Roads to Driverless: The Future Law of Highways

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Autonomous vehicles will have profound effects on the environments in which they operate. Alex Glassbrook explores the development of the laws of roads during the century since the emergence of motor vehicles in the UK, and asks how roads and laws might evolve to cope with new species of vehicles.

Introduction

Driving along a motorway, a few weeks ago, I came across one of the problems for driverless cars.

It was a sunny Sunday morning and I was driving my children into the beautiful countryside of Kent, to visit their grandmother. As we rounded a bend, brake lights on the cars in front of us lit up red. Then all the traffic began to slow.

At first, I thought that this was weekend congestion and dreaded a long wait. But it soon became clear that we were slowing down for a much happier reason - to watch a vintage, open-topped **Rolls Royce**[5] gliding majestically down the inside lane.

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[1] http://www.thefutureoftransportconference.com/en/

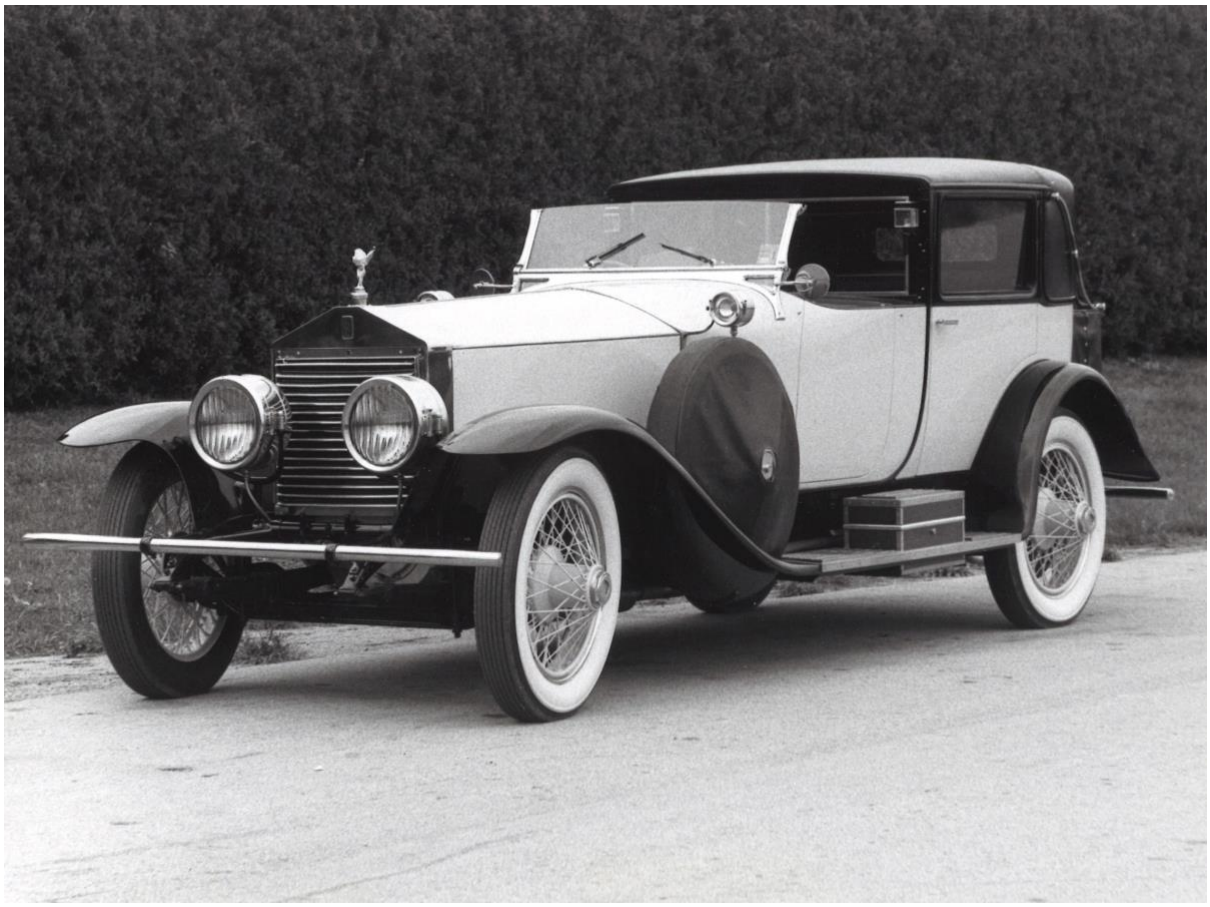
[2] http://tgchambers.com/member-profile/alex-glassbrook/ . The opinions in this paper are those of the writer and not necessarily those of Temple Garden Chambers. This paper should not be relied upon as legal advice. Save for that page, the writer does not endorse the views expressed in, nor warrant the accuracy of the contents of, any websites quoted in this article.

[3] Law Brief Publishing, February 2017: https://www.amazon.co.uk/Law-Driverless-Cars-Introduction/dp/1911035282

[4] http://tgchambers.com

[5] I imagined at the time that it was a Silver Ghost, but since (upon checking photo's online) I saw that a Silver Ghost recently sold for £7.1 million, I'm not so sure. See https://www.huffingtonpost.co.uk/entry/rolls-royce-silver-ghost-most-expensive-rolls-royce_n_1651629?guccounter=1

It was a "Jurassic Park" moment: seeing a great beast from the early history of motoring. Every driver slowed down for a look, then accelerated carefully away.



Rolls Royce Silver Ghost (1923)

That was an unusual display of synchronised driving, triggered by a shared response to a rare sight. It illustrated this point, from one of the reports I will discuss later:

> "*One of the main concerns about vehicle automation is that although it is possible to develop* ***automated systems*** *which can deal with predictable situations much more effectively than humans can, they are* ***not necessarily as good at dealing with … "all the strange things that happen once per 10,000 or 100,000 miles of driving"***"[6]

What happens on roads is all about human behaviour, and the quirks of human psychology in the moment. This comes home to me daily, not only in my job (which, in sad contrast, involves many

[6] RAC Foundation report, p.10: https://www.racfoundation.org/wp-content/uploads/2017/11/CAS_Readiness_of_the_road_network_April_2017.pdf

cases of serious personal injury resulting from road traffic accidents) but also from my daily travels on the roads of London, where I cycle to work.

So, like all of you, I have a lot of opportunities to think about behaviour on roads, and how our situations and surroundings affect that behaviour.

The objective study of human driver behaviour has sometimes taken a back seat in commentary about Connected and Autonomous Vehicles.

This relative lack of attention to our own behaviour might be due to the excitement of technological progress, or to the perception that ways in which humans drive are more often dangerous than helpful – and that future machines will correct our many faults.

That perspective is changing. The Department of Transport of the British Government commissioned the Transport Institute at University College London to "*identify the key social and behavioural questions that should be addressed relating to automated vehicles*"[7].

UCL delivered its report in January 2017. The authors (Clémence Cavoli, Tom Cohen and Peter Jones) raised many useful points. But I pick out these findings:

That:

> *There is a strong focus amongst published research upon the more technical aspects of the subject, with* ***social and behavioural issues*** *receiving much less attention.*

- that:

> "*authors* [tend not] *to consider a* ***sufficiently wide range of possible futures*** *in arriving at their conclusions*"

- and that:

> "*The nature of the AV offer will be significantly influenced … by consumer* ***perceptions and attitudes, and the regulations*** *imposed by governments*"

The UCL authors concluded that:

> "*It is impossible to say whether full automation will happen (*[which is] *ostensibly a technical question) without asking at the same time whether there would be a substantial consumer interest in purchasing* [or] *using such products and whether widespread deployment would be societally acceptable. Hence, almost all useful questions about AVs have at least a social or behavioural component*"

[7] http://www.ucl.ac.uk/transport-institute/pdfs/AV-soc-behave-report

I will take those points from the UCL report as my headings.

First: **Social and Behavioural Issues**

At about the same time that the Department of Transport commissioned the UCL report, the Royal Automobile Club Foundation commissioned Dr Charles Foster, a psychologist specialising in individual and organisational competence, to report on the readiness of the British road network for CAVs.

I take these points from the RAC report:

- The opinion that physical **segregation of types of vehicle** is too great an undertaking to be practicable (I shall return to that point).
- The **distinction between a Connected[8] vehicle and an Autonomous[9] vehicle** is important and should always be borne in mind; the same considerations do not always apply to both.
- Very little research has been done on the **readiness of road infrastructure** for CAV's
- Road **infrastructure must support CAV's** to drive safely (for example, road signs may need to be simplified and road markings made clearer; Dr Foster also cites the example – already well known to London cyclists as a feature of bus stops – that "*because CAVs will run consistently in the same lane positions there will be* ***greater wear and tear in the wheel tracks****, and that either the road area beneath the tracks will need to be strengthened, or maintenance repairs will need to be more frequent*"[10]).
- **Governments need to decide on the level of automation** to be supported, **and how they will support** it.
- Governments need to **plan in advance**; time is a factor.
- There is **already a need to invest in road repairs** – irrespective of the additional investment that CAV's would require. Konstandinos Diamandouros (Head of Office at the European Union Road Federation) made that point forcefully to this conference in 2017.
- A policy of universal coverage might not be possible initially – there are important issues of **expenditure**. The RAC report gives this example: "… *Main Roads Western Australia has*

[8] Connected Vehicle (CV): A vehicle fitted with communications devices which provide information either to the driver or to the vehicle, allowing either to collaborate with other road users and with parts of the road infrastructure.
[9] Autonomous Vehicle (AV): A vehicle designed to be capable of safely completing journeys without the need for a driver in all normally encountered traffic, road and weather conditions.
[10] RAC Foundation report, p.9

been considering deploying digital communication units only at critical points with a poor safety record in order to reduce costs"[11].

The Wide Range of Possible Futures

Many of us have spoken about the range of possible futures for CAV's.

The range might include one or more of the following:

- **Fully electrified** road transport
- Road transport that is **still partially fossil-fuel powered,** as batteries might not have the same capability as the internal combustion engine.
- **Fully autonomous** road transport
- Road transport that is **not fully autonomous** (driver never cedes full control but is assisted by the expansion of other systems, **eg. connected** vehicles).
- Road transport that is **fully autonomous in some locations** (eg. zones) but not in others.
- Road transport that is **fossil-fuel free in some locations** (eg. short, urban journeys) but not in others.
- Road transport that is **supported by necessary services** (including communications networks and chargers) **in some areas, and not well-served elsewhere**.

Or:

- Road transport that **everywhere** consists of **vehicles of all types and ages** (from bicycle through classic, fossil-fuelled cars to level 5, fully electric CAVs) **and all types of road user** (from pedestrians to freight vehicles to horse riders). CAVs would need to be of the highest capability to operate in such a world.

That is not a complete list. But even that short list has its contrasts. And those contrasts show the importance of early planning for roads.

We need to resist first impressions. For example: it is not a foregone conclusion that new transport technologies would succeed in urban and fail in rural areas.

The experience of failed urban renewal by large-scale standardisation of systems (especially in housing planning and construction) tends to show that urban centres, despite the concentration

[11] Ibid, p.14

of resources – can be the places in which innovation is most energetically pursued yet most discredited.

I think of one example, namely Robert Moses' attempted post-war regeneration by mass-building of housing projects and roads in New York, resulting in mass demolition of neighbourhoods, and the resistance in the 1950's to that programme by the writer **Jane Jacobs** and others. There are many more examples of well-meant but failed building projects.

Nor is it sound to plan roads by first identifying all road traffic as an evil, to be segregated from pedestrians and banished from neighbourhoods.

In her great observational work on urban planning - "The Death and Life of Great American Cities" – Jane Jacobs described the vitalising effect of road traffic.

Jane Jacobs (as Chair of the Committee to save the West Village, 1961)

"***Life attracts life***" - she wrote in 1961 – "***To think of city traffic problems in oversimplified terms of pedestrians versus cars, and to fix on the segregation of each as a principal goal, is to go at the problem from the wrong end***. *Consideration for pedestrians in cities is inseparable from consideration for city diversity, vitality and concentration of use.*"[12]

"***The problem***", she wrote, "***is how to cut down absolute numbers of surface vehicles*** *and enable those that remain to* ***work harder and more efficiently***"[13].

[12] Jane Jacobs, "The Death and Life of Great American Cities" (New York, 1961) Chapter 18 (at page 454 of the 2011 Random House edition).
[13] Ibid.

Observation of streets in London today supports Jane Jacobs' view: the concentration of traffic, despite a Congestion Charge, and the packing-in of many traffic control measures into a small space (as in **this picture of Fleet Street**) show the difficulties of further segregation. If so, the most useful part of the CAV revolution might be the prospect of "App Cars" and the consequent decrease in private vehicle ownership by individuals.

Fleet Street, London (from Ludgate Circus)

Perceptions, Attitudes and Regulations

Perceptions

As the RAC report says, "***communication is the most important aspect of CAV capability***"[14].

Many people are aware of a certain amount of communications technology at work on roads already. Most drivers are aware of speed cameras, for example. And many know that overhead displays on motorways use systems such as number plate recognition to influence the flow of traffic (such as the Motorway Incident Detection and Automatic Signalling system, known as MIDAS).

People are less aware of the extent of that technology. A study carried out by Nottingham Trent University for the British Highways Agency in 2015 identified 14 main types of communications technology on roads, from emergency telephones to MIDAS. The Nottingham Trent report dated

[14] RAC Foundation report, p.9

the birth of communications technology on British roads to 1958[15], the year in which construction started on the M1 motorway[16].

So the use of communications technology to manage roads and traffic is one of the Highways Agency's most familiar tools.

Now, 60 years later, the Department of Transport looks forward to having new tools. The Department's current investment strategy commits to **linking CAVs with "Smart Systems" for motorways** and:

> "*investing in the future of these solutions, and* ***developing the best regulatory environment to encourage further investment and take-up*** *of these solutions…*"

The same document signals expansion of those technologies: from motorways into urban areas, and by accessing individual road-users' personal mobile data. To quote the Department of Transport:

> "***Smart traffic management technology*** *can reduce congestion in urban areas,* ***using the information from millions of smart phones about people's location and speed*** *to make journeys better*"[17]

As we have heard from Jessica Uguccioni, the Law Commission will be reviewing the legal framework for autonomous vehicles in Britain and aims to publish a scoping report by the end of this year, at the request of the CAV unit of the Department of Transport.

But, according to its website, the Law Commission has "*predominantly*" excluded data protection and privacy, theft and cyber security and land use policy from the scope of its review, though it notes that these areas will inform that review[18].

There are some good, practical reasons for the omission of data protection and privacy law as core areas (not least the enormous resources very recently given to the General Data Protection Regulation and new Data Protection Act).

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[15] See pages 18 and 19 of Appendix B to the study, at http://assets.highways.gov.uk/specialist-information/knowledge-compendium/2014-2015/Appendix+B+-+UK+Road+Transport++network.pdf

[16] See Chapter 2, page 23, of "On Roads: A Hidden History" by Joe Moran (London, 2009, Profile Books, page number from 2010 edition)

[17] See page 59 of the Department of Transport Investment Strategy (December 2017) at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/624990/transport-investment-strategy-web.pdf

[18] https://www.lawcom.gov.uk/project/automated-vehicles/; address by Jessica Uguccioni of the Law Commission to this conference: http://www.thefutureoftransportconference.com/en/stream-3.php

But the omission is still significant, given the **key role played by data** in both connected and autonomous driving systems, and the Department of Transport's own, current proposal to **use "*the information from millions of smart phones*"** as a tool of traffic management.

As the JURI committee of the European Parliament acknowledged in its 2017 report on robotics and artificial intelligence, the **General Data Protection Regulation is unlikely to be the last word** in relation to that type and scale of data processing[19]. That view has recently been echoed by the Science and Technology Committee of the British House of Commons, in its report "Algorithms and decision-making"[20].

Attitudes

Data protection is on our minds for a number of reasons: the GDPR and recent social media scandals among them.

But the key concern about CAV's will remain physical safety. The convenience of data sharing has often outweighed the surrender of privacy. The convenience of a taxi arriving swiftly, summoned by Smartphone, is an example of that.

The challenge of the moment is public trust in the safe operation of CAV's on our roads. If we are candid, I think we all recognise the reality of that concern, while also holding to the belief that these technologies will be capable of delivering much safer, better road transport.

Given the scale of **road traffic casualties**, it is not an exaggeration to describe this as a potential revolution in public health as well as in transport.

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[19] The Legal Affairs Committee (the JURI committee) of the European Parliament noted in January 2017 that advances in robotics and artificial intelligence might force a review of the GDPR: "… *further aspects of data access and the protection of personal data and privacy might still need to be addressed, given that privacy concerns might still arise from applications and appliances communicating with each other and with databases without human intervention;*": Preamble to the EP's Civil Law Rules on Robotics Report, page 5, (O). And the Department of Transport's February 2015 review of British law and regulations relating to connected and autonomous vehicles had highlighted liability risks arising from use of data: "*The use of external information sources for automated decision-making, rather than driver judgement, may create liability issues that extend to information providers or suppliers of systems that provide advice to drivers or inform decisions by automated vehicles*". So the GDPR does not appear to have settled the law on data, privacy and connected and autonomous vehicles.

[20] 23 May 2018, Page 43, recommendation 13: "*The Centre for Data Ethics & Innovation and the ICO should keep the operation of the GDPR under review as far as it governs algorithms, and report to Government by May 2019 on areas where the UK's data protection legislation might need further refinement*".
https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/351/351.pdf

2016 British Road Traffic Accident Casualty Figures

(Source: UK Department of Transport[21])

24,101 seriously injured

1,792 fatalities

181,384 total casualties

Providing the conditions for that revolution to occur is the challenge to policymakers, to legislators and to regulators.

Which brings us to:

Regulations

The British laws of roads come from a number of sources – including the common law of **negligence and nuisance**, statutes governing **road repairs** (the Highways Act 1980, New Roads and Street Works Act 1991) and **traffic flow** (the Traffic Management Act 2004) as well as laws concerning the **escape of hazardous phenomena** onto the roads – from floods to escaped animals.

The **law of motor insurance** provides by **statute** for compulsory satisfaction of judgments, by **regulation** for a direct right of action against a negligent driver's motor insurer and by **agreements between government and insurers** for compensation of the victims of uninsured and untraced drivers.

Very particular risks have led to some **very particular laws** (as in Section 79 of the Highways Act, which compels removal of any obstruction to the view at a bend in the road).

So it is an **eclectic bundle of laws**, from which it is not possible to extract a single, uniting thread. There are the general purposes to promote human safety and, where injury occurs, to compensate by effective payments of damages. But the British law of roads has proceeded (like its regulation of speed limits) by varying leaps forward and back.

If there is a common theme, it is the variety and complexity of behaviour of the road user – not even just human behaviour but animal as well.

[21] https://www.gov.uk/government/statistics/reported-road-casualties-great-britain-annual-report-2016

Driving has raised problems and led to wholesale legal reform on many occasions. For instance, in the 1930's, the precursor to the Law Commission – the Law Revision Committee – was spurred by the inflexibility of the law to the facts of road traffic accidents to change the law of contribution[22].

So, I hope that the Law Commission might consider **keeping the law of data not just in its peripheral vision but as a focal area** of its review of the laws applying to CAV's[23].

If there is one capacity that distinguishes CAV technology from current motor technology, it is its capacity to process data. The central purpose of that processing is to make roads physically safer. The effects of transport data law will spread far beyond civil liability and into the wider territories of private and public law. We need to map those routes.

In Conclusion:

It is a challenge to see a smooth curve of improving regulation in the history of road traffic laws. The pattern, if there is any, is too abstract for that.

It seems better, as Professor Paul Mitchell of University College London wrote, in his history of tort law in the first half of the twentieth century, that we "*deal patiently and sensitively with legal developments in their own time and social context*"[24].

We must be sensitive to the facts which we need laws to address. As the authors of the UCL report say, "*New behaviours … will arise*"[25]. Today, we have a brand-new law of data. But, as both the British and European Parliaments have recognised, that law will need to modify as rapidly as the technology it governs.

To echo another Jurassic Park film, we have made something new. The dominant beasts in the new law of roads might be the laws of data, communications and privacy.

[22] Professor Paul Mitchell, "A History of Tort Law 1900-1950" (Cambridge, 2015), Chapter 11. The common law rule was that there was no contribution between tortfeasors. In 1934 the Law Revision Committee recommended its alteration "*as speedily as possible*", noting that the contribution of two tortfeasors independently to the same damage "*frequently arises where the plaintiff sustains a single damage from the combined negligence of two motor car drivers and recovers judgment against both*". The alteration took effect in the Law Reform (Married Women and Tortfeasors) Act 1935. See Mitchell pp.278, 289.

[23] I take into account (from Jessica's address to this conference) that data retention and limitation will be part of the review, insofar as they relate to civil liability.

[24] Mitchell, p.3

[25] UCL report, p.26

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