Autonomous cars – initial thoughts about reforming the liability regime

by Mathias N. Schubert, Gen Re, Cologne

1 The advent of autonomous vehicles

We have been reading about autonomous cars (also referred to as self-driving or even driverless cars) for years. While the concept is not new, its practical implementation seems no longer a thing of the distant future.

The idea of sitting passively in the “driver’s seat”, in the foreseeable future most likely being legally obliged to pay attention to what is going on while being chauffeured, may not be appealing to many people, but others will have a different view, e.g. people who do not like driving or who feel insecure doing so.

To some extent, the technology already exists in products available to (affluent) members of the general public, rather than in experimental vehicles like the famous Google car. For instance, the new Mercedes-Benz S-Class includes a “Traffic Jam Assistant” that enables it to automatically follow a car in front at low speed.

However, the prognoses vary wildly as to when autonomous cars will be introduced on a large scale, gradually displacing conventional automobiles driven by humans. Will this begin to happen as early as 2018 or so, or will it be more like 2030? Be this as it may, the advent of autonomous vehicles will most likely be a gradual development, and one can doubt that the fully autonomous car – a vehicle that is both able and legally permitted to drive unaided for the entire journey with no human intervention, possibly even without a human in it – will become a reality for practical purposes any time soon.

A development in two or even three overlapping main stages, following further testing and experimental use of autonomous vehicles, appears to correspond to a widely held view. The UK Department for Transport, apparently on the basis of feedback obtained during a consultation held in 2014, expects first the introduction of “highly automated vehicles”, to be followed by “fully automated vehicles”.

About This Series

Created for our clients, our Insurance Issues publication provides an in-depth look at timely and important topics on insurance industry issues.
An unpublished study prepared by Exane BNP Paribas makes more specific estimates on the timing for three segments, which can be interpreted as follows:

- A slow and gradual introduction of “semi-automated vehicles”, beginning already now in some places
- The subsequent advent of the comparatively faster growing segment “highly automated vehicles”, beginning around 2020
- The advent of the slowly growing segment of “fully automated vehicles”, beginning sometime after 2020 and representing a market share of less than 15% by 2035, of all three segments combined

Figure 1 does not show the aggregate market share of the three segments combined within the total global passenger car market. In 2014 global passenger car sales were about 65 million units. On this basis, global passenger car sales could reach 80 to 85 million units by 2020 and 100 to 110 million units by 2025, which would mean that automated vehicles – on the basis of the Exane BNP Paribas estimates – could account for about 30% of all passenger car sales by that time. It would likely take another five years for automated vehicles to reach a market share in the region of 60% or 70%.

While these scenarios may seem plausible, the further predictions extend in time, and the more they incorporate high levels of autonomy or even full autonomy, the greater is the risk of being wrong. Anderson et al, in a 2014 study of the RAND Corporation, have correctly reminded us that technological history is full of “dead ends and promising leads that ended up never being economical to bring to production”, and that autonomous vehicle technology might simply remain too expensive to be attractive to consumers.

Figure 2 offers a more detailed orientation with regard to the various levels of automation. It illustrates automation that is, or is going to be, technically possible; it does not reflect what degree of automation is or will be compliant with current or future legislation.
2 Legal and insurance implications

2.1 Current framework

I have few doubts that the regulatory implications and requirements, the complexities of which at times appear somewhat exaggerated, will be addressed in a timely fashion. The liability- and insurance-related implications, however, are both interesting and challenging. One of the core aspirations of the autonomous vehicle concept is a drastic reduction of automobile accidents as a result of the massive reduction of the potential for human error. Currently, depending on the country, as much as about 95% of automobile accidents are estimated to be caused by human error.8 If this aspiration is realized, it is clear that insurance loss cost will diminish significantly.9

This, of course, presupposes that MTPL (Motor Third Party Liability) “as we know it” survives, albeit as a much smaller insurance segment. This is a realistic assumption, at least as long as autonomous vehicles share the road with conventional ones. Even when drivers replace their conventional owned or leased cars – already laden with numerous Advanced Driver Assistance Systems (ADAS) – with “high autonomy” vehicles, capable of operating autonomously for some portions of a journey (not “full autonomy” yet), accidents will inevitably occur. While the conventional cars were more dangerous, due to the huge influence of human error, the “high autonomy” vehicle is still dangerous because of the laws of physics alone. The human using it, giving it orders and doing some of the driving, continues to be the one who exposes the public to the danger in the pursuit of his or her needs or desires.

Particularly for someone coming from a legal system where MTPL is essentially based on strict liability (the current regime in Germany, France and numerous other EU countries), the basic concept of strict liability of the primarily responsible party (the owner10 and/or driver), combined with compulsory liability insurance, continues to make perfect sense.11 Where MTPL is still based on negligence, a migration toward strict liability could well be regarded as a rational evolution mirroring technical progress, rather than an abrupt and massive paradigm change.12 The same can be said if autonomous cars are not, or are much less, individually owned (or leased) but operated by car sharing platforms. The insurance-related challenges posed by car sharing have already been solved for conventional vehicles, and the analogy made for individually owned autonomous vehicles applies here as well. Structure and ownership of the platform do not matter.

As (unlimited) negligence-based liability will be deemphasized or even displaced while the vehicle operates autonomously, it is possible if not likely that caps on strict liability (in Germany currently EUR 5m for bodily injury and EUR 1m for property damage) will be increased mid to long term.

Certainly, the manufacturer’s liability for injury and damage caused by a defective product will attract increased attention and become much more complex. The blurred boundaries between adequate driver behavior (currently still highly relevant beneath the surface of strict liability, where applicable, inter alia, for apportioning liability between multiple parties) and flawless machine performance will very likely become much more important, with flawless machine performance often moving into the limelight.

2.2 Are novel solutions needed?

At the surface, current legal mechanisms seem capable of addressing this situation. The big question is whether this makes economic sense in the mid to long run, and especially in the European context. In many European countries, MTPL limits of indemnity are so high that MTPL insurance is fully adequate to compensate victims of road accidents. This is mirrored by the fact that product liability of automobile manufacturers is not that much of an issue in Europe, unless the manufacturer also serves the U.S. market via export or local production. In the U.S., statutory MTPL minimum limits are very modest by European standards (typical limits being USD 50,000 per event/SD 25,000 per person), as a result of which product liability actions brought by accident victims play a much more important role. European product liability cases brought by victims are not so frequent and often have peculiar characteristics (notably loss outside the scope of the MTPL regime, e.g. the driver being injured or killed when the vehicle hits a tree or oncoming...
Apart from such claims, one would expect to see increased product liability claims activity by MTPL insurers seeking recourse against automobile manufacturers, ultimately at the expense of their product liability insurers once the manufacturers’ deductibles/SIRs are exhausted. Economically, such product liability claims activity would not seem to be beneficial, except for the lawyers involved.

Chapter 7 of the recent detailed report published by the UK Department for Transport provides an illustrative discussion of the context specifics of the product liability regime under the Consumer Protection Act, which implemented Council Directive 85/734/EEC of 25 July 1985 in the UK, as well as the preexisting, negligence based law. It identifies a number of problems likely to arise, including but not limited to:

- Difficulties in resolving the question of what legally constitutes a “defect” in a vehicle (Item 7.5)
- The multitude of potentially responsible parties (drivers, owners, operators, manufacturers, suppliers and importers, service providers and data providers) and their respective contributions to a collision (Items 7.14 et seq.)
- The specific intricacies of the failure-to-warn variety of defect (Items 7.21 et seq.)
- The complexity of the technology involved, requiring heavy reliance on experts and the associated costs (Items 7.48 et seq.)
- Difficult questions concerning allocation of responsibility to the driver, its transfer to the highly automated vehicle once it operates autonomously, and the “passing back” of the responsibility to the driver when the conditions for autonomous operation of the vehicle are no longer met (Items 7.57 et seq.)
- The legal implications that arise if and when the ultimate leap to fully autonomous vehicles (perhaps not even featuring pedals and a steering wheel) is made (Item 7.61), which would “clearly require a further comprehensive review and fresh legislation to address some of these fundamental questions over driver versus vehicle liability” (Item 7.63)

Generally, one might expect an increase of product liability litigation because humans will tend to insist after an accident that they did nothing wrong, and that the accident was caused by a malfunctioning of the autonomous vehicle. Where human behavior was arguably flawed, in many cases this could still entail allegations of failure to warn and instruct properly against the manufacturer. Such allegations may be particularly appealing if the industry continues to develop technology that is not at all uniform in design, process, handling, and presentation, which may easily be confusing for users.

2.3 Food for thought for European markets
Against this background, it would perhaps make economic sense and serve justice to consider alternative solutions that respond to the evolving technology and the shifting roles of the constituents. With conventional vehicles, the manufacturer supplies the automobile and is responsible for product defects; the driver is the one who participates in road traffic and is held liable in case of an accident. With autonomous vehicles, the manufacturer’s role extends beyond the traditional role of supplying the vehicle, to virtual and partial participation in road traffic by means of the autonomous vehicle functionality. This paradigm shift may well justify adjustments to the existing liability and insurance regime.14

In my view, two conceptual approaches spring to mind, both of which would result in a seamless solution with clear liability, clear coverage, and a minimization of litigation.

2.3.1 Option 1: Product liability deemphasized
The first approach starts in a rather traditional way, with the (human) owner/driver as the focal point. In the highly automated car, the (human) driver and the “e-driver” (the electronic array that enables the car to operate autonomously during portions of a journey) form a “team” (pretty much as pilot and auto-pilot in a commercial airplane). As stated earlier, within an MTPL regime based on strict liability, it poses no difficulty whatsoever to hold the (human) owner/driver liable for accidents caused by the e-driver (irrespective of whether the latter has a product defect or not).
The question remains as to what happens with the manufacturer’s liability. In order to avoid complex, expensive and possibly futile litigation, the law could exempt automobile manufacturers (as well as the suppliers relevant four autonomous vehicle functionality) from product liability for injury and damage that is covered under the MTPL regime and that was caused by a product defect affecting autonomous vehicle functionality. One may wish to make an exception to this exemption for cases where the defect is the result of gross negligence. On the other hand, and as a quid-pro-quo for this exemption, one could have automobile manufacturers participate in the loss cost of MTPL by mandating that automobile manufacturers contribute a portion of the MTPL premium due for each individual vehicle. Technically, one could consider implementing this by means of amending the road traffic act and introducing a contributory liability of manufacturers of highly/fully autonomous vehicles for accidents caused by their vehicles, unless the accident was not caused by the autonomous vehicle functionality of the car (the burden of proof being on the manufacturer). It would probably be fair to limit this special manufacturer’s liability within the MTPL regime to 10 years after the vehicle was put into circulation (subject to reinstatement of this period if the manufacturer performs a full update or even a reinstallation of the autonomous vehicle functionality). If such a course of action is chosen, it would probably be pragmatic to include the manufacturer as an additional insured under the MTPL policy issued to the owner/driver. Since the (strict) product liability regime in the Member States of the EU is based upon Council Directive 85/734/EEC, this would need to be accomplished in a uniform fashion throughout the EU by means of partially exempting automobile manufacturers (as well as their suppliers) from said Directive. The measure would of course need to be complemented by Member States adjusting the parallel regime of negligence-based product liability accordingly.

While this concept may be intellectually appealing, the MTPL premium collection process may well be difficult to design and administer. However, the pragmatism of this solution might well trump such concerns.

This concept does not mean that automobile manufacturers are relieved of the responsibility of doing their utmost to produce vehicles that are free of defects. First, the accident record of their vehicles would be reflected in the MTPL loss cost. Second, there would still be the threat of product liability claims for injury and damage outside the scope of the MTPL regime, as well as for gross negligence for loss within the scope of the MTPL regime. Finally, and perhaps most importantly, the recall exposure, as well as the reputational risk, would remain a potent motivation to avoid defects as much as possible.

2.3.2 Option 2: Product liability further sharpened

The second approach takes the opposite tack on the product liability side. It appears rather radical and is inspired by a proposal made by the Australian Law Reform Commission in 1989 when a revision of Australian product liability law was under way. A distinctive, very deliberate element of this proposal was the omission of a requirement of a product defect. Instead, the manufacturer was to be held liable for injury and damage “caused by the way goods acted”. A reference to “the way goods acted” was described as a “reference to any of the following:

(a) the way the goods acted or behaved;

(b) the effect the goods had; and

(c) the failure of the goods to act or to behave in a particular way, or to have a particular effect”.17

This proposal was quite controversial, and at the end legislation essentially in line with the European Directive – requiring a product defect, to be proved by the claimant – was passed.

While a general product liability regime without a requirement of defectiveness still seems an outlandish proposition, one could perhaps justify such a system for highly specific contexts and limited in scope. Here, the following argument could be made. While the highly and fully autonomous vehicles will be much safer than conventional cars, the technology in the product is so complex that there is an uncontrollable residual risk of “malfunctioning” even when the product is, strictly speaking, free from defects. Under these circumstances, one could argue that
the manufacturer can in fairness be held liable for injury and damage, along with the owner/driver. If one favors such a solution, this would once again need to be accomplished in a uniform fashion throughout the EU by means of partly amending the Council Directive 85/734/EEC for the automotive sector, or at least making an option to that effect available to Member States. A “minimally” invasive way of amending the regime in this sense would be the introduction of an irrefutable presumption of a defect in a highly or fully automated vehicle that causes an accident, unless the manufacturer can prove that the autonomous vehicle functionality was not the cause of the accident.

The MTPL regime would in this alternative remain identical to the first approach, except that manufacturers would not be incorporated into the MTPL system. In order to make the “absolute” product liability of the manufacturers more palatable, one might consider allowing only limited recourse actions by MTPL carriers, i.e. allowing only to recover the loss partially, e.g. 50%.

Loss not within the scope of the MTPL regime – e.g. injury to the owner/driver – would then still be fully recoverable.

3 Conclusion

As shown in this article, and consistent with numerous other observations, the current legal “toolbox” is basically equipped to deal with autonomous vehicles in the near future. Some adjustments – not radical ones – will probably need to be made within the MTPL regime in countries where the regime is based on negligence, rather than (entirely or essentially) on strict liability. Countries characterized by a strict liability regime may need some fine tuning (e.g. higher caps on damages). The product liability regime is conceptually sound and currently adequate.

In the mid-to-long run, however, the overall status quo (including the status quo adjusted in line with the above) might well prove inadequate, at least from an economic perspective, especially in the European context. The conceptual sketches outlined above are not meant as blueprints more or less ready for implementation, but rather are intended to trigger further thinking and debate, hopefully on the way to a seamless solution with clear liability, clear coverage, and a minimization of litigation. After all, if the technology really results in a massive reduction of accidents, in fewer fatalities and severe injuries on our roads, and in numerous other advantages, it is utterly worth making the legislative adjustments that are conducive to making the technology practical reality.

Endnotes

1 For a concise overview of the technology, its impact on accident frequency and severity, and several other aspects, refer to Charlie Kingdollar, “Auto: Going, Going ... Where?”, Insurance Issues, March 2014.

2 Gillian Yeomans, “Autonomous vehicles: Handing over control – Risks and opportunities in insurance”, published by Lloyd’s, April 2014, page 8, refers to a study conducted by the UK’s Automobile Association which found that 65% of people liked driving too much to want an autonomous car. The publication is accessible at http://www.lloyds.com/news-and-insight/risk-insight/library/technology/autonomous-vehicles.


4 Figure 1 was included as complementary information in an article published in the Financial Times of 2 March 2015, page 18, „Driverless cars must steer through moral issues“.}

---

About the Author

Mathias N. Schubert, is Line of Business Manager Casualty at Gen Re in Cologne. He can be reached at Tel. +49 221 9738 428 or schuberm@genre.com.


According to “The Pathway to Driverless Cars” (supra Note 3), human error was a factor in 94% of collisions causing death or injury in Great Britain in 2013 (including cases of the driver being impaired by alcohol/drugs), summary report page 13. The inclusion of driver impairment cases might explain, at least in part, the lower percentage attributed to the human factor elsewhere.

Individual loss cost items might actually increase. It has been suggested that the replacement of a damaged fender with a sensor could cost as much as USD 5,000, see James M. Anderson et al (supra Note 4), page 155. It has also been argued that we might see new types of high-severity crashes, Helen Chapman, Gabor Fellner, “Driverless cars: liability and insurance issue emerging from innovations in the automotive industry”, International Product Liability Review, September 2014, page 4.

“Owner”, while being the most sensible term used for the German term “Halter” (“keeper”) is technically not quite correct, as the term does not require legal ownership (title). If someone leases (rather than rents) a car, ownership still rests with the leasing company, but he or she is still considered the “owner” in the regulatory and MTPL contexts.


Supra Note 3, pages 54 et seq.

Rahul Gumber, “Driverless Cars: Implications for Insurers” (August 2014), page 1: “With vehicles becoming increasingly automated – and as the control shifts from human to computer – it is likely that liability will follow that transfer of control.”

According to Anderson et al, (supra Note 6) at page 144, one AV manufacturer they interviewed “emphasized that a driver would always be in ultimate control of the vehicle” and was “critical of Google for demonstrating a blind person using an AV”; similarly, Elon Musk of Tesla is reported to have suggested “that the conceptual model should be an autopilot engaged by the driver rather than self-driving cars”. Google X, however, is aiming for a fully self-driving vehicle, with no steering wheel, no pedals, not even mirrors, see „Q&A: Google Self-Driving Car Head Chris Urmson on Building a Car From Scratch”, available at http://recode.net/2014/05/27/qa-google-self-driving-car-head-chris-urmson-on-building-a-car-from-scratch/.

Gillian Yeomans, supra Note 2, comments that “it could only take one prolific accident to significantly affect public trust and damage manufacturers’ reputations”, page 21.

The new Act was incorporated into the Trade Practices Amendment Act 1992 as Part VA, Sections 75AA to 75ASS. It was passed into law by the Australian Parliament on 24 June 1992 and entered into force on 9 July 1992.

The reader who is interested in the issues facing policymakers in the United States may refer to Anderson et al (supra Note 6), Chapter 7 (pages 135 et seq.), “Guidance for Policymakers and Conclusion”; see also John Villasenor, “Products Liability and Driverless Cars: Issues and Guiding Principles for Legislation” (2014), with further references to law review articles in notes 48 et seq.; available at http://www.brookings.edu/~/media/research/files/papers/2014/04/products-liability-driverless-cars-villasenor/products_liability_and_driverless_cars.pdf.
This information was compiled by Gen Re and is intended to provide background information to our clients as well as to our professional staff. The information is time sensitive and may need to be revised and updated periodically. It is not intended to be legal advice. You should consult with your own legal counsel before relying on it.