives. House Bill 1207 (2012). http://www.flsenate.gov/Session/Bill/2012/1207
[7] Autonomous Vehicle Technology. Florida Senate Bill 1768 (2012). http://www.flsenate.gov/Session/Bill/2012/1768
[8] Vehicles: autonomous vehicles: safety and performance requirements. California Senate Bill No. 1298 (2012). http://leginfo.legislature.ca.gov/faces/billVotesClient.xhtml?bill_id=201120120SB1298
[9] Slosson, M. (2012, May 8). Google gets first self-driven car license in Nevada. *REUTERS*. http://www.reuters.com/article/2012/05/08/uk-usa-nevada-google-idUSLNE84701320120508

In California, the Vehicle Code governs the requirement for any person to register a vehicle he wants to drive, move, or leave standing upon a highway (Cal Veh Code § 4000). Autonomous vehicles are not named in the Vehicle Code. The Senate Bill No. 1298 adds the Division 16.6 (introducing Section 38750) to the Vehicle Code which introduces autonomous vehicles. After the enactment of the bill, autonomous vehicles may be operated by a driver who possesses the proper class of license to operate the vehicle (Cal Veh Code §38750b). The driver is required to sit in the driver's seat and operate the vehicle or monitor the vehicle's autonomous driving, taking immediate manual control when necessary. Only manufacturers can obtain a license for an autonomous vehicle, after they provided proof of insurance in the amount of $5,000,000 and only drivers designated by the manufacturer may operate the vehicle. The autonomous vehicle has to comply with any safety standards enacted by the state or federal government.

Manufacturers have to be conscious that the bill allows for possible changes to requirements for operating an autonomous vehicle. The Department of Motor Vehicles (DMV) may establish additional requirements to ensure safety (Cal Veh Code §38750d3). Before a manufacturer will be granted a license to operate a vehicle without a driver in the driver's seat, the DMV is required to inform the Legislature and has to wait at least 180 days (Cal Veh Code §38750e2). This regulation is an uncertainty to whether future approval for driver-less vehicles will be granted or denied.

The Vehicle Code governs the duties of a driver in the case of an accident (Cal Veh Code §§ 20000-20020). As long as the autonomous vehicles are only being tested and a driver is required to be in the vehicle, the driver can comply with these rules, for example stopping at the scene of the accident (Cal Veh Code §20001). How a driver-less vehicle would be able to comply with this set of rules, seems to not have been decided yet.

To be able to decide what caused an accident, the bill requires the autonomous vehicle, while being in autonomous mode, to store all sensor data for at least 30 seconds prior to any collision. The data is required to be saved for three years after the collision (Cal Veh Code §38750c1G). This allows for an investigation whether the vehicle caused the crash. If the data was allowed in a lawsuit against the manufacturer, the company might be able to prove that the vehicle did not make a mistake but something else is the proximate cause for the collision. But as long as a person is required to sit in the driver's seat and take immediate manual control of the vehicle in any case of failure or emergency (Cal Veh Code §38750b3), the driver is responsible and current law applies to him.

Common law governing accidents caused by autonomous vehicles

Since autonomous vehicles are still very new and in development, there exists no precedential decision that directly deals with this new technology. One case, though, might give some guidance to when an operator of an autonomous vehicle could be excused from liability even when the vehicle caused the accident.

Currently, an operator of a vehicle can be excused from liability if he faced an unexpected danger, was without fault, and acted as a normal person could be expected to act in trying to avoid the danger (Mortensen v. Fairbanks, 1 Cal. 2d 489, 35 P.2d 1030 (1934)). As discussed above for the state of California, the operator of the autonomous vehicle would be required to sit in the driver's seat during operation and take immediate manual control over the vehicle in the case of an emergency. But what if the autonomous technology was in control of the vehicle prior to an unexpected danger (emergency)? Could it be considered the operator's fault if he could have avoided danger by driving the vehicle manually? Would the operator be excused from liability if the autonomous vehicle warned the operator immediately as it detected danger and the operator took immediate manual control over the vehicle but was unable to avoid the danger? In such a case the recorded sensor data would probably be inspected to decide if the vehicle could have warned earlier to avoid the danger, which might lead to a product liability as it is something only the manufacturer can influence. But this is mere speculation as there is no common law on autonomous vehicles yet. Currently there is no answer to the raised questions.

Ethical impact analysis of the introduction of autonomous vehicles

Legislative and manufacturers depend in their arguing in favor of developing and legalizing autonomous vehicles on the *ethics of care*. They argue that most car accidents are due to human errors.[10] By replacing the human driver with autonomous technology they hope to lower the rate of injuries and deaths caused by vehicle accidents.[11] Today more and more cars are equipped with safety features that assist the driver and help him to keep control of the vehicle in dangerous situations (e.g. anti-lock braking systems or automatic braking systems). As drivers are not yet willing to give up control completely, car manufacturers will gradually introduce more automation.[12] In terms of the *ethics of care*, the manufacturers can justify increased automation because they take care of people and save lives by reducing accidents. Legislators justify the legalization of autonomous technologies in the same way as they promise to meet the general need of lowering the death and injury rate by reducing vehicle accidents.

[10] Maddox, J. (2012). Improving Driving Safety Through Automation. *NHTSA*.
[11] Hirsch, J. (2012, September 26). State gives boost to self-driving cars; Legislation creates guidelines for the vehicles to be tested and operated. *Los Angeles Times*. Section: BUSINESS, Business Desk, Part B, Pg. 2
[12] Fitchard, K. (2012, April 9). Ford is ready for autonomous cars. Are drivers? Retrieved from: http://gigaom.com/mobile/ford-is-ready-for-the-autonomous-car-are-drivers/