ABOUT THE AUTHORS

David Ashmore is an affiliate researcher at the University of Melbourne. He is currently working towards his doctorate which examines the symbolic aspects of transport choice across different cultures. His professional background is in transport regulation and procurement; he has worked for consulting firms, universities and the civil service.

Carey Curtis is Professor of City Planning and Transport at Curtin University, Director of Urbanet research network and Guest Professor at the University of Gothenburg. Her research interests include city form and structure, transit-oriented development, personal travel behaviour, accessibility planning, institutional barriers to sustainable transport, governance and transport policy.

Diane E. Davis is Charles Dyer Norton Professor of Regional Planning and Urbanism, and Chair of the Department of Urban Planning and Design at the Harvard Graduate School of Design. Her published works examine the relations between urbanization and national development, the politics of urban policy and urban governance. Her current research focuses on the future of cities in an era of rapid technological innovation, climate change and new forms of sovereignty.

Iain Docherty is Professor of Public Policy and Governance at the University of Glasgow. He has held board-level appointments with client and provider sides of the transport industry in the United Kingdom and advised public agencies in the United States, Australia, Canada, The Netherlands and Sweden, and the OECD.

Robyn Dowling is Professor of Urbanism in the School of Architecture, Design and Planning at the University of Sydney. She is well known for her work on the cultural geographies of suburban homes and neighbourhoods. Her current research focuses on urban policy responses to techno-

logical disruptions, focusing on smart mobility and the implementation of smart city strategies.

Edgar Salas Gironés is a PhD candidate in innovation governance at Eindhoven University of Technology. In his PhD project, he studies the emerging governance arrangements between private and public actors for the transition towards Smart Mobility in the Netherlands.

Debbie Hopkins is a departmental Research Lecturer in the School of Geography and the Environment, University of Oxford. Her research responds to questions of behaviour change and socio-technical innovation in low carbon transitions. She is currently working with the Research Centre on Innovation and Energy Demand to examine the energy implications of automation in the freight industry.

Crystal Legacy is a Senior Lecturer in Urban Planning at the University of Melbourne. Her research examines questions of urban conflict and citizen engagement with a current focus on the role of the citizen in contested transport processes in Australian and Canadian cities. She is co-editor of *Instruments of Planning: Tensions and Challenge for More Equitable and Sustainable Cities* (Routledge, 2015).

Dimitris Milakis is Assistant Professor of Smart and Sustainable Transport Systems at Delft University of Technology. His research focuses on the influences of the built environment and (emerging) transport systems on human travel and location behaviour. He is also interested in human perceptions and preferences of travel and their integration into urban and transport planning.

Milos Mladenovic has obtained his BSc in Transport Engineering at the University of Belgrade, and MSc/PhD in Civil Engineering at Virginia Tech. His current research interests include ethical assessment of emerging mobility technologies, socially sustainable transport planning methods, asset management methods for intelligent transport systems and transport engineering education practices.

Kate Pangbourne is an EPSRC/LWEC-funded University Academic Fellow at the Institute for Transport Studies, University of Leeds. She has an MA (Hons) in Philosophy with English Literature, an MSc in Sustainable Rural Development and a PhD in Geography (Environmental). With an interdisciplinary background encompassing environmental sustainability,

transport geography, technology, social science and philosophy, she addresses changing behaviours, practices and governance.

Jan Scheurer is a senior research fellow at Curtin University, Perth, and an Honorary Associate at RMIT University, Melbourne/Barcelona. He has 20 years of academic experience in the fields of transport and accessibility planning, urban design and sustainability studies.

Tim Schwanen is Associate Professor of Transport Studies and Director of the Transport Studies Unit at the University of Oxford. He holds a PhD in Geography from Utrecht University, the Netherlands and has published extensively on various dimensions of everyday mobility, including the role of new technologies and the dynamics and prospects of low carbon transitions in urban mobility.

Dominic Stead is Associate Professor of Urban and Regional Development at Delft University of Technology and Honorary Research Fellow at University College London. He has held positions at the University of Queensland, Friedrich-Alexander University Erlangen-Nürnberg, HafenCity Universität Hamburg, University College London and the University of the West of England.

John Stone is a senior lecturer in Transport Planning at the University of Melbourne. His research explores the political and institutional context for variation in international transport planning practice, with a focus on cities in Australia, Canada and German-speaking Europe. He has also worked in local government and as a community advocate for sustainable transport.

Darja Vrščaj graduated from the research MSc in Science and Technology Studies at Maastricht University in 2014. In the past, she worked at the European Parliament, STOA Unit and the OECD, STI Directorate. Currently, she is pursuing a PhD at the Technical University of Eindhoven. Her research is co-funded by the Ministry of I&M.

CONTENTS

CHAPTER 8

PLANNING FOR DISRUPTIVE TRANSPORT TECHNOLOGIES: HOW PREPARED ARE AUSTRALIAN TRANSPORT AGENCIES?

John Stone, David Ashmore, Jan Scheurer, Crystal Legacy and Carey Curtis

ABSTRACT

In Australia, corporations are playing an increasing role in the shaping of urban regions through their ability to mobilize capital to support large infrastructure projects and to usurp institutional planning roles which have traditionally been the responsibility of public-sector agencies. The chapter outlines emerging evidence of changes in the roles of corporations in generating ideas and mobilizing political support for their favoured city-shaping projects, and shows that the private sector is embedded in the processes of government, such as planning, in increasingly complex ways. Through 'market-led' or 'unsolicited' proposal evaluation frameworks, corporations can now bring proposals to political leaders in ways

which go outside traditional planning processes and bypass conventional engagement with civil society.

In this context, we present data from a recent survey of planners in state and national land-use and transport agencies. The survey, conducted through semi-structured interviews, gathered information about the expectations of these organizations in relation to the nature and timing of the deployment of new AV technologies; about the potential implications for achieving environmental and social planning objectives; and about the collective infrastructure investments that AV technologies may require. This work is being used to shape a new research agenda to explore the planning and regulatory frameworks that are needed to ensure that the AV technologies can be deployed in ways that maximize the public good.

Keywords: Autonomous vehicles; transport planning; Australia; governance; regulation

INTRODUCTION

Many of the scenarios for AV deployment frame impacts on urban living in simple dichotomies between dystopian or utopian futures. In this context, Isaac (2016) emphasizes a critical role for governance (as well as regulation and policy) in shaping a future involving AVs. As cities continue to grow, citizens and governments are seeking ways to mitigate the effects of climate change, environmental system collapse and the social consequences of rising inequality. The public purpose of urban planning, as Gleeson and Beza (2014) argue, is to facilitate the design and delivery of collective solutions to these and other urban problems. However, urban research currently fails to offer a coherent framework which brings the potentials of AV technology into dialogue with this conception of urban planning.

In Australia, after three decades under a dominant neoliberal paradigm, we can see a closing of political and institutional minds to the possibility of collective effort, and therefore an existential threat to the practice of urban planning. The private sector has become deeply

embedded in many aspects of urban transport and land-use planning from the funding of major urban toll roads and the operation, through franchises, of complex suburban rail operations to the management of land-title records and the privatization of building inspections. As 'privatized urban monopolies … control ever larger parts of Australia's metropolitan estates' (Gleeson, forthcoming, p. 183) the capacity for state agencies to direct the shape of urban development is further hollowed out (Streeck, 2016, p. 72) and corporate ambition is increasingly fused with state power and resources in what we can call 'corporatized governance' (Paul, 2016, Ch. 2). This is the context in which planners in Australian transport and land-use agencies are positioning themselves to meet the challenges of a possible transformation of urban transport driven through technological innovation generated by the private sector.

Even without such constraints, planning in the face of complex change is a difficult task. Guerra (2016), whose interviews with planners in US metropolitan planning agencies provided the catalyst for our own project, lays down a challenge to planners by reminding them of failures to respond effectively to past technological innovations from the automobile to the postal service:

> *Planners may yet again fail to influence the relationship between cities and a new transportation technology by either misunderstanding driverless cars or seeing them as a solution for contemporary planning problems, such as road congestion or climate change. (p. 211)*

Acknowledging this challenge, we support the collective project of urban planning, if for no better reason than that we believe its laissez-faire alternative offers little hope of achieving our environmental or social aspirations for the city survival (see also Chapter 2 in this volume). So, to shape our future research and engagement in the future of Australian cities, we interviewed a small sample of senior staff in Australian transport and land-use planning agencies to better understand their attitudes to the planning and regulation of emerging AV technologies. This chapter reports on the lessons learned in these interviews. We begin by giving some background to progress towards AV deployment in Australia and the

environment in which urban planners currently operate as they contemplate the task of managing the driverless city of the future.

AV DEPLOYMENT AND URBAN PLANNING IN AUSTRALIA: THE CURRENT STATE OF PLAY

The closure of large General Motors and Toyota plants in late 2017 marked the end of local car manufacturing in Australia (ABC, 2017a). So, more than ever, the design of the local car fleet will be decided offshore. However, governments of most States within the Australian Commonwealth are actively competing to attract businesses engaged in the development of AV systems, and trials of various types of vehicles are in progress in several cities (ABC, 2017b; Government of Western Australia, 2016). Local and international telecommunications companies are collaborating with universities in trials of out-of-vehicle communications and guidance systems (Premier of Victoria, 2017); and national agencies are working to:

> *... put end-to-end regulation in place by 2020 to support the safe, commercial deployment and operation of automated vehicles at all levels of automation. (National Transport Commission, 2017)*

Australian drivers – the large majority of whom live in the suburbs of the major cities where a car is a virtual necessity for access to urban life – are becoming aware of AV technology through popular media. And, while only a minority now think that they would purchase an AV, half the urban population apparently see AVs as a viable alternative to public transport, if the price was right (ITLS, 2017). These results suggest that international companies wishing to sell AV technologies in Australian cities will eventually need to find ways to persuade initially reluctant drivers to give up control, but that the first fruitful market for these companies might be found in competition with existing public transport services.

The sphere of influence for planners to respond to changes such as AVs has shrunk dramatically in recent decades. We can see this in the example of Victoria, where, as neo-liberalism took hold in the 1990s, the public service was hollowed out and the operation of large metropolitan train

and tram systems was franchised. Thus, the capacity for strategic transport planning was restricted, and even the head of the state planning agency argued that planners were relatively powerless:

> *... the importance and – even more, the possibility – of the application of conscious choice to city formation is exaggerated. (Paterson, 2000, pp. 377–386)*

And, today, planners in Victoria work in an environment in which regulation is viewed as 'red tape': an imposition on business rather than a protection for the public (DTF, 2017a). This mindset has permitted the emergence of new processes that undermine traditional approaches to strategic urban planning. It is now possible to fast-track private-sector proposals that have political support (DTF, 2017b). These processes are being used at a city-shaping scale. For example, a current proposal, now in an advanced stage, will permit construction of a $AUD 5.5 billion inner-urban toll-road in Melbourne that had not been foreshadowed in any metropolitan strategic plan. If it is completed under current terms, which include mobilization of over $A 3 billion in private capital, this project would entrench the monopoly position of the highly profitable toll operator. This degree of influence over the use of key parts of the urban road network, combined with a long-term ambition to use its existing tolling technology to roll out electronic road-pricing across the urban road network (Millar & Schneiders, 2016), puts this company in a powerful position to form strategic partnerships with the international developers of AV technologies. These examples illustrate the restricted domain in which Australian planners operate with respect to the private sector and therefore the inherent difficulties that they may face in protecting the public good through the delivery of collective solutions to problems raised in the deployment of AV technologies.

PREPARED FOR WHAT? THE CONTEXT FOR INTERVIEWS WITH AUSTRALIAN PLANNERS

International consideration of the objectives for governance of the deployment of AVs (ITF, 2017a) points to the need for planners and regulators

to evaluate any proposed commercial or public project not only on questions of safety and liability, but also against objectives including:

- reduction of traffic (to foster active travel and mass transit and to support compact urban form);
- reduction of global and local pollutants;
- improvement in accessibility to tackle social inequality.

To avoid the risk of 'greenwash', it is also necessary that any claims on these questions be supported by publicly verifiable data (see, for example, discussions within the International Transport Forum (2017b)).

A further issue for planning and regulation of AVs is the desired relationship between the new technologies and existing transit networks. Some transport planners argue that AVs will be more valuable if they are integrated with traditional public transport services, and with cycling and walking, because this allows for a 'seamless' experience for users and greater efficiencies for the use of each mode (Lindsay, 2016; UITP, 2017). If AVs are to be deployed in ways that provide lower cost structures or greater operational flexibility to replace or rationalize low-patronage traditional services, then it seems logical that transit planning agencies will need a significant degree of control of the information platforms and payment channels needed to provide new multimodal mobility. This is a task that innovative agencies internationally are already well-placed to perform, building on decades of growth in patronage and increasing political and public support. Transit-planning agencies in German-speaking Europe, in particular, have practical experience of fare and service coordination between public and private transit operators and, more recently, with other mobility services such as car and bike sharing (Goodall et al., 2017; VDV, 2015), but this does not appear to be the case in Australia, where urban transit agencies are only recently emerging from decades of declining patronage and fragile political support (Mees & Groenhart, 2012).

To explore these issues, a series of semi-structured interviews were conducted in March and April 2017 with transport and land-use planners and policymakers. The interviews were framed around the question: how prepared are Australian transport planning agencies for disruptive transport technologies? The question of preparedness in relation to AV technology is obviously made more complex by the uncertainty over the timing and capabilities of any mass market entrant in the field. Guerra (2016), after

surveying US metropolitan planning organizations on their approaches to the introduction of AVs, found that:

> *... none of the Metropolitan Planning Organizations most likely to be planning for self-driving cars have incorporated them into their most recent Regional Transport Plans. (p. 213)*

He concluded that even though planners were closely following the evolution of the new technologies, the absence of AVs in their plans was principally due to uncertainty about the impacts of AVs on road capacity, traffic safety, land use and travel behaviour. Our research aimed to explore the extent to which uncertainty was also influencing the responses of Australian planners to AVs.

Participants for the semi-structured interviews were recruited from state or national transport or planning agencies. Six interviews were conducted, with an agreement to anonymity of agency and city. Key themes, discussed in the next section, were identified through an inductive process by which the most important topics were identified by their frequency and the emphasis given to them by interviewees (Boyatzis, 1998; Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006).

FINDINGS AND ANALYSIS

Uncertainty Hampering Planning

Guerra (2016) found that planning agencies in the United States appeared to be failing to prepare for the deployment of AVs because, as one respondent put it: 'We don't know what ... to do about it. It's like pondering the imponderable' (p. 214).

This sentiment was also reflected in our interviews:

> *The planning cycle and the planning horizons have gone even more crystal ball than they ever were before. It's very hard to plan in such an environment. If you try and foresee what's going to happen and try and regulate ahead of the curve, then you are probably going to get something wrong. But then if you leave it too long, then you'll have outdated regulation. [Interviewee 5]*

Respondents felt that getting regulation wrong was a worse problem than having outdated regulation, which could, in theory, be improved upon. So, it was seen as preferable to 'watch and wait' and to maintain dialogue with all parties in the sector, expand and develop the relevant skill and knowledge base within government agencies, and keep the planning process as open as possible.

While uncertainty in relation to the ultimate form of AV deployment and its impact is unavoidable, acknowledgement of uncertainty by planners is not necessarily evidence of unpreparedness. Preparedness might be better gauged by the extent to which planners are working to devise and articulate goals for AVs and to formulate means by which to measure their impact. There was, however, little indication of any push to ~~drive~~ an integrated and purposive agenda.

Government: Enabler or Prescriber?

The degree to which the purpose of government is to prescribe outcomes or enable the market was a recurrent theme, with the prevailing sentiment being that bureaucrats were neither technological nor procurement specialists. Again, the tactic appeared to be 'watch and wait'. Participants consistently pondered the existential choice between laissez faire and directing the market towards some holistic solution.

> *... there would need to be a certain level of regulation put in place by government pertaining to safety, but otherwise it would be possible for government to step away and allow self-regulation to take place. [Interviewee 6]*

Given the prevailing climate of political and institutional support for the private sector over the public, it is not surprising that interviewees generally accepted that the market be allowed to take things forward with the state taking a light regulatory approach. The exception being safety: there are high hopes that AVs will not only reduce traffic accident rates and severity, but their enormous generation of data will also offer new opportunities to address remaining road safety challenges through regulatory intervention. However, the 'light touch' on questions other than safety is likely to have a significant impact on the evolution of the state planning function. Interviewees, in general, recognized the difference between

waiting to see how a sector evolves before enacting an appropriate regulatory framework and allowing matters to be taken forward by the market in a 'hands-off' manner. Most tended to support the dominant ideological view that the government's role should be as an enabler. The implications of this standpoint are discussed in Chapter 1 of this volume and explored through scenarios in Chapter 9.

Government as a Facilitator of Integrated Supply

Despite the general acceptance of market dominance described in the previous section, some interviewees felt that there was a need to ensure that new modes were integrated into a holistic offering. These respondents suggested that this could be done through a ticketing portal or 'Mobility as Service' application, with coordinated (and possibly subsidized) supply for disadvantaged communities or regional and remote areas (see Chapter 3 for further discussion on the hopes and realities of MaaS). These interviewees felt there was an imperative for the state to prevent supply-side fragmentation, and to manage social dis-benefits:

> *If (AVs) become part of an overarching public transport network, then what is the regulation guiding that? The policy certainly needs to consider how much is left to an organic market-driven response compared to how much is tied in to a centrally driven public transport service. And what obligations are on the transit authority to have a level of control, to say contract someone to provide a ... subsidised service, what level of regulation is needed for that? [Interviewee 5]*

> *There is a growing focus on engagement ... but ... where the commercial motivators of industry don't always sit well ... I think that government has a role to even the balance ... to ensure that the right outcomes are provided for those less profit-driven areas. [Interviewee 6]*

Given current practices, operationalization of this need to provide a social safety net would most likely be achieved through complex contractual relationships with AV suppliers. As the interviewees themselves

agreed, the public sector faces a shortfall in the skills required to do this effectively.

The complexity of this question was illustrated by one respondent who said:

> *... an on-demand model for buses rather than regular services ... would give government an opportunity to re-examine the relationship they have with public transport. [Interviewee 4]*

This was not meant to imply that governments should retreat from providing 'marginal' bus services, but rather that the new economies of AVs will require new responses from governments. This was the closest respondents came to acknowledging the need for AVs to operate in ways that strengthen transit systems as an alternative to the private car, as described earlier.

Public Sector Knowledge Gaps

Interviewees stressed that in such a specialized area – far more complex than traditional transit – the skills needed to critically appraise the benefits of the new technologies, and how to procure them as part of an integrated solution, are underdeveloped:

> *The capacity of the public sector to understand the drivers that motivate private sector behaviour is going to be really important ... A lot of the expertise is going to be held by the private sector, we actually need to build our capacity to be a really informed consumer of services and advice (and) when the private sector holds expertise that the public sector doesn't, it can be very challenging to drive good ... outcomes. [Interviewee 1]*

Given the ideological climate in which Australian planners operate, it is not surprising that some interviewees felt that the public sector generally does not recognize its own power:

> *I think that the (private sector is) very aware that they need the active cooperation of governments ... probably more than we ... realise that they need this.... [Interviewee 2]*

This comment acknowledges the reality that, despite the rhetoric, businesses do not want the removal of all government regulation, but rather want a predictable environment in which their service can be operated ~~at~~ with consistent returns. It also speaks to the impacts of 'corporatized governance' through which once-clear demarcations of public and private sector roles in policy development, planning and system operations and maintenance are being re-organized in response to technological disruptions.

Fragmentation of Effort

Interviewees recognized several lines of fragmentation: between politicians and planners; between state and national governments; and within the emerging AV industry itself:

> *... all policy development requires an authorising environment ... As a bureaucracy, we're limited by the ambitions of our political masters and their willingness to (explore) innovative areas. [Interviewee 1]*

> *Clearly, there can be competition for investment and jobs and the like, that's what governments do. But when it comes to the actual technology, the way it's being deployed, there's got to be national consistency. [Interviewee 3]*

> *There are multiple portals in place and perhaps there could be better governance to establish the links between those portal~~s~~ and ... ~~channels~~, and a public description of what each of them is focussed on, but there's a bit of competitive tension at the moment which isn't a bad thing. [Interviewee 6]*

Respondents' views on the issues requiring a regulatory framework covered a broad range, including an imperative to adhere to emerging global vehicle and technology standards, given the absence of locally manufactured vehicles and the relative isolation from global supply chains. The integration agenda, identified as critical in the literature briefly surveyed in our earlier discussion of the international context for the interviews, was not explicitly recognized as such by most of the respondents.

CONCLUSIONS

The uncertainty about the form of the new technologies that Guerra (2016) found to be causing paralysis of action among metropolitan regional planners in the United States was also found in Australia, but the uncertainty goes further to encompass the almost existential crisis of legitimacy and purpose that Australian planners face after decades of neo-liberal doctrines in planning and governance more generally. So, planning institutions as a whole are more likely to be avoiding some of the more difficult challenges. This is unfortunate as there is only a short time available in which planners will be able to formulate possible policy and regulatory responses before the emergence of commercial proposals for permission to deploy new vehicle technologies and requests for such things as state provision of communications support or preferential access to road space.

The evidence from our interviews suggests that some Australian planners are grappling with these questions, but, outside the questions of safety being pursued by the National Transport Commission, these individuals are only just beginning to articulate the formal and informal processes by which policy and regulation to achieve these outcomes can be created. Further research and engagement is needed to deepen understandings of planners' attitudes and to participate in the development of mechanisms for management of the deployment of AVs. This can be used to open a wider public debate, with all sectors of the AV industry and with civil society, to build consensus around new requirements for planning and regulation.

ACKNOWLEDGEMENTS

The authors wish to recognize the generous contribution of the anonymous interviewees. This chapter is adapted from a paper ~~to be~~ presented at the *State of Australian Cities* Conference in Adelaide in November 2017.

REFERENCES

AU:1

[ABC] Australian Broadcasting Corporation. (2017a). Retrieved from http://www.abc.net.au/news/2017-10-02/toyota-and-holden-factories-to-shut-down/9008312. Accessed on 25 October 2017.

[ABC] Australian Broadcasting Corporation. (2017b). Driverless vehicle technology to be tested at Adelaide Airport, Flinders University, 21 March 2017. Retrieved from http://www.abc.net.au/news/2017-03-21/driverless-car-trial-atadelaide-airport,-flinders-university/8373006. Accessed 22 September 2017.

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage Publications.

Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. doi:10.1191/1478088706qp063oa

DTF. (2017a). Department of Treasury and Finance. Retrieved from http://www.dtf.vic.gov.au/About/Structure-and-functions/The-Red-Tape-Commissioner/Red-Tape-Rubbish-Bin. Accessed on 3 June 2017.

DTF. (2017b). Retrieved from http://www.dtf.vic.gov.au/Infrastructure-Delivery/Market-led-proposals. Accessed on 3 June 2017.

Fereday, J. & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, *5*(1), 80–92. doi:10.1177/160940690600500107

Gleeson, B. (~~forthcoming~~ 2017). The metropolitan condition. In S. Hamnett & R. Freestone (Eds.), *Planning metropolitan Australia*. Abingdon: Routledge.

Gleeson, B. & Beza, B. B. (Eds.). (2014). *The public city: Essays in honour of Paul Mees*. Melbourne: Melbourne University Press.

Goodall, W., Fishman, T. D., Bornstein, J. & Bonthron, B. (2017). *The rise of mobility as a service: Reshaping how urbanites get around*. Deloitte University Press. Retrieved from https://dupress.deloitte.com/dup-us-en/deloitte-review/issue-20/smart-transportation-technology-mobility-as-a-service.html

Government of Western Australia. (2016). Trial of autonomous vehicles. Media Statements, 9 February 2016. Retrieved from https://www.mediastatements.wa.gov.au/Pages/Barnett/2016/02/Trial-of-autonomousvehicle.aspx. Accessed on 22 September 2017.

AU:2

Guerra, E. (2016). Planning for cars that drive themselves. *Journal of Planning Education and Research*, *36*(2), 210–224. doi:10.1177/0739456X15613591

Isaac. (2016). *Driving towards driverless: A guide for government agencies*. New York, NY: Parsons Brinkerhoff, WSP.

[ITF] International Transport Forum. (2017a). Retrieved from https://2017.itf-oecd.org/outputs-resources

[ITF] International Transport Forum. (2017b). Retrieved from http://2017.itf-oecd.org/new-business-models-authorities

[ITLS] Institute for Transport and logistics Studies. (2017). Retrieved from http://sydney.edu.au/business/__data/assets/pdf_file/0005/330188/TOPS-2017-Q3_Final_noITLSlogo.pdf, Sydney University.

Lindsay, G. (2016). Now arriving: A connected mobility roadmap for public transport. New Cities Foundation. Retrieved from http://www.newcitiesfoundation.org/wp-content/uploads/2016/10/PDF-Now-Arriving-A-Connected-Mobility-Roadmap-For-Public-Transport-Greg-Lindsay.pdf

Millar, R. & Schneiders, B. (2016). Transurban: The making of a monster. *The Age*, 14 May 2016.

National Transport Commission. (2017). *Changing driving laws to support automated vehicles*. Discussion Paper, October 2017, NTC, Melbourne.

Paterson, J. (2000). Choice and necessity in metropolitan planning. *Urban Policy and Research*, *18*(3), 377–386.

Paul, E. (2016). *Australian political economy of violence and non-violence*. London: Palgrave Macmillan UK.

Premier of Victoria. (2017). Retrieved from https://www.premier.vic.gov.au/world-first-hi-tech-transport-research-for-melbourne/. Accessed on 25 October 2017.

Streeck, W. (2016). *How will capitalism end?* New York, NY: Verso.