

Taking the Human Out of the Regulation of Road Behaviour

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Abstract

Autonomous vehicles ('AVs') are likely to pose a significant challenge to the regulation of road behaviour in the medium to long term. The extent of that challenge depends, in part, on the categorisation of the change that they represent. This article, through taking an expansive regulatory approach, argues that the replacement of the human driver, by a machine, is not as radical as it may appear. Using Black's notion of decentred regulation, the article concludes that the role of the human decision-maker is only a relatively small part of the overall system that guides behaviour on the roads. The infrastructure, the design of the cars, the associated systems around insurance and enforcement intersect to the extent that the 'human' aspect of current drivers is of lesser relevance to the regulatory efforts. This is not to say that the transition to an all-autonomous fleet will be simple; instead, the claim is that the reoriented perspective offered here provides a better context for the key difference between AVs and humans, being the processes by which decisions are made by each category of entity.

I Introduction

The regulation of road behaviour is a key aspect of governance today — most citizens drive, ride, walk or are driven on the roads on a daily basis. The regulatory system's current settings are facing the significant challenge of incorporating the actions of autonomous vehicles ('AVs') — those vehicles that will not require a driver to control them.¹ Recent legislative developments in the area include an amending Act in South Australia covering trials of driverless vehicles,² a Texas statute that regulates the use of such vehicles³ and a Californian statute that has authorised the use of vehicles without drivers, steering wheels or brake pedals on

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¹ How the use of AVs will be dealt with by the law is a burgeoning area of research — much of it coming out of the United States ('US'). See, eg, Dorothy F Glancy, 'Autonomous and Automated and Connected Cars — Oh My! First Generation Autonomous Cars in the Legal Ecosystem' (2015) 16(2) *Minnesota Journal of Law, Science & Technology* 619; Jeffrey R Zohn, 'When Robots Attack: How Should the Law Handle Self-Driving Cars that Cause Damages' [2015] (2) *Journal of Law, Technology and Policy* 461. Other research in the area will be referred to in the discussion below.

² *Motor Vehicles (Trials of Automotive Technologies) Amendment Act 2016* (SA), inserting *Motor Vehicles Act 1959* (SA) pt 4A.

³ *An Act Related to Automated Motor Vehicles*, Tex Transportation Code Ann §§ 545.451–545.456 (2017). Prior to this legislation, Texas law was silent as to the regulation of AVs.

public roads in limited circumstances.⁴ In terms of the development of regulations, the Australian National Transport Commission ('NTC') has recently released a set of guidelines for AV trials⁵ and the Californian Department of Motor Vehicles is also reviewing regulations covering the deployment of such vehicles.⁶ Finally, a Bill had been presented to the United Kingdom ('UK') Parliament covering, inter alia, the question of insurance and liability for crashes involving AVs.⁷

This article argues that the 'human' was on the way out of the regulatory processes well before the first AVs were used on the streets.⁸ Through an examination of the systems that constrain the actions of drivers, it will be asserted that the system has been moving away from the assessment of individual road-users.⁹ The theoretical framework for this analysis is Black's 'decentred regulation'¹⁰ — an idea of particular value as there is no centralised regulator with responsibility for all aspects of road behaviour.

The focus of this research is on the on-road behaviour of drivers, rather than of other road users, such as cyclists and pedestrians. This is both because the future role of AVs is being discussed and because of the perception that there are more regulatory tools and processes aimed at drivers as opposed to those aimed at other road users.¹¹ The goal of this analysis is to revisit some of the obvious, and less

⁴ *An Act to Add and Repeal Section 38755 of the Vehicle Code, Relating to Autonomous Vehicles*, Cal Vehicle Code § 38755 (2016). For a more complete listing of the legislative efforts around AVs in US jurisdictions, see Center for Internet and Society, *Automated Driving: Legislative and Regulatory Action* (2017) <http://cyberlaw.stanford.edu/wiki/index.php/Automated_Driving:_Legislative_and_Regulatory_Action>.

⁵ NTC, *Guidelines for Trials of Autonomous Vehicles in Australia* (2017) <[https://www.ntc.gov.au/Media/Reports/\(00F4B0A0-55E9-17E7-BF15-D70F4725A938\).pdf](https://www.ntc.gov.au/Media/Reports/(00F4B0A0-55E9-17E7-BF15-D70F4725A938).pdf)>.

⁶ Department of Motor Vehicles, California, *Deployment of Autonomous Vehicles for Public Operation* <<https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/auto>>.

⁷ Vehicle Technology and Aviation Bill 2017 (UK). The issues of liability and insurance for crashes involving AVs will be discussed below. This Bill, however, lapsed with the proroguing of Parliament before the 2017 General Election. It has yet to be reintroduced.

⁸ Another 'human' aspect of the introduction of AVs, not considered in this article, is their social impact. This is the subject of a Parliamentary Inquiry: Standing Committee on Industry, Innovation, Science and Resources, House of Representatives, *Inquiry into the Social Issues Relating to Land-Based Driverless Vehicles in Australia* <http://www.aph.gov.au/Parliamentary_Business/Committees/House/Industry_Innovation_Science_and_Resources/Driverless_vehicles>.

⁹ There is little legal academic research into road behaviour, despite its important role in society. For recent examples, see Gabrielle Appleby and Adam Webster, 'Cycling and the Law' (2016) 39(1) *University of New South Wales Law Journal* 129; Chris Dent, 'Relationships between Laws, Norms and Practices: The Case of Road Behaviour' (2012) 21(3) *Griffith Law Review* 708. There is also little by way of commentary on road law. The few in Australia include state-based texts for NSW, eg, Nic Angelov, *Traffic Law NSW* (Thomson Reuters, 17th ed, 2017); for Western Australia ('WA'): Patrick Mugliston, Stuart Ainsworth and Hal Gibson Pateshall Colebatch, *Traffic Law in Western Australia* (LexisNexis Butterworths, 2007); and for Victoria: Michael J Lombard, John Marquis and Warwick Walsh-Buckley, *Motor and Traffic Law Victoria 2012* (LexisNexis Butterworths, 2012). It is not clear that all states and territories have an equivalent text.

¹⁰ See, eg, Julia Black, 'Decentring Regulation: Understanding the Role of Regulation and Self-Regulation in a "Post-Regulatory" World' (2001) 54(1) *Current Legal Problems* 103.

¹¹ It should also be noted that, with the high-level theoretical approach to the issue, the analysis will be founded on the regulation of AVs in the abstract, and not on the more practical issue of how the regime could engage with both AVs and human drivers sharing the roads. For more practical engagements, see, eg, Kieran Tranter, 'The Challenges of Autonomous Motor Vehicles for

obvious, aspects of the regulation of road behaviour in order to gain a broader perspective on that regulation. More specifically, the focus of the analysis is the manner in which the regulation impacts on the decision-making processes of drivers.¹² Given the shift away from the importance of human decisions in this area, the greater use of AVs may not be as revolutionary as currently feared.¹³

II Regulation of Road Behaviour and Decentred Regulation

In terms of a definition, the regulation of road behaviour covers any process that impacts on the actions of a driver when driving a car. Those processes may be a part of the law, they may be a function of the vehicle itself (some aspects of which are also governed by law) or they may be part of the road infrastructure. This Part of the article discusses the wide conception of regulation within the theory of decentred regulation.

A Decentred Regulation

In general terms, a regulatory regime may be understood to comprise ‘standard-setting, monitoring compliance with the standards, and enforcement of the standards.’¹⁴ More traditional definitions include the ‘promulgation of an authoritative set of rules, accompanied by some mechanism, typically a public agency, for monitoring and promoting compliance with these rules’ and regulation ‘takes in all the efforts of state agencies to steer the economy’.¹⁵ This assumption of a ‘public agency’ is why many of the regulatory frameworks developed in the past have been aimed at firms or industry sectors with defined roles and responsibilities. That is, regulatory efforts have involved regulatory organisations active in the monitoring of compliance with standards set either by the State or by the State in consultation with the targeted industry sector.¹⁶ There is no single, centralised, organisation active in the regulation of road behaviour. Despite this, there are aspects of this (limited) understanding of the regulation of road behaviour that render it amenable to analysis through the use of the theory, those aspects being the setting of standards, the enforcement of the standards (through civil compensation and

Queensland Road and Criminal Laws’ (2016) 16(2) *Queensland University of Technology Law Review* 59.

¹² As the focus is on the decision-making that occurs on the road, there will be no engagement with manner in which information about road use may be used by those away from the road, ie privacy concerns around AVs. For a discussion of the intersection of privacy and tort liability in this area, see Jack Boeglin, ‘The Costs of Self-Driving Cars: Reconciling Freedom and Privacy with Tort Liability in Autonomous Vehicle Regulation’ (2015) 17(1) *Yale Journal of Law and Technology* 171.

¹³ Levy also considers that AVs do not pose a significant regulatory problem. His reasoning, however, is different to that presented here (and is US-based): Jeremy Levy, ‘No Need to Reinvent the Wheel: Why Existing Liability Law Does Not Need to be Pre-emptively Altered to Cope with the Debut of the Driverless Car’ (2016) 9(2) *Journal of Business, Entrepreneurship and the Law* 355.

¹⁴ Hilary Charlesworth and Christine Chinkin, ‘Regulatory Frameworks in International Law’ in Christine Parker et al (eds), *Regulating Law* (Oxford University Press, 2004) 246, 246.

¹⁵ Robert Baldwin, Colin Scott and Christopher Hood, ‘Introduction’ in Robert Baldwin, Colin Scott and Christopher Hood (eds), *A Reader on Regulation* (Oxford University Press, 1998) 1, 3.

¹⁶ An obvious example is the WorkCover Authority, which has regulatory responsibilities in the area of occupational health and safety.

criminal penalties) and its role in maintaining the efficacy of the road transport network — a key sector of the economy.

Black's decentred understanding of regulation is broad and rests on an understanding of regulation as being wider than government regulation.¹⁷ Regulation is seen as the 'intentional activity of attempting to control, order or influence the behaviour of others'.¹⁸ This understanding can, therefore, focus on the importance of social and cultural factors.¹⁹ The emphasis in this analysis, however, is on the legal framework, broadly understood, that encapsulates the control of driver behaviour, along with the norms that have developed around the framework.

One particular value of the notion of decentred regulation is the recognition that regulation does not always operate from the top down, or from key industry bodies across; that is, regulation may be better understood to be much more widely spread through the community.²⁰ According to Black, there are five aspects of the 'decentred understanding' of regulation; these are: 'complexity, fragmentation, interdependencies, ungovernability, and the rejection of a clear distinction between public and private.'²¹ The focus, then, is on the non-rigid relationships between the parties involved in the operation of the regulatory system. As such, decentred regulation may be evidenced by a 'greater reliance on markets and less faith in both judicial elaboration of private law and control mechanisms involving regulators'.²² This, again, reflects a shift away from 'command and control' modes of governance and acknowledges the role that individual parties may have in the protection of their own interests. Each of the five aspects of Black's theory will be considered in light of the regulation of road behaviour.

B Fragmentation

It makes sense, given that it is what road users are used to, that the regulation of road behaviour is fragmented. At the highest level of analysis, there are: the vehicle standards that govern the construction of cars; the road rules themselves that relate to on-road decisions by drivers and the processes to enforce them; the informal set of norms that also impact on decisions; the systems in place to compensate for any

¹⁷ Haines, for example, argued that regulatory theory 'had a rather restricted focus' and was limited to the analysis of the 'relations between individual regulators and organisations': Fiona Haines, *Corporate Regulation: Beyond 'Punish or Persuade'* (Clarendon Press, 1997) 15.

¹⁸ Christine Parker et al, 'Introduction' in Christine Parker et al (eds), *Regulating Law* (Oxford University Press, 2004) 1, 1, quoting Julia Black, 'Critical Reflections on Regulation' (2002) 27 *Australian Journal of Legal Philosophy* 1, 25.

¹⁹ In this area, see, eg, John Urry's notion of 'automobility': John Urry, 'The "System" of Automobility' (2004) 21(4–5) *Theory, Culture & Society* 25.

²⁰ Put another way, regulatory theory has, in the past, focused on decisions made by one party over actions of another — where the first party is not the locus of harm.

²¹ Black, above n 18, 4. For applications of this idea to the law, see Chris Dent, 'Compensation and/or Correcting the Record: A Framework for the Regulation of (Defamatory) Speech' (2011) 16 *Media and Arts Law Review* 123; Chris Dent, 'Copyright as (Decentred) Regulation: Digital Piracy as a Case Study' (2009) 35(2) *Monash University Law Review* 348.

²² Hugh Collins, 'Regulating Contract Law' in Christine Parker et al (eds), *Regulating Law* (Oxford University Press, 2004) 13, 29.

damage resulting from on-road decisions; and the sets of knowledge that delimit the road infrastructure. Each of these will be highlighted briefly.

1 *Vehicle Standards*

It seems trite to say that cars, these days, are more technologically developed than those of even 20 years ago. Design standards, or more properly the *Australian Design Rules* ('*ADRs*'),²³ do not directly impact on the decisions drivers make on the roads.²⁴ As noted by the NTC, the *ADRs* are 'generally performance based and cover issues such as vehicle structure, lighting, noise, engine exhaust emissions, anti-theft controls and braking. One of the purposes of the *ADRs* is to make road vehicles safe to use.'²⁵ It is this focus on safety that ties the *ADRs* to driver behaviour.

There is little value in describing, in detail, all the *ADRs* that are relevant to vehicles — though they cover most aspects of a vehicle's construction.²⁶ The point here is to highlight their role in mandating performance criteria for vehicles in order for them to be sold in Australia. Under the *Australian Consumer Law*, a 'person must not, in trade or commerce, supply consumer goods of a particular kind if: (a) a safety standard for consumer goods of that kind is in force; and (b) those goods do not comply with the standard'.²⁷ Section 41 of *Motor Vehicle Standards Act 1989* (Cth) defines the national standard under the *ADRs* to be the safety standard for the purposes of the *Australian Consumer Law*. As such, the *ADRs* impact on the liability of sellers of vehicles and, potentially, on that of drivers who knowingly use a vehicle that does not meet the *ADRs*.²⁸ Though the *ADRs* may not have a direct impact on road behaviour, the constraints that they place on the vehicles mean that bad human decisions made while driving a vehicle do not have the same consequences as they may have had with earlier designs. Further, the standardisation of vehicles through the *ADRs* means that the decisions available to drivers also become standardised, and therefore more predictable, when dealing with the vehicle's features.

²³ These design standards are in addition to any state-based regulations that relate to the roadworthiness of vehicle — see, eg, the regulations discussed in Mugliston, Ainsworth and Colebatch, above n 9, 155–78.

²⁴ The *ADRs* are administered under the *Motor Vehicle Standards Act 1989* (Cth).

²⁵ NTC, 'Regulatory Options for Automated Vehicles' (Discussion Paper, NTC, May 2016) 81.

²⁶ The *ADRs* themselves are very detailed. The first vehicle *ADR* covers reversing lamps. The Rule stipulates, inter alia, the minimum intensity of light along the axis of reference (80 candelas), the maximum intensity of light in directions in or above the horizontal plane (300 candelas) and below the horizontal plane (600 candelas), and the 'trichromatic coordinates' of the white light to be emitted: Minister for Local Government, Territories and Roads (Cth), *Vehicle Standard (Australian Design Rule 1/00 — Reversing Lamps)*, 21 November 2005.

²⁷ *Competition and Consumer Act 2010* (Cth) sch 2 s 106(1).

²⁸ On a related note, the technology in cars, particularly the use of on-board computers, means that the maintenance of vehicles is now increasingly out of the reach of most vehicle owners. The skills needed are such that a thorough knowledge of an internal combustion engine is no longer sufficient to fully service a vehicle. The technology, and the *ADRs*, also may impact on the capacity of individuals to modify vehicles legally. Also, the use of software means that intellectual property law may be an issue. In the US, at least, there is an exemption to the *Digital Millennium Copyright Act*, 17 USC §1201(a) (1998) that allows consumers to bypass the technological protection mechanisms on their vehicles' electronic control units for the purposes of 'diagnosis, repair, or modification': *Exemptions to Prohibition Against Circumvention*, 37 CFR §201.40(b)(6) (2015).

2 *Road Rules and their Enforcement*

The rules that govern driving are themselves clear examples of fragmentation in that the legislation over driver behaviour is a matter of state, rather than Commonwealth, law. This is a function of Australia's constitutional arrangements, rather than an artefact of the regulatory processes. A significant amount of standardisation has taken place over the past couple of decades, notably with the drafting of the *Australian Road Rules*.²⁹ There remain notable exceptions, such as the 'hook-turns' allowable under the Victorian Rules.³⁰

In terms of enforcement of the road rules, one of the most visible aspects is the role of the police. Traffic officers can be seen to perform a 'symbolic justice' role in that they show the 'public that a regime of law exists'.³¹ Their visibility may not be that high. To take Victoria as an example, there were 13 529 police officers in that state as of 30 June 2017.³² That said, there were 53 500 lane kilometres of road pavement at the same time,³³ and Victoria had a population of 6.3 million in June 2017.³⁴ Of course, not all Victorians were drivers at that time; however, not all police officers are active in enforcing the road rules. As such, while the police are a visible form of regulation; they may not be *that* visible; and, therefore, their impact on the regulation of drivers may be reduced.

Of increasing importance is the use of automated systems for detecting infringements of the road rules.³⁵ Examples of these include speed cameras (including point-to-point cameras)³⁶ and red-light cameras.³⁷ These rely on technology – including lasers, induction loops and visual recognition software – in order to catch drivers who transgress the rules. Currently, there are almost 300 fixed cameras in Victoria and a small number of point-to-point cameras.³⁸ The number of mobile cameras is not, however, publicly available. The point here is that the

²⁹ The *Australian Road Rules* were first approved in 1999 by the former Australian Transport Council (now the Transport and Infrastructure Council). The specific road rules of each state and territory are now based on the *Australian Road Rules*: see, eg, *Road Safety Road Rules 2017* (Vic) and *Road Traffic Code 2000* (WA). The *Australian Road Rules* are reviewed regularly by the NTC: see, eg, NTC, *Review of the Australian Road Rules and Vehicle Standards Rules* (Report, NTC, May 2013). Consultation on the 12th amendment to the Rules took place in 2017: NTC, *The Australia Road Rules* <<https://www.ntc.gov.au/roads/rules-compliance/the-australian-road-rules/>>

³⁰ *Road Safety Road Rules 2017* (Vic) reg 34.

³¹ David H Bayley, *Police for the Future* (Oxford University Press, 1996) 34.

³² Victoria Police, 'Annual Report 2016–17' (Annual Report, Victoria Police, 2017) 7.

³³ VicRoads, 'Annual Report 2016–17' (Annual Report, Vic Roads, August 2017) 33.

³⁴ Australian Bureau of Statistics, *3101.0 — Australian Demographic Statistics, Mar 2016* (14 December 2016) <<http://www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0>>.

³⁵ O'Malley expands on role of technology in the enforcement of road behaviour: Pat O'Malley, 'Simulated Justice: Risk, Money and Telemetric Policing' (2010) 50(5) *British Journal of Criminology* 795.

³⁶ Point-to-point cameras measure the average speed of a vehicle over a set distance, rather than measuring the speed of a vehicle at a specific point in time.

³⁷ For a thorough risk-based analysis of the use of, and attitudes towards, these devices, see Helen Wells, *The Fast and the Furious: Drivers, Speed Cameras and Control in Risk Society* (Ashgate, 2012).

³⁸ Victorian State Government, *Camera Locations* (20 December 2017) *Cameras Save Lives* <<https://www.camerassavelives.vic.gov.au/camera-locations>>.

technology captures a higher number of offences than a purely human police force could, the accuracy of the records is likely to be better and there is no discretion, at the point of recording, with respect to the issuing of an infringement. This has the dual effect of taking the human out of enforcement and of reinforcing the reach of enforcement efforts in the minds of the drivers.³⁹

In terms of the processes of prosecution, the vast majority of infringements are settled without the offender appearing in court. Again, using Victorian statistics as an example, there an election to go to court for only 2.07% of the infringements issued for the three years 2012–3 to 2014–5.⁴⁰ A further 4.3% of infringements are withdrawn⁴¹ — presumably many or most after a challenge from the alleged offender — meaning that almost 94% of infringements are paid without question and without engaging with the judicial system. The ease of payment, similar to the online payment of utility bills, may mean that infringements are seen as an acceptable cost of living, rather than a (shaming) punishment for a wrong.⁴²

3 Norms

The third aspect of driver regulation relates to the norms that are internalised by drivers. In terms of what is meant by ‘norms’, the definition to be used here is that a norm is the ‘common measure’ of behaviour within a group.⁴³ This means both that norms are tacitly accepted by the members of that group and that they are a standard — a ‘measure’ — against which the actual behaviour of individuals may be judged.⁴⁴ A key technical aspect of the term ‘norm’ is the implicit reference to the ‘bell curve’ — in this case, a distribution of actions or practices around a median standard.⁴⁵ Some individuals, therefore, will exceed the standard, whereas others will not quite meet it. Importantly, norms focus on actual behaviours and not on any prescribed rules.⁴⁶

³⁹ There is also evidence to suggest that red-light cameras impact on driver behaviour: J R R Mackenzie, C N Kloeden and T P Hutchinson, ‘Analysis of Infringement Data from Fixed Red Light and Speed Cameras at Signalised Intersections in South Australia’ (Report, No CASR071, Centre for Automotive Safety Research, June 2012).

⁴⁰ These figures combine traffic infringements and infringements for excessive speed, drink and drug driving: Infringement Management and Enforcement Services, ‘Annual Report on the Infringements System’ (Report, No CD/15/525277, Department of Justice and Regulation (Vic), January 2016) 9.

⁴¹ Ibid.

⁴² The fact that there was an annual average of over 3.1 million infringements over the three years, coupled with the fact that only a limited number of infringements can be compiled before a licence is lost, suggests that a significant proportion of the population of road-users infringe each year.

⁴³ François Ewald, ‘Justice, Equality, Judgment: On “Social Justice”’ in Gunther Teubner (ed), *Juridification of Social Spheres* (Walter de Gruyter, 1987) 91, 108 (emphasis altered).

⁴⁴ For a very useful discussion of the distinction between a norm that is ‘immanent to’ a social group and a rule or principle imposed from outside the group, see Ben Golder and Peter Fitzpatrick, *Foucault’s Law* (Routledge, 2009) 43 n 43.

⁴⁵ For a discussion of this, see Mary Beth Mader, ‘Foucault and Social Measure’ (2007) 17(1) *Journal of French Philosophy* 1.

⁴⁶ It may be noted that public service announcements in the media — such as the slogan ‘if you drink and drive, you’re a bloody idiot’ — focus on messages aimed at reminding (or teaching) road users of the *standard* of behaviour expected when they use the road and all are based on the rules as promulgated by the Parliament.

Many norms are not adopted by an individual as the result of specific instruction. They are, nonetheless, standards of behaviour that road users are expected to abide by (though it is other road users and not the police that have such expectations). Some of these relate to behaviour that may be seen as ‘common courtesy’, such as letting a driver on a side street into traffic when stopped at a set of traffic lights. Instead of formal instruction, these norms are adopted as a result of two processes — observing the behaviour of others and listening to the standards expressed by friends and family who accompany the user in her, or his, travels. A number of groups of people may be seen to be the source of normative practices. Practices may, in particular, be learnt from ‘peers’ — whether they be the group of friends who accompany an inexperienced driver as she or he gets used to the idea of having a licence, or the other road users who use the road at the same time the individual does. Both sets of peers exhibit practices that an individual will take on board as the ‘right’ way to put abstract norms into practice.⁴⁷

4 Compensation

The regulation of road behaviour can be extended to include those processes that are available to seek redress for any harm suffered as a result of a breach of the rules. In Australia, there are two key processes here: insurance and litigation. There are also two types of insurance: compulsory, for personal injury; and voluntary, for property damage. For the purposes of this analysis, these compensation schemes are considered part of the regulation of road behaviour because the potential for significant financial consequences for breaching the road rules could be a key way of limiting breaches of the road rules.

In terms of litigation, an injured person could sue a driver where the harm suffered was allegedly the result of negligence. The standard tests for that cause of action apply — there needs to be a duty of care, a breach of the relevant standard of care attached to that duty and not-too-remote harm that was caused by the breach.⁴⁸ In most cases, the existence of a duty between one road user and another will not be an issue; neither will the issue of causation of any physical damage. Unsurprisingly, key High Court of Australia judgments in the area relate to the standard of care owed — for example, *Imbree v McNeilly*⁴⁹ and the earlier judgment that it overruled, *Cook v Cook*.⁵⁰ If the plaintiff can show that the defendant breached the requisite standard of care, then the plaintiff may receive compensation for their injuries.

⁴⁷ Such informal norms are subject to sanction, as are the formal road rules. The negative consequences for breaching a norm are usually limited to expressions of disapproval — perhaps ridicule if voiced by a peer inside a vehicle or a honk of a horn from other road users. In some cases, however, physical assault, commonly referred to as ‘road rage’, may be the result of a failure to meet the norms of road behaviour. While these sanctions are not as systematic as the state-instituted penalties, they are, nonetheless, perceived to be unpleasant and to be avoided by road users.

⁴⁸ The standard tests for negligence apply. These tests are, to a significant extent, delimited by the uniform State Civil Liability Acts (for example, *Civil Liability Act 2002* (NSW)). Aspects of these tests will be discussed further below.

⁴⁹ (2008) 236 CLR 510.

⁵⁰ (1986) 162 CLR 376.

Pursuing litigation, however, is an expensive and risky option. Insurance may reduce the need for an injured party to seek legal redress by themselves. With respect to insurance, many drivers take out (voluntary) insurance to cover any property damage that results from their driving.⁵¹ There are different levels of insurance aimed at managing the financial risks that attach to driving.⁵² These range from a simple ‘third party damage’ policy through to a ‘comprehensive’ policy. If a policy is taken out, then drivers may not have to find a substantial amount of money to compensate anyone who suffered property damage as a result of their driving; instead, the driver pays a regular premium as well as an excess at the time of a claim. This may be seen to reduce the negative financial consequences associated with bad driving. Many insurance companies, however, charge higher premiums to drivers who make more claims.⁵³ This retains some degree of fiscal pain for driving that may result in a claim.

Further, all the Australian states and territories have compulsory third party (‘CTP’) schemes that provide compensation for personal injuries that result from car crashes.⁵⁴ The purpose of the schemes is to indemnify drivers (and vehicle owners) for any personal injury for which they may be liable. Some schemes operate on a ‘no-fault’ basis;⁵⁵ whereas others require the claimant to establish that a driver or owner of a vehicle was at least partially at fault.⁵⁶ Where compensation is available through a scheme, the defendant may not be liable for the potentially very high damages awards that arise in motor vehicle claims (in terms of loss of earnings, rehabilitation expenses and modifications to homes to accommodate a disability that arose from the crash).⁵⁷ Premiums are included in the vehicle registration fees levied by each state and territory jurisdiction and, therefore, the expense of the insurance to the driver does not act as a constraint on road behaviour.

⁵¹ It is not clear how many drivers choose not to take out insurance. The national industry body, Insurance Statistics Australia Ltd, does not list it as a statistic that it collects: Insurance Statistics Australia Ltd, *Frequently Asked Questions* (2016) <<http://www.insurancestats.com.au/frequently-asked-questions>>. In WA (as an example), the Department of Transport has been quoted as saying that it ‘did not collect data relating to uninsured vehicles being driven on public roads’: Angela Pownall, ‘Call to Protect Drivers in “Uninsured” Mishaps’, *The West Australian* (online), 9 July 2016 <<https://thewest.com.au/news/australia/call-to-protect-drivers-in-uninsured-mishaps-ng-ya-112030?r=1>>.

⁵² Some losses that are covered do not relate, directly, to driver behaviour, such as those policies that cover the theft of a vehicle.

⁵³ They also charge higher premiums for groups of drivers who they see to pose a higher risk on the road, such as inexperienced drivers.

⁵⁴ See, eg, *Motor Accidents Compensation Act 1999* (NSW); *Motor Accident Insurance Act 1994* (Qld); *Motor Vehicles Act 1959* (SA).

⁵⁵ For example, the Victorian system as operated by the Transport Accident Commission under the *Transport Accident Act 1986* (Vic).

⁵⁶ For example, the system in WA, as operated by the Insurance Commission of Western Australia (‘WA Insurance Commission’) under the *Motor Vehicle (Third Party Insurance) Act 1943* (WA). As of July 2016, where the claimant has suffered a ‘catastrophic injury’, there is no need for that claimant to establish that any driver or owner was at fault. More specifically, there is no need to show fault in order for an injured person to be eligible to participate in the scheme: *Motor Vehicle (Catastrophic Injuries) Act 2016* (WA) s 8.

⁵⁷ It may be noted that, under some schemes, the scheme prevents the claimant also bringing an action for negligence against the driver: see, eg, *Motor Accidents (Compensation) Act 1979* (NT) s 5.

Key points to be made about insurance are that, first, for the no-fault CTP schemes, the mental processes of the driver involved does not have to be in issue. Second, the dispute is (usually) settled without the input of the driver who caused the damage. For personal injury, the injured party makes a claim against the insurer. For property damage, it is often the insurance company of the property owner that negotiates with the driver's insurance company. In other words, the driver caused the harm, but may have a limited role in the compensation process – though, perhaps, the more serious the damage caused, the more likely the driver will be charged with a driving offence that will require a court appearance.

5 Road Infrastructure

Road design is also a key process by which crashes are minimised — one of the goals of the regulatory system. Two obvious examples of safety-oriented design include the use of bitumen as a road surface⁵⁸ (as opposed to, for example, gravel) and the adoption of barriers between opposing lanes of freeway traffic. These features, admittedly, may make drivers feel more comfortable when speeding by removing risks from the environment (on the basis that bitumen is a more consistent surface and barriers minimise inadvertent head-on collisions). The number of lanes of a road may also impact on congestion levels and the potential speed of drivers on it. Lanes both increase choice (which lane should a driver be in for a future road change), thereby taking up mental 'space',⁵⁹ and decrease choice (channelling vehicles in established lanes is clearer than having a road of the same width without marked lanes). However, adequate signage reduces stress, as does the greater traffic flow (in many cases) of multi-lane roads.

Other aspects of road design also impact on the decision-making of drivers. Traffic lights, for example, reduce the need for drivers to assess the behaviour of other vehicles when negotiating an intersection and roundabouts mean that drivers have to consider other road users coming from only one direction. Both types of design contribute to the road environment playing a significant role in guiding the actions of drivers. In other words, while infrastructure design is often considered in terms of safety and the minimisations of collisions,⁶⁰ it may also be usefully seen in terms of its impact on driver decision-making.

An associated aspect of design is the designation of speed limits — both the legal maximum speed limit on most roads and the recommended speed limits that

⁵⁸ For a discussion of the impact of the road surface on crashes, see Peter Cairney and Paul Bennett, 'An Exploratory Study of Surface Characteristics and Crash Occurrence on Selected Roads in Australia' (Report, No ARR 382, ARRB Group Ltd, May 2013).

⁵⁹ This is sometimes referred to as 'mental workload': see, eg, Nina Schaap et al, 'The Relationship between Driver Distraction and Mental Workload' in Michael A Regan, John D Lee and Trent W Victor (eds), *Driver Distraction and Inattention: Advances in Research and Countermeasures* (Ashgate, 2013) 63.

⁶⁰ As almost random examples, see Benoît Flahaut, 'Impact of Infrastructure and Local Environment on Road Unsafty: Logistic Modeling with Spatial Autocorrelation' (2004) 36(6) *Accident Analysis and Prevention* 1055; Robert B Noland, 'Traffic Fatalities and Injuries: The Effect of Changes in Infrastructure and Other Trends' (2003) 35(4) *Accident Analysis and Prevention* 599.

may feature on some bends in the road.⁶¹ Speed limits are, of course, a key site of prosecution of drivers and a key point of disagreement between drivers and ‘the law’.⁶² This disagreement is discussed in terms of the ‘credibility’ of speed limits — where ‘credibility means that drivers consider a speed limit as logical or appropriate in the light of the characteristics of the road and its immediate surroundings’.⁶³ This means that where a driver does not find a posted speed limit to be credible, they may choose to ignore it.

C Complexity

At one level, the fragmentation of the regulation of road behaviour, described above, is a clear example of the complexity of the regulation. Within each fragment there is additional complexity. There are, for example, over 400 regulations in the *Road Safety Road Rules 2017* (Vic); these are in addition to the more than 480 sections in the *Road Safety Act 1986* (Vic). Not all of these provisions cover the use of a car on the road; however, a sufficient number of them do such that navigating the law can be a complex process. The complexity of insurance policies of all types needs no emphasis for any of those who have taken the time to read one.

If the automated enforcement processes are considered, there is complexity in their maintenance and continued use as evidence-providing instruments. In order for the evidence of speed cameras to be used for prosecutions, the devices have to be checked. There is a specific set of rules around the frequency, and requirements, of these calibration checks. More specifically, in order for the data from a speed camera to be used in a prosecution in NSW, certification may be produced to prove that the device had been checked.⁶⁴ The Regulation tied to that provision sets out the Australian Standard with which the device should comply⁶⁵ and the prescribed period for the testing of the speed measurement device (every 12 months).⁶⁶ That regulation also sets out specific security indicators that are required to have photographs, taken by the cameras, used as evidence (for example, a series of 48 characters of which 32 characters have been produced by an MD5 algorithm or a series of 128 characters produced by a SHA-512 algorithm).⁶⁷ A failure to comply

⁶¹ The setting of speed limits will be highlighted below.

⁶² The Northern Territory trial of an ‘open’ speed limit provided the opportunity for community discussion on the issue. Many commentators were of the opinion that, as long as the individual driver thought it safe, then a speed limit higher than 110km/h would be safe. See, eg, the comments attached to Ian J Faulks, ‘Goodbye Speed Limits: The NT’s Risky Road Safety Strategy’, *The Conversation* (online), 17 October 2013 <<https://theconversation.com/goodbye-speed-limits-the-nts-risky-road-safety-strategy-19241>>.

⁶³ Charles Goldenbeld and Ingrid van Schagen, ‘The Credibility of Speed Limits on 80 Km/h Rural Roads: The Effects of Road and Person(ality) Characteristics’ (2007) 39(6) *Accident Analysis and Prevention* 1121, 1121.

⁶⁴ *Road Transport Act 2013* (NSW) s 137.

⁶⁵ *Road Transport (General) Regulation 2013* (NSW) reg 35(1)(a) ties the standard to Standards Australia, *Radar Speed Detection: Part 1: Functional Requirements and Definitions*, AS 2898.1—2003, 11 August 2003.

⁶⁶ *Road Transport (General) Regulation 2013* (NSW) reg 35(1)(b)–(c).

⁶⁷ *Ibid* reg 35(2). It may be noted that the cameras have to be tested every 30 days. The certification of these cameras is regulated under *Road Transport Act 2013* (NSW) s 138.

with these requirements would render a prosecution unsuccessful, if based on that data alone.

There is also complexity associated with *ADRs*. As noted above, the *Motor Vehicle Standards Act 1989* (Cth) has a role in the setting, and maintenance, of the standards for road vehicles and vehicle components in Australia. The Act establishes the process by which standards are determined (by the Minister,⁶⁸ who may consult with specified organisations prior to the determination⁶⁹). The Act also allows for the testing and inspection of vehicles and components, the inspection of facilities for such testing, the inspection of the manufacturing process and the examination of documents relating to testing or manufacture of vehicles and components.⁷⁰ Certain powers are given to inspectors,⁷¹ including entering premises without consent,⁷² in order to ensure compliance with the Act.⁷³ There are also specified penalties for rendering a vehicle non-standard⁷⁴ and for supplying a nonstandard new vehicle to the market.⁷⁵

As a final example, the allocation of speed limits is a complex process. The Organisation for Economic Co-operation and Development ('OECD') has noted that speed management policy must be based on an evaluation of what are the appropriate speeds on these different parts of the road network. The appropriate speed for a section of road is set taking into account safety, mobility and environmental considerations and the impact of the chosen speed on the quality of life for the people living alongside the road. Appropriate speed differs from one type of road to another and recognises the different weight to be given to the various elements on the different parts of the road network.⁷⁶

The setting of a speed limit for a given stretch of road, therefore, requires the input of significant data and specialised knowledge. The multiple data sets, and the multiple bodies of specialised knowledge, that inform the regulation of road behaviour reinforce the complexity of the processes.

D *Interdependency*

Turning to the third aspect of decentred regulation, the various fragments of the regulation of road behaviour do not operate in isolation. It is the multifaceted nature of the regulation that shows, in part, its interdependency. The assessment of the OECD around speed limits, for example, highlights the, at times competing, goals

⁶⁸ *Motor Vehicle Standards Act 1989* (Cth) s 7.

⁶⁹ *Ibid* s 8.

⁷⁰ *Ibid* s 9.

⁷¹ *Ibid* s 27.

⁷² *Ibid* s 28. Such entry is only possible if a Magistrate is satisfied that the entry is 'reasonably necessary' for the inspector to assess compliance with the statutory requirements and issues a warrant.

⁷³ There is also a penalty for failing to answer the questions of, or produce documents for, an inspector without a 'reasonable excuse': *ibid* s 32.

⁷⁴ *Ibid* s 13A.

⁷⁵ *Ibid* s 14.

⁷⁶ Transport Research Centre, 'Speed Management' (Report, Organisation for Economic Cooperation and Development and European Conference of Ministers of Transport, 2006) 86.

for the regulation of road behaviour. The reference to ‘appropriate speed’ takes account of ‘safety’ and ‘mobility’. These accord with two of the goals discussed elsewhere: ‘efficient transit ... the avoidance of harm’ and the self-regulation of road users.⁷⁷ Further, the competing regulatory goals mean that different regulatory processes contribute to each of the goals in different ways. For example, improving the safety of cars through changing the *ADRs* may mean that drivers feel safer and, as a result, may drive more recklessly. More ambiguously, cruise control, while reducing the chance that drivers will speed, may mean that the driver concentrates less on the driving process.⁷⁸ This impacts on the goal of the self-regulation of drivers, which is not necessarily a bad thing.⁷⁹ However, there is value in pointing out this effect. More generally, maximising the safety of the system, for example, through a very low maximum speed limit would be directly counter to the goal of efficient transit. In addition, maximising self-regulation through the reduction of penalties may decrease both safety and efficiency — though removing self-regulation through only allowing professional drivers on the road would also negatively impact efficiency.

In terms of a more specific example of interdependency, the norms associated with road behaviour may often depend on the road rules. Although anecdotal, it seems that, in many jurisdictions, the norm is for drivers to drive at up to 5 km/h above the posted speed limit rather than sticking to the limit, or for drivers not to stop at yellow traffic lights even when it is safe to do so (but, much less often, going through a red). These behaviours become, through widespread acceptance, the standard against which all drivers are judged. They are related to the road rules, but are not identical to the relevant provisions in the rules.

One legal feature that ties together many of the interdependent aspects of regulation is the contract in that these legally enforceable agreements define the interdependencies. Collins has noted that a decentred approach to regulation places a ‘new burden on the law of contracts’.⁸⁰ To take some examples of key contracts in the area, voluntary insurance cover is bought via contracts, with indemnities being included to cover certain actions of the driver.⁸¹ Contracts, in the area of the

⁷⁷ Dent, above n 9, 712.

⁷⁸ As another example, parking assist technology for parallel parking may have reduced the risks of minor crashes while also reducing the skill-set of drivers. Earlier technologies, such as automatic gearboxes, also reduced the need for drivers to think about the appropriate gear for the desired driving performance.

⁷⁹ It can be justified on the basis that either human decision-making is constrained by time limits and so removing small decisions frees up time for other decisions; or that human decision-making is based on heuristics and, as the heuristics may be wrong, taking decisions away from the human reduces the risk of bad decisions. See generally Gerd Gigerenzer and Daniel G Goldstein, ‘Reasoning the Fast and Frugal Way: Models of Bounded Rationality’ in Terry Connolly, Hal R Arkes and Kenneth R Hammond (eds), *Judgment and Decision Making: An Interdisciplinary Reader* (Cambridge University Press, 2nd ed, 2000) 621; Gerd Gigerenzer, ‘Fast and Frugal Heuristics: The Tools of Bounded Rationality’ in Derek J Koehler and Nigel Harvey (eds), *Blackwell Handbook of Judgment and Decision Making* (Blackwell Publishing, 2004) 62.

⁸⁰ Collins, above n 22, 29.

⁸¹ With respect to CTP insurance, some jurisdictions allow consumers to enter into a contract for that insurance from their choice of provider. In the Australian Capital Territory (‘ACT’), for example, CTP insurance may be purchased from ‘licensed insurers’. More specifically, it is an offence to issue a CTP

enforcement of the road rules, also allow the payment of fines without attending court or involving the police officer/radar camera.⁸² In addition, there are, of course, the contracts that arrange for the payment of the personnel — these tie together the individuals and the regulating entities.⁸³ Further, the provision of any expert advice, with respect to road and vehicle design, would also be governed by contracts; as would the supply of car parts to manufacturers — likely with specific requirements relating to any standards to which the parts are subject. In short, regulation in this area is delimited by contracts. As a result, while the system appears chaotic, each individual actor within it is bound to other actors. The contracts, then, may be seen to affirm the interdependency as most contracting parties are likely to have multiple roles in the system (for example, all regulators are also likely to be drivers and parties to insurance contracts). The actions of all, whether regulatory or as a road user, are not made in isolation — contractual obligations would have played at least some role in their making.

E Lack of Clear Distinction between the Public and Private Sectors

This fourth aspect of decentred regulation is founded on the assessment that the public sector is no longer solely, or predominantly, responsible for regulating the behaviour of citizens. While many of the fragmented aspects of regulation described above (the enforcement of the road rules and the inspection of manufacturers) do rely on the State, other aspects rely, to a greater extent, on the private sector. If the ‘private’ is understood more broadly, it could incorporate the role of the (private) individual; for the purposes of this analysis, the individual is covered in more depth below in Part III.

The insurance schemes are a key example of the lack of distinction between the two sectors. Compensation for harm is an integral part of the system — perhaps much more important to the injured party than the prosecution of the traffic infringement that caused the harm. However, it is not the State that provides the insurance. If the role of the State is to protect the citizens,⁸⁴ and if insurance is seen as the protection of citizens from the results of wrongful actions, then insurance could properly be seen as the role of the State. Even without using such a lens, when it comes to CTP policies, in most cases, it is private sector organisations that are entering into contracts that are required by law. The insurer could be a State organisation, relying on the economic value of the State to underwrite the policies;

policy without a licence: for example, *Road Transport (Third-Party Insurance) Act 2008* (ACT) s 180. It may be noted that such an insurer ‘cannot repudiate, or decline to issue or renew, a CTP policy’: *Road Transport (Third-Party Insurance) Act 2008* (ACT) s 24. In other jurisdictions, however, there is a single entity that provides this insurance — for example, the WA Insurance Commission.

⁸² There are also the contracts that allow for the provision, service and calibration of the automated enforcement devices.

⁸³ These are not necessarily contracts of employment. Police officers in WA, for example, have been characterised as ‘officer[s] responsible to the Crown’ and not employees: *Minister of Police (WA) v Western Australian Police Union* [2000] WAIRComm 226 (14 November 2000) 33 [86]. The history of characterisation of the role of police in Australia dates to *Enever v The King* (1906) 3 CLR 969, 975–8.

⁸⁴ Such as the ‘nightwatchman’ role of classical liberal theory: Robert Nozick, *Anarchy, State, and Utopia* (Basic Books, 1974) 26.

instead, the line is blurred by having private companies providing the policies.⁸⁵ On a related point, the WA Insurance Commission, the body that provides CTP insurance in that state, is a statutory corporation. It is corporation that is ‘an agent of the Crown in right of the State and has the status, immunities and privileges of the Crown except as otherwise prescribed.’⁸⁶ This combination reflects an attempt to garner the benefits of both public and private forms of institutional organisation.

As another example, the operation of enforcement systems is outsourced in some jurisdictions. In New South Wales (‘NSW’), a private contractor is used to operate the speed cameras.⁸⁷ While the ‘program is managed by Transport for NSW in consultation with NSW Police’,⁸⁸ the practice still represents a private sector organisation operating in a space that used to be exclusively the province of the public sector. This observation is neither new, nor is it meant as a criticism. Its purpose is to reinforce, along with the analysis above, the fact that the regulation of road behaviour is usefully understood in terms of Black’s theory.

III The Ungovernable Driver and the Regulation of their Decision-Making

There is one of Black’s five aspects of decentred regulation that has not been considered yet: ‘ungovernability’. This is the only aspect that specifically focuses on the human as the target of regulation. This Part of the article considers the ‘ungovernable’ driver and the web of regulation described in Part II above. For Black, ungovernability relates to the behaviour, attitudes, and autonomy of the regulated parties.⁸⁹ Taken together, these components suggest not that they cannot be governed at all, but that there are significant challenges associated with getting them to comply with the laws as promulgated by Parliament. Expressed differently, in the context of this article, all of the complex, interdependent and fragmented processes are aimed at guiding the behaviour of drivers — with each of the processes having a role in the guidance (though it can never be clear which process is the most important for modifying the relevant behaviour).

The suggestion here, however, is that, perhaps due to their ungovernability, the role of the driver is diminishing in this area of regulation.⁹⁰ More specifically,

⁸⁵ There are multiple ways in which the rise in risk assessment and management has been explored theoretically. There is, of course, Beck’s work: see, eg, Ulrich Beck, *Risk Society: Towards a New Modernity* (Mark Ritter, Sage, 1992) [trans of *Risikogesellschaft: Auf dem Weg in eine andere Moderne* (first published 1986)]. There is also the more ‘governmentalist’ model: see, eg, Robert Castel, ‘From Dangerousness to Risk’, in Graham Burchell, Colin Gordon and Peter Miller (eds), *The Foucault Effect — Studies in Governmentality* (University of Chicago Press, 1991) 281.

⁸⁶ *Insurance Commission of Western Australia Act 1986* (WA) s 4A.

⁸⁷ Transport for NSW, ‘NSW Speed Camera Strategy’ (Strategy Document, Transport for NSW, June 2012) 11.

⁸⁸ *Ibid.*

⁸⁹ Black, above n 18, 6–7.

⁹⁰ Even in the area of contracts, the individual is being removed. For example, in many cases involving the drivers themselves, the contracts are not subject to significant negotiation. Contracts for the sale of cars and for the provision of insurance, to take two examples, tend to be standard form contracts that are offered, as is, by the supplier and accepted by the purchaser. Relatively minor clauses may

the role of the decision-making of drivers has been reduced over time.⁹¹ For example, and particularly when breaches of the minor offences are considered, the systems do not care about why a person drives at 15 km/h over the limit or why the person ran a red light. For these (minor) offences, it is sufficient that the driver was caught doing the act. A decision may be imputed to the actions of the driver, however it does not matter whether the decision was conscious, in terms of the driver weighing up the risks associated with the breach,⁹² or whether there was a lack of attention or other carelessness.⁹³ To be clear, it seems natural for the decision-making of individuals to be considered when the law is breached as we ourselves acknowledge the decisions (or lack thereof) behind our own actions. This ‘common sense’ is not, however, the only lens through which the regulation of behaviour may be viewed.

When the issue of compensation for damage is considered, some of the compulsory insurance schemes do not even require that someone be found to be at fault. As noted above, where there is no need to establish fault, then there is no need, or opportunity, to question the decisions of any of those in the crash. Even, however, where fault does have to be established in order for the insurance to be paid, this may not entail an interrogation of the decisions of the at-fault driver. There is neither a need for a conviction to be recorded, nor a successful claim in negligence, against a driver in order for the hurt individual to make a successful claim.⁹⁴ The issue for the insurance companies relates to whether the driver caused the crash⁹⁵ — an examination of the circumstances of the incident, rather than the mental processes of the driver.

be amended before the agreement is signed; however, the terms are predominantly set by the supplier. In the vast majority of cases, the supplier will have more resources than the purchaser and the contract is likely to have been the product of significant legal advice — with most suppliers being ‘repeat players’. Galanter has discussed the impact of, and advantages to, ‘repeat players’ in the legal system: Marc Galanter, ‘Why the “Haves” Come Out Ahead: Speculations on the Limits of Legal Change’ (1974) 9(1) *Law and Society Review* 95. This limits the options faced by drivers when entering into contracts and limits the extent to which the terms of the contracts reveals the preferences of the customer when entering into them.

⁹¹ This reduced focus on decision-making does not mean that humans are, necessarily, being completely removed from the road safety system. As it stands, the use of automated forms of identification still centres on the human driver — if only to know where to send the infringement notice (such as facial-recognition technology — though this is not yet widely used on the roads).

⁹² Such a calculation may be inaccurate on the basis that up to ‘90 per cent of drivers believe that their driving skills are better than average’: Helen Wells, ‘Risk and Expertise in the Speed Limit Enforcement Debate: Challenges, Adaptations and Responses’ (2011) 11(3) *Criminology and Criminal Justice* 225, 236, citing Patricia Delhomme, ‘Comparing One’s Driving with Others’: Assessment of the Ability and Frequency of Offences. Evidence for a Superior Conformity of Self-Bias?’ (1991) 23(6) *Accident Analysis and Prevention* 493.

⁹³ Alternatively, the driver may make a conscious decision that justifies their behaviour and undertakes a process of ‘deresponsibilisation’: Wells, above n 37, 118–24. This process seeks to render the driver blameless on the basis that it is not a serious breach of the law. The enforcement agent of the law — whether a camera or an officer — still does not pay heed to this form of argument.

⁹⁴ Greg Pynt, *Australian Insurance Law: A First Reference* (LexisNexis Butterworths, 3rd ed, 2015) 306, citing *Government Insurance Office of NSW v R J Green & Lloyd* (1966) 114 CLR 437, 444 (Barwick CJ). The WA Insurance Commission website, for example, makes no mention of any legal action as being a necessary condition for making a claim: WA Insurance Commission, *Make a Claim* <<https://www.icwa.wa.gov.au/motor-injury-insurance/involved-in-a-crash/make-a-claim>>.

⁹⁵ For a discussion of, and links to, the relevant case law around the terms used in policies relating to causation, see Pynt, above n 94, 330–1.

Legal actions in negligence for property damage arguably explore the decision-making of the driver, should they get to court (as opposed to being settled between insurance companies). The Civil Liability Acts⁹⁶ set out the requisite test:

- (1) A person is not negligent in failing to take precautions against a risk of harm unless:
 - (a) the risk was foreseeable (that is, it is a risk of which the person knew or ought to have known), and
 - (b) the risk was not insignificant, and
 - (c) in the circumstances, a reasonable person in the person's position would have taken those precautions.
- (2) In determining whether a reasonable person would have taken precautions against a risk of harm, the court is to consider the following (amongst other relevant things):
 - (a) the probability that the harm would occur if care were not taken,
 - (b) the likely seriousness of the harm,
 - (c) the burden of taking precautions to avoid the risk of harm,
 - (d) the social utility of the activity that creates the risk of harm.⁹⁷

The test, therefore, considers what the driver 'knew or ought to have known' and considers what precautions the reasonable person would have taken (or would have decided to take).⁹⁸ The test also is couched in terms of the assessment of risk.⁹⁹ A precise calculation of risk is not, however, part of the adjudicative process.¹⁰⁰ Not every time a person runs a red light, for example, will a crash occur (either because of the level of traffic or because of the actions of other drivers).¹⁰¹ It is sufficient that the court considers that the (uncalculated) level of risk is too great for a reasonable person to take (assuming all the other requirements for the action have been met).

⁹⁶ Very similar pieces of legislation were passed across Australia in 2002 after the Ipp Report — an inquiry launched in response to a perceived crisis in personal injury awards: David Ipp et al, 'Review of the Law of Negligence: Final Report' (Report, Commonwealth of Australia, 30 September 2002).

⁹⁷ *Civil Liability Act 2002* (NSW) s 5B.

⁹⁸ The courts may also take account of the relative skills and attributes of the parties: see, eg, *Imbree v McNeilly* (2008) 236 CLR 510, 514 [3] (Gleeson CJ). However, this does not mean that the courts explicitly consider the decisions made by the parties. As an aside, in *Imbree* Kirby J discussed extensively the relevance of the compulsory third party insurance to the case: at 542–4 [107]–[112]; no other judgments considered insurance at the same level of detail (Kirby J, however, did not disagree with the orders of the others).

⁹⁹ Another example of risk assessment in the context of driving is the decision whether or not to buy any non-compulsory insurance policy. That decision may be seen as a function of the forms of governance in society: see, eg, François Ewald, 'Insurance and Risk', in Graham Burchell, Colin Gordon and Peter Miller (eds), *The Foucault Effect — Studies in Governmentality* (University of Chicago Press, 1991) 197.

¹⁰⁰ There was a relatively nuanced understanding of the factors that contributed to the decision of the relevant party in *Allen v Chadwick* (2015) 256 CLR 148. The relevant party, however, was not a driver — she was a passenger who knowingly got into a car driven by a person under the influence of alcohol.

¹⁰¹ Further, not every time a crash occurs will it result in death or serious injury — though that is less relevant for a discussion of liability under the Civil Liability Acts as compensation under the compulsory schemes is expressly excluded (see, eg, *Civil Liability Act 2002* (NSW) s 3B(1)).

Any consideration of the mental processes of the driver, however, is a shift away from the historical tendency, evident within the law, with respect to decision-making. There is not the space to fully articulate this argument here,¹⁰² however it is clear that in the 18th century the law tended to only care about the outcome of an action, rather than the reasons behind it. In the 18th century cases that operate as precursors to negligence law, for example, there was a greater recourse to absolute liability, such as with respect to the claims against common carriers.¹⁰³ It was only in the 19th century that the law became more interested in the “internal life” of defendants.¹⁰⁴ It was in that century that the ‘reasonable man’ and the ‘prudent man’ (as they then were) were born.¹⁰⁵ These standards have developed since that time to the point that it is uncontroversial for a legal test to purport to examine the mind of a party.

A final point may be made in this exploration of the assessment of driver decisions. It was highlighted above that most driving offences are prosecuted without the driver entering a court. The more serious offences require attendance — a key reason for which is that a trial allows a more thorough investigation of the crash and those factors that led up to it. In Western Australia (‘WA’), for example, there are few indictable offences, all of which are in the *Road Traffic Act 1974* (WA) rather than in the *Road Traffic Code 2000* (WA).¹⁰⁶ It is these investigations, therefore, that are most likely to consider the decision-making (or lack of it) of drivers.

Importantly, for this analysis, the mental aspect of driving offences is not always in issue.¹⁰⁷ For the states and territories with a Criminal Code, for example, there may not be a need to look into the mind of the driver. Under WA law, intention (unless expressly referred to in the relevant provision) and motive are not relevant to the issue of criminal responsibility.¹⁰⁸ Non-code states still may engage with the

¹⁰² For an exploration of how the law began to look at the role of knowledge in the decision-making of parties, see Chris Dent, ‘The Rise in References to “Knowledge” in 19th Century English Law’ (2016) 16(1) *Legal History* 27.

¹⁰³ For example, a common carrier was liable for ‘for every accident, except by the act of God, or the King’s enemies’: *Forward v Pittard* (1785) 1 TR 27, 33; 99 ER 953, 956 (Lord Mansfield).

¹⁰⁴ For an exploration of this in the US context, see Susanna L Blumenthal, *Law and the Modern Mind: Consciousness and Responsibility in American Legal Culture* (Harvard University Press, 2016).

¹⁰⁵ The first reference to the ‘reasonable man’ was in *Blyth v Birmingham Waterworks Co* (1856) 11 EX 781, 784; 156 ER 1047, 1049 (Alderson B) and the ‘prudent man’ appeared in *Vaughan v Menlove* (1837) 3 Bing (NC) 468, 475; 132 ER 490, 493 (Tindal CJ). See also Chris Dent, ‘The “Reasonable Man”, His Nineteenth-Century Siblings and Their Legacy’ (2017) 44(3) *Journal of Law and Society* 406.

¹⁰⁶ The indictable offences include: a failure to render assistance after a crash that caused bodily harm: s 54; a failure to report such a crash to the police: s 56; dangerous driving causing death or grievous bodily harm: s 59; dangerous driving causing bodily harm: s 59A; and reckless driving: s 60.

¹⁰⁷ Gurney notes that in the US, ‘many traffic laws only require an *actus reus*’ and not a *mens rea*: Jeffrey K Gurney, ‘Driving into the Unknown: Examining the Crossroads of Criminal Law and Autonomous Vehicles’ (2015) 5(2) *Wake Forest Journal of Law and Policy* 393, 408. He supports this with the assertion that ‘traffic regulations are generally considered public welfare offences’ and, therefore, are seen in strict liability terms: at 408 n 94.

¹⁰⁸ Sections 23, 23A, 23B and 24 ‘supplant’ the common law principles of *mens rea*: Thomas Crofts and Kelley Burton, *The Criminal Codes: Commentary and Materials* (Lawbook, 6th ed, 2009) 9.

concept of mens rea¹⁰⁹ when it comes to driving offences.¹¹⁰ In such jurisdictions, the case law refers to what an ‘ordinary prudent individual’ would consider appropriate action when considering the intention of the accused driver.¹¹¹ This approach, therefore, mirrors the approach used in negligence law — assessing what the decision should have been, rather than assessing what the specific intentions or motivations of the offending driver were. Even these instances of this level of forensic examination, however, are a very small percentage of the number of infringements of the road safety laws.

IV Ungovernable Autonomous Vehicles?

Part IV of this article is founded on the twin observations that the regulation in this area is usefully seen in terms of decentred regulation and that the ‘human’ role in that regulation has decreased over time. If it is accepted that the law is moving away, or at least paying less attention to, the decision-making of drivers, then this may have ramifications for the regulation of AVs.¹¹² This analysis is, therefore, based on an assumption, but not necessarily the hope, that the use of the technology will grow.¹¹³

First, it is acknowledged that, while decisions of humans are regularly considered, it is less common to view ‘machines’ as making decisions. The argument here is based on the fact that the on-board systems of AVs can be seen to make decisions¹¹⁴ – and it does not take a radical view of the process to reach that position.¹¹⁵ To consider further, there needs to be a more detailed consideration of

¹⁰⁹ The concept of mens rea may be seen to counter the assertion above that the law only began to consider the decision-making of parties in the 19th century on the basis that mens rea has a longer history than that. Two points may be made here. First, the modern understanding of mens rea entered the law in the 19th century (see, Adekemi Odujirin, *The Normative Basis of Fault in Criminal Law: History and Theory* (University of Toronto Press, 1998)). Second, earlier references to the mental element of crimes such as ‘malice aforethought’, by commentators such as Coke, did not demonstrate an interest in ‘defences based on the accused’s mental state’: Louis Blom-Cooper and Terence Morris, *With Malice Aforethought: A Study of the Crime and Punishment for Homicide* (Hart, 2004) 25–6.

¹¹⁰ See, eg, *DPP (NSW) v Bone* (2005) 64 NSWLR 735 (in relation to an offence under the *Road Transport (Safety and Traffic Management Act 1999* (NSW)); *DPP (NSW) v Kailahi* (2008) 191 A Crim R 145 (in relation to an offence under the *Road Transport (Driver Licensing) Act 1998* (NSW)).

¹¹¹ *R v Lawrence* [1982] AC 510, 526 (Lord Diplock), quoted with approval in *Maritime Authority of NSW v Rofe* (2012) 84 NSWLR 51, 60 [20] (Brereton J).

¹¹² An international standard that has been put in place for AVs: SAE International, *Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles*, J3016_201609, 30 September 2009 <http://standards.sae.org/j3016_201609/>. The associated document is a taxonomy and a set of definitions relating to AVs and other automated systems for vehicles.

¹¹³ For a discussion of resistance to the current trend in the technologisation of personal transport and its regulation, see Gavin J Smith and Pat O’Malley, ‘Driving Politics: Data-driven Governance and Resistance’ (2017) 57 *British Journal of Criminology* 275.

¹¹⁴ For a description of how AVs work, see Harry Surden and Mary-Anne Williams, ‘Technological Opacity, Predictability, and Self-Driving Cars’ (2016) 38(1) *Cardozo Law Review* 121. It may be noted that the second author is a Professor of Engineering and Robotics.

¹¹⁵ It has already been noted that systems with artificial intelligence (‘AI’) are understood to make decisions. It has been said that a ‘fundamental difference between the decision-making processes of humans and those of modern AI [is that] AI systems [may] generate solutions that a human would not expect’: Matthew U Scherer, ‘Regulating Artificial Intelligence Systems: Risks, Challenges,

what decision-making is and what constitutes a decision in the context of road behaviour.¹¹⁶ The issue will be explored in the context of AVs operating under a ‘Full Self-Driving Automation’ mode.¹¹⁷ This means that the ‘vehicle is designed to perform all safety-critical driving functions and monitor roadway conditions for an entire trip.’¹¹⁸ In other words, an AV driving in this mode is operating in the same way that a human driver does when they are in control of a car.

With respect to the decisions involved, driving on the road is a complex process. It comprises of multiple, interacting actions and inactions that are engaged with iteratively. The steering of the car is separate, but related, to the vehicle’s speed (which itself requires decisions over the use of power versus brakes). An awareness of, and responses to, any surrounding traffic is separate, but related, to any obligations imposed by traffic lights or signs. Gear selection, navigation and the use of windscreen wipers or indicators are other key decisions that need to be made throughout many journeys. In other words, at every point in which a setting of the vehicle is changed, a decision is made; not only that, but every time the possibility of a change to a setting is considered and rejected, a decision is made. A single journey through an urban centre, therefore, may require thousands of decisions.

A list of factors that can be seen to describe decision-making on the road has been noted as being of potential relevance to a prosecution for dangerous driving causing death or grievous bodily harm under s 59 of the *Road Traffic Act 1974* (WA):¹¹⁹

[T]he nature and quality of the driving itself; the amount of traffic on the road at the time ... the amount of traffic which might reasonably be expected to enter the road ... the number of pedestrians on or near the road ... the nature of the road itself; the weather conditions including visibility; ... the condition and state of repair of the motor vehicle; the [relevant] experience of the driver [including] the driver’s familiarity or lack of familiarity with the road.¹²⁰

There is, obviously, nothing in this list that requires the driver to be human. Many of the factors can be understood to be inputs into the decision-making process (the

Competencies, and Strategies’ (2016) 29(2) *Harvard Journal of Law and Technology* 353, 364. Given the highly constrained nature of decisions on the road (limited by the road infrastructure, the vehicle itself and the road rules), this may not be a significant problem for AVs.

¹¹⁶ It should be noted that this remains a high-level discussion, instead of a more technical discussion of how the detail of the current law would apply — in part given the fact that ‘no jurisdiction has yet regulated’ full self-driving AVs: Tranter, above n 11, 80;. The NTC, for example, engages with the issue of the ‘control’ of AVs and how that relates to the current law: NTC, ‘Regulatory Reforms for Automated Vehicles (Policy Paper, NTC, November 2016) 32–6. Such a level of detail will not be gone into here.

¹¹⁷ Tranter, above n 11, 64. This is a category used by the US National Highway Traffic Safety Administration (NHTSA) and adopted in Australian analyses of AVs. Full Self-Driving Automation covers the highest level (level 4) of automation in vehicles.

¹¹⁸ Adam Thierer and Ryan Hagemann, ‘Removing Roadblocks to Intelligent Vehicles and Driverless Cars’ (2015) 5(2) *Wake Forest Journal of Law and Policy* 339, 344. Many discussions of AVs feature the NHTSA levels. The titles of the other levels of automation are: 0 — No Automation; 1 — Function-Specific Automation; 2 — Combined Function Automation; and 3 — Limited Self-Driving Automation.

¹¹⁹ Other jurisdictions have the equivalent offence in the ‘general criminal statute’: Law Reform Commission of Western Australia, *Review of the Law of Homicide*, Final Report (2007) 120.

¹²⁰ Mugliston, Ainsworth and Colebatch, above n 9, 101.

amount of traffic, the number of pedestrians, the nature of the road, the weather conditions and the state of the vehicle) and others may be seen in terms of the risk management strategy of the driver (the nature of the driving and the driver's familiarity with the road). The inputs, for an AV, are a function of the sensors connected to the system and the risk management strategy is a function of the software of the system.

Given that assessment, there needs to be a closer look at the 'decision-making' of AVs.¹²¹ Four categories of information may be seen to be relevant for a decision: what are the alternatives; what are the possible outcomes; what is the likelihood of each outcome; and what is the value of each outcome to the decision-maker?¹²² Each of these categories, in the context of decisions made on the road, contain a knowable number of entries. In the first category of information, there is only a limited number of speeds (and rates of acceleration or deceleration) that are possible, a finite number of gears and relatively few options with respect to directions (assuming that the vehicle is to stay on the road).

An artificial intelligence system in an AV would be able to assess (most of) the possible outcomes of any change in the settings of the vehicle. Two sets of interactions are important here. The first set is that of the effect on the vehicle of the interaction of multiple changes in the AV's settings (for example, increasing power while changing gears and rounding a bend). The second set relates to the interaction of the AV, the surrounding road users and the road environment more generally.¹²³ The first set of interactions is relatively straightforward as they are a matter of basic physics. The second set is more problematic as it requires an understanding of the behaviour of other users, and possible changes of behaviour by those other users resulting from the AV's changes. It is likely that an AV with sufficient sensors and computing power would be able to track and predict the movement of other road users more effectively than a human driver could. Further, in the same way that human drivers become more predictable with standardised vehicles, AVs will also be (relatively) predictable to other AVs.

In terms of inputs, AVs will also be able to learn the norms that are part of the regulation of road behaviour. This may, on the surface, seem to be an area that would be the most resistant to a transfer to the regulation of AVs, on the basis that norms are an artefact of the social and AVs are not social beings. Norms, however, can be understood as a process of learning road behaviour. Given that the software

¹²¹ This is a different question to one that could focus on the entity that could be deemed responsible for any bad decision of the AV. For example, the failure of a piece of hardware (such as a sensor), or the software that made the decision, could be found to be behind a crash that caused death. That raises the question of who should take responsibility for the crash. The issue of responsibility has been discussed in general terms by others: see, eg, NTC, above n 25, 74–80. This topic was not given a standalone chapter in the subsequent NTC policy paper. For a US discussion of the issue of product liability for AVs, see Jeffrey K Gurney, 'Sue My Car, Not Me: Products Liability and Accidents Involving Autonomous Vehicles' [2013] (2) *University of Illinois Journal of Law, Technology and Policy* 247.

¹²² 'General Introduction' in Terry Connolly, Hal R Arkes and Kenneth R Hammond (eds), *Judgment and Decision Making: An Interdisciplinary Reader* (Cambridge University Press, 2nd ed, 2000) 1, 4.

¹²³ As noted above, the infrastructure is already a form of behaviour regulation. This would not change when AVs are more common.

that will guide AVs will have the ability to learn from experience,¹²⁴ such vehicles will be able to act in a way that is in accordance with the behaviour of the surrounding vehicles.¹²⁵ Of course, unlike with human drivers, the AVs may have strict limits on their actions as a result of their programming, which means that machine-learned norms will not be contrary to the road rules. It is likely that, if AVs ever dominate the road, then the norms will match the rules (allowing for changing traffic, road and weather conditions). Until that point, the learning nature of the AVs may mean that the vehicles ‘blend in’ with the behaviour of the human-piloted vehicles.

Returning to the four categories of information relevant to decision-making, the issue of the value of particular outcomes is, perhaps, the most contentious in the context of AVs. ‘Value’, of course, is a term with multiple meanings. Some of them are straightforward: an increase in speed of an AV (all other things being equal) would get the vehicle more quickly to its intended destination, which may be programmed to be of value to the AV. The ‘negative’ value of being prosecuted for speeding may impact on the AV’s decision to minimise, absolutely, its travel time. The more problematic instance would be where value is seen to have a ‘moral’ component. One study has highlighted how AVs may have to choose between harming several humans and harming one person (which could be the owner and sole passenger of the vehicle), with the study concluding that ‘figuring out how to build ethical autonomous machines is one of the thorniest challenges in artificial intelligence today.’¹²⁶ The question of the appropriate value setting regarding causing unavoidable harm is a software issue that will be dealt with by, and may be subject to, a set of safety standards.¹²⁷

There is little reason to consider that the AVs will not be able to be seen as decision-makers. Further, assuming that a set of ADRs are created for the software, there would be a standardisation of responses (or decisions) of AVs.¹²⁸ This would

¹²⁴ The US Department of Transport has issued a proposed rule that will require new vehicles to have the capacity to ‘talk’ to each other, including the sharing of information about the location, direction and speed of each vehicle: US Department of Transportation, *US DOT Advances Deployment of Vehicle Technology to Prevent Hundreds of Thousands of Crashes* (13 December 2016) <<https://www.transportation.gov/briefing-room/us-dot-advances-deployment-connected-vehicle-technology-prevent-hundreds-thousands>>. Compiling, and comparing, such data over time will give an AV an understanding of how other vehicles move in different circumstances.

¹²⁵ Surden and Williams describe how AVs will be ‘designed to “learn” over time and change how they act as they encounter new data’: Surden and Williams, above n 114, 163.

¹²⁶ Jean-François Bonnefon, Azim Shariff and Iyad Rahwan, ‘The Social Dilemma of Autonomous Vehicles’ (2016) 352(6293) *Science* 1573, 1576 (citations omitted). See also Ethics Commission on Automated Driving, *Automated and Connected Driving* (German Federal Ministry of Transport and Digital Infrastructure, 2017). Others have considered the ethics of *not* using AVs: Robert Sparrow and Mark Howard, ‘When Human Beings are Like Drunk Robots: Driverless Vehicles, Ethics and the Future of Transport’ (2017) 80 *Transport Research Part C* 206.

¹²⁷ For a discussion of potential processes to ensure that the regulation of AVs is ‘ethically sound’, see Nick Belay, ‘Robot Ethics and Self-Driving Cars: How Ethical Determination in Software Will Require a New Legal Framework’ (2015) 40(1) *Journal of the Legal Profession* 119.

¹²⁸ In some ways, it is clear that AVs would be better decision-makers than humans. They would not be subject to the Dunning-Kruger effect or to other forms of illusory superiority. For an overview of cognitive illusions, see Ward Edwards and Detlof von Winterfeldt, ‘On Cognitive Illusions and Their Implications’ in Terry Connolly, Hal R Arkes and Kenneth R Hammond (eds), *Judgment and*

reduce the variability of decision-making on the road,¹²⁹ and, as a result, simplify the risk assessment processes of the AVs. As noted, however, the decentred nature of the driver regulation has meant that human decisions in the area are becoming less targeted by the forms of regulation. The shift away from the regulation of human decision-making may also indicate that the system is caring less about the ‘self’ at the heart of road behaviour.¹³⁰ As such, AVs may be seen as ungovernable just as human drivers are. AVs may not have all the mental distractions of a human – including worrying about a missed work opportunity or stressing about a more personal crisis — however, these distractions are part of the human road users’ existence as humans and not as road users. To suggest that, given their less distracted nature, AVs should be seen as less capable of being subject to the complex web of road regulation seems perverse. In short, the regulatory goal of reducing trauma on the road and any additional goal of streamlining the post-crash processes may be accommodated by AVs as well by human drivers.¹³¹

V Conclusion

The regulation of road behaviour in Australia appears to be effective. While the headline figure of 1295 road deaths in 2016 in Australia may seem high,¹³² the statistic of 0.5 road deaths per 100 million vehicle kilometres travelled¹³³ indicates that the chance of getting killed in a car crash is actually very small. The reduction or removal of human error, and human decision-making, is likely to reduce that risk even further.¹³⁴ As a result, concerns over the fact that AVs may cause accidents may be misplaced, as we already accept a significant number of road deaths every year.¹³⁵

Decision Making: An Interdisciplinary Reader (Cambridge University Press, 2nd ed, 2000) 592. Not only that, the reaction time and decision-making speed of AVs are likely to be much better than those of humans.

¹²⁹ That is, given the range of personal experiences, knowledge and skills of the human drivers on the road now, there may be a significant range of decisions that are made in response to a single set of circumstances.

¹³⁰ Expressed differently, the reduced interest in the human ‘self’ may make it easier for the regulatory systems to embrace a non-human ‘self’.

¹³¹ In terms of any compensation payable after a crash, again, the current systems should be able to accommodate the new technology. Where an AV hurts an individual, and the crash happened in a jurisdiction with a ‘no-fault’ CTP scheme, the insurer will compensate the injured party in the same way they do now because the decisions of the AV would be as irrelevant as the decision-making of drivers under the current system. Where the CTP scheme is not ‘no fault’, and for crashes where property damage is suffered, then there would be the need to apportion responsibility among those involved in the crash. For a US-based discussion of the potential role of insurance in crashes featuring AVs, see Carrie Schroll, ‘Splitting the Bill: Creating a National Car Insurance Fund to Pay for Accidents in Autonomous Vehicles’ (2015) 109(3) *Northwestern University Law Review* 803.

¹³² Bureau of Infrastructure, Transport and Regional Economics, ‘Road Trauma Australia 2016 Statistical Summary’ (Report, Department of Infrastructure and Regional Development, 2016) 1.

¹³³ *Ibid* 39.

¹³⁴ ‘Most experts predict that autonomous cars will be much safer than human drivers’: Surden and Williams, above n 114, 128.

¹³⁵ It may be there has been a long-term fear of technology at the heart of the road rule enforcement system. This fear had its first expression in the requirement that the first automobiles had a speed limit of four miles per hour and that all vehicles were to be preceded by a person carrying a red flag:

This article has shown that the current, albeit complex, system of regulation has reduced the role of the agency of human drivers — presumably to make the processes cheaper and/or more efficient. This reduction in agency shows the reduction in the relative importance of the decision-making of individuals, a benchmark against which the decision-making of AVs may be considered. The systems already in place operate to minimise the impact any individual driver may have on the perpetuation of the regulatory endeavours. That reduction in agency may facilitate the introduction of fully independent AVs. Further, the introduction of AVs may reduce the impact of ad hoc, unstructured, or ill-informed processes of human risk assessment and decision-making. Not that the technology is quite ready to provide fully self-driving vehicles — this may be the rare case of the law being *ahead* of, instead of behind, the times.

Locomotives Act 1865, 28 & 29 Vict 1, c 83, s 3 (commonly known as the ‘Red Flag Act’). For example, the media of the early 20th century, with a touch of hyperbole, claimed a ‘machine of steel and brass will delight in killing people’: ‘Horse v Motor’, *The Argus* (Melbourne), 12 December 1900, 4, quoted in Kieran Tranter, ‘“The History of the Haste-Wagons”: The *Motor Car Act 1909* (Vic), Emergent Technology and the Call for Law’ (2005) 29(3) *Melbourne University Law Review* 843, 846.