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Cycling: Bringing the future into the present

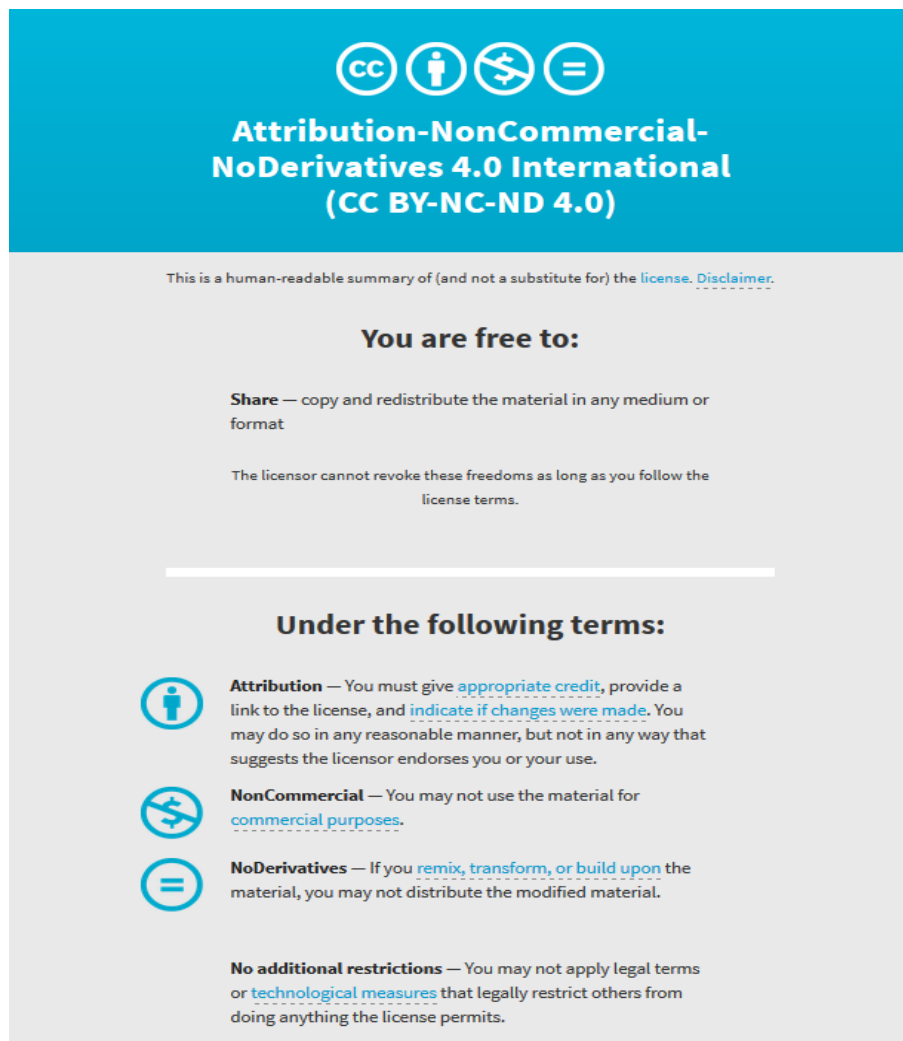
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1 Cycling: Bringing the future into the present

Jennifer Bonham and Marilyn Johnson

Introduction

Inspired by the growing interest in cycling across Australasia, *Cycling futures* brings together work by both well-established and emerging cycling scholars from Australia and New Zealand. Australasian cycling research has been developing alongside the steady growth in cycling. Since the early 2000s, reported rates of cycling participation have been increasing (Department of Communications, Information Technology and the Arts, 2011). In 2015, more than 4 million Australians (17.4%) had ridden their bicycle in the previous week, while over a third (36.3%) had ridden in the previous year (Australian Bicycle Council & Austroads, 2015). In New Zealand, in 2009-13, a third of the population (34%) cycled in the previous year, with 19% of New Zealanders reporting cycling in the last month (Ministry of Transport, 2013). This increase across Australasia reflects the growing interest in cycling in towns and cities across the globe.

Cycling participation rates in the Netherlands and Denmark are well documented, and attempts to foster alternative-mobility futures are gaining momentum around the world. The implementation of cycling-friendly policies and cycling infrastructure in global (and aspiring global) cities sends a powerful message about the changing future of urban mobility. New York City has been installing cycling facilities for almost two decades (Chen et al., 2012), while some areas of

London report that cycling now comprises 16% of vehicle journeys (Transport for London, 2013, p. 5). Tokyo has continued its long tradition of cycling with an estimated 14% of journeys being made by bike (Kidd, 2013); and in Paris, the pervasive Velib bike-share scheme provides a well-patronised, practical option for the city's residents and tourists (Beroud & Anaya, 2012).

Cycling has remained a significant means of travel in China despite policies through the 1990s and early 2000s which either sought to reduce bicycle use (Zacharias, 2002; Haixiao, 2012) or eroded conditions for cyclists (Wang, 2011a; 2011b). Bicycles constitute more than 15% of journeys in cities such as Beijing and more than 50% of journeys in cities like Tianjin (Wang, 2011b; Haixiao, 2012). Perhaps more importantly, changes in central government thinking since 2005 have fostered a reassessment of the role of the bicycle in urban China, facilitating the incorporation of cycling into city planning and the spectacular development of bike-share schemes (Haixiao, 2012, pp. 163 & 169). Similar to China, the complex relationship between national policies, personal income growth and the attachment of socio-economic status to different mobility practices has seen a significant increase in automobile ownership among the urban middle-class in India. Nonetheless, more than 20% of journeys in many medium-sized Indian cities are made by bicycle (Brussel & Zuidgeest, 2012, p. 181).

A review of Latin American cities by Hidalgo and Huizenga (2013) shows that cycling and walking (combined) make up more than 30% of journeys in many large cities including Curitiba, Santiago and Rio de Janeiro. Latin American countries differ on how they are implementing the Bogotá Declaration (on sustainable transport), but the city governments of Bogotá, Buenos Aires and León (Mexico) are shaping their urban travel futures away from motorisation and toward active travel by providing bike lanes, bike paths and secure bike parking, amongst other initiatives (Hidalgo & Huizenga, 2013). Policy makers in African nations such as Nigeria and South Africa have also identified cycling as playing an important role in urban and economic development (Chidoka, 2012).

The growing interest in cycling in Australia and New Zealand, as in other parts of the world, is underpinned by three major concerns: health and fitness; congestion and liveability; and pollution and climate change. Australasian researchers, practitioners, policy makers and community members are engaged in a global discussion on the role of cycling in addressing these concerns. Contributors to this book report on,

and extend, this discussion as they explore the insights generated locally and internationally on the past, present and future of cycling. The focus of the first half of the book (Part I: Current challenges) is largely on the current engagement with cycling, challenges faced by existing and would-be cyclists, and the issues that cycling might address. The second half of the book (Part II: Strategies for change) is concerned with strategies and processes of change. Contributors working from different ontological positions reflect on changing socio-spatial relations to enable the broadest possible participation in cycling. The structure of this introductory chapter broadly reflects the overall structure of the book, as it positions contributors in relation to debates within the wider field of Australian and New Zealand cycling research.

Current challenges

While cycling participation rates in Australia and New Zealand are amongst the lowest in Western countries (Pucher & Buehler, 2008) this has not always been the case. Chapter Two, 'A glimpse at Australia's cycling history' by Jim Fitzpatrick, presents Australia's forgotten history as one of the world's leading cycling nations. His chapter is introduced in full below.

The pervasive image of Australia as a healthy, sporting nation is being fundamentally challenged by representations of its citizens as overweight and obese (Australian Institute of Health and Welfare, 2013; Colagiuri et al., 2010). Cycling, as a form of active travel, has been embraced by all levels of government across Australia and New Zealand as well as by health promotion organisations such as the Heart Foundation. In Chapter Three, 'Health benefits of cycling', Chris Rissel focuses on Australia as he reviews the country's current health challenges and critically examines the role of cycling in reshaping the nation's health.

Cycling is often considered to act as a panacea to a range of societal ills, from improving individual and population health through to fostering urban social interaction and revitalising rural communities through slow tourism (Dickinson & Lumsdon, 2010). However, there is a significant human cost for cyclists in Australasia. An average of 9 cyclists has been killed each year in New Zealand for the past 10 years, while in Australia more than 50 cyclists were killed in 2013. This latter figure exceeded the previous decade average by more than 10 deaths. Further, almost 1 in 5 (18%) of the people seriously injured on Australian roads is a bicycle rider (Henley & Harrison, 2012). In Chapter Four, Julie Hatfield, Soufiane

Boufous and Ros Poulos provide a sobering account of the human trauma costs of cycling. Their chapter, 'An epidemiological profile of cycling injury in Australia and New Zealand', examines the various ways of measuring rates of road trauma and the factors that influence the nature and severity of such trauma.

One crash factor that has been well researched in road safety is speed. Typically, speed research focuses on the posted speed limit or the travel speed of motor vehicles in relation to crashes (Elvik, Christensen, & Amundsen, 2004; Aarts & Van Schagen, 2006). In addition, speed is a critical element in cycling safety and potential crashes, yet there has been little cyclist speed research in Australasia to date. In Chapter Five of this volume, 'Faster than the speed of bikes', Marilyn Johnson and Derek Chong present new findings from an innovative naturalistic cycling study in the Australian Capital Territory. The findings present the first analysis of the study's cyclist speed data generated using helmet-mounted video cameras equipped with GPS data loggers.

After road trauma, the second major issue leading to a rethink of mobility is urban congestion, which has both economic and liveability implications. The cost of road congestion in Australian cities is \$9.4 billion per year (Bureau of Infrastructure, Transport and Regional Economics [BITRE], 2007) and is forecast to more than double to over \$20 billion per year by 2020 if it remains unaddressed (Council of Australian Governments [COAG], 2006). Although the productivity costs associated with over-reliance on motor vehicles have been acknowledged and cycling has been recognised for its role in reducing congestion (BITRE, 2014a, p. 140), there is very little scholarly analysis of the economic contribution of cycling. Figures compiled for the European Cycling Federation show that 650 000 people are employed in cycling-related industries in Western Europe, and a doubling of cycling would increase employment to over a million people (Blondiau & van Zeebroeck, 2014). In Chapter Six, 'Economics of everyday cycling and cycling facilities', Jungho Suh reflects on the market benefits of cycling as he reviews existing economic analyses of cycling. However, his chapter focuses specifically on the tools available to decision makers when determining the non-market benefits of cycling. Congested roads impose additional costs, as they make life unpleasant and difficult for people living in adjacent areas as well as for people seeking to travel on foot or by bicycle, an issue taken up in Chapter Seven, 'Cycling and sustainable transport', by Simon Kingham and Paul Tranter.

Finally, carbon emissions from the transport sector are growing. Across Australia and New Zealand, transport accounts for 42% and 27% of average household greenhouse gas emissions respectively (for example, see Department of Infrastructure and Transport, 2013a, p. 188; Romanos, Kerr, & Will 2014, pp. 13-14). Single-occupant private automobile use is a key target for sustainable transport policy and planning. The issues of travel practices, vehicle emissions and liveability interact in complex ways. Kingham and Tranter use a scalar approach to examine the human and environmental impacts of transport systems that are motor-vehicle oriented, and the significant role that even a modest shift to cycling might play in addressing these impacts.

Most contributors to this volume explore the role of cycling as an everyday means of transport, but in Chapter Eight, 'Cycle touring', Matthew Lamont elaborates on the breadth of cycle tourism. Cycle touring is highly developed in New Zealand, while in Australia there is a strong emphasis on cycling events, including professional and elite racing and organised community rides. Lamont provides an overview of current cycling research and examines the social, economic and environmental challenges that cycling might address.

The second part of the book focuses more closely on proposals to create cycle-friendly environments. It is in this second section that the ontological differences which inform various strands of cycling research become explicit.

Ontology and cycling research

Skimming the Contents page of this volume, it will be clear that contributors are working from different ontological positions. These differences are keenly debated among European scholars (for example, Cycling and Society forums), but they are rarely discussed in the Australasian cycling literature. Nonetheless, the differences are significant, as they determine the kinds of questions researchers ask about cycling and the recommendations they make about how to proceed — for instance, in terms of policies, programs, funding, further research and so forth. In this section, we discuss both realist and constructionist ontologies. However, we provide greater detail on constructionist positions precisely because they are not well represented in Australasian cycling research and it is timely to open a discussion between researchers working from different approaches.

Most chapters in this volume are grounded in realist ontology — that is, a view that reality exists independent of the individual and it is possible to produce objective knowledge about that reality (Petersen, 2014, p. 4). From this position, definitions — such as those for cycle tourism given in Matthew Lamont’s chapter, and those for cycle paths in Glen Koorey’s chapter (discussed further below) — serve to describe, as accurately as possible, the object under investigation. Further, the methodology employed by Johnson and Chong in their chapter is informed by a naturalistic theory which is grounded in realist ontology. Researchers working from realist positions often see their role as providing objective knowledge to assist individuals and political representatives in decision-making processes. Jan Garrard’s chapter on evaluation (discussed later) provides an accessible account of the policy-making process from a realist ontological position.

By contrast, constructionist ontologies hold that the world does not exist independent of the individual. Rather, as individuals are born into an already-interpreted world, they and their interpretations of the world are necessarily shaped by socially available understandings (Irwin, 2011). Clearly, if interpretations of the world are socially produced then the knowledge created by researchers cannot be objective, but it is shaped by how it is possible to understand the world. For convenience, constructionist approaches can be distinguished into constructivism and social constructionism. Constructivists hold that individuals are ‘actively engaged in the creation of their own phenomenal world’ (Vivien Burr as cited in Bacchi, 2015, p. 5), so that their research focuses on ‘the meaning-making activity of the individual’ (Crotty, 1998, p. 58). Many researchers working from constructivist positions are interested in how individuals relate their own experiences to socially produced understandings of such experiences (for example, Davis, 2010). Australasian researchers Simone Fullagar (2012) and Kath Bicknell (2013) are exemplars of constructivist cycling research. Fullagar explores women’s experiences of a cycling event, while Bicknell examines meaning making in the mountain biking blogosphere. In this volume, Matthew Lamont’s chapter describes constructivist research as he foregrounds the different understandings cyclists attach to their physical and emotional experiences of cycle touring.

From a policy perspective, constructivists focus upon ‘how people ... offer an interpretation of a problem’ and the ‘challenges they face in developing shared understandings of a problem’ (Bacchi, 2015, p. 3). Constructivist cycling policy

research might focus on the cultures of different stakeholder organisations and, given the problem definition processes that exist within these organisations, how it is possible for individual policy makers to frame cycling. For example, transport authorities may frame cycling in terms of efficient traffic flow; bicycle organisations may view it in terms of citizenship; hospital emergency staff may operate within a framework of injured bodies; and public health researchers may frame cycling in terms of exercise. Following Robert Hoppe, cycling might be regarded as one of those ‘messy’ or ‘unstructured’ problems whereby

there is uncertainty about which disciplines, specialties, experts and skills to mobilize; conflicts over values abound; and many people get intensely involved, with strong but divisive opinions. (2002, p. 310)

Constructivist research into cycling might disentangle problem definition processes within stakeholder organisations and examine how individual policy makers engage with these processes. The objective of such research would be to reach across stakeholder boundaries and produce a single shared ‘problematism’ that can be addressed in policy (Bacchi, 2015, p. 7).

By way of contrast, social constructionism ‘emphasizes the extent to which our understandings of the world are the product of social forces’ (Bacchi, 2015, p. 5). Instead of examining the individual’s involvement in meaning making, social constructionists are interested in the social processes through which particular understandings of the world are produced and become pervasive. Three chapters in this volume employ a strand of social constructionism that emphasises how practices *produce* realities — in this view, there are multiple realities, and politics is involved in the production of what is taken to be ‘reality’ (the real). Both Annemarie Mol (1999) and John Law and Annemarie Mol (2008) use the term ‘ontological politics’ to describe *how* objects and subjects are produced or, to put it more precisely, to focus on the ongoing enactment of networks of strategic relations within which objects and subjects are produced (for example, see Bacchi & Bonham, 2014). These networks of relations involve heterogeneous elements (for example, people, activities, computers, tools, materials, words, images) across a range of sites (for example, households, laboratories, streets, universities); and it is in the enactment of specific arrangements of these elements across these sites that objects and subjects are given effect.

This position is not a denial of materiality nor is it a claim that we somehow invent reality, but it is a suggestion that ‘realities are practised into

being in heterogeneous networks of relations' (Law & Singleton, 2014, p. 388). For example, the cyclist is enacted in the field of transport in terms of origins, destinations, purposes, timing, trip distance and so forth. The cyclist is also enacted in the field of health in terms of disease history, cardiovascular function, duration, frequency and intensity of exercise effort. Cyclists are also enacted in the field of sport in terms of biomechanics, heart rate and lung capacity. Each of these fields has instruments — surveys, traffic sensors, blood pressure machines — which, following Annemarie Mol, interfere in, rather than describe, reality. Borrowing from Mol (2002, p. 117), the term 'cyclist' can be seen as a 'coordinating mechanism' that spans disciplinary boundaries and prevents the 'pluralising' of the bike-body assemblage into 'separate and unrelated objects', but each discipline brings a different version of the cyclist into effect. Clearly, if objects (and subjects) do not precede these various networks of relations but are enacted within them, then objects (and subjects) are fundamentally political (Law & Singleton, 2014, p. 380). They are political in terms of both the forging of the strategic relations which produce each version of the object (and subject), and the version of reality (in this case the transport or health cyclist) which becomes prioritised in policy.

Research informed by ontological politics foregrounds the fragility of objects and subjects usually taken as a self-evident phenomenon. The important point for a book on cycling is that different versions of cycling and cyclists are produced within different networks of relations, and these can challenge what has come to be taken for granted. The three chapters in this volume that take ontological politics as their starting point scrutinise key conceptual categories for how they are produced and what they make possible.

In the first chapter of Part II, 'Gender and cycling: Gendering cycling subjects and *forming* bikes, practices and spaces as gendered objects', Jennifer Bonham, Carol Bacchi and Thomas Wanner draw on poststructuralist and feminist insights to demonstrate the instability of gender categories. Their chapter reflects on the potential lived effects of gendering as the authors trace the various processes through which femininity and masculinity become attached to, and then detached from, bicycles, cycling practices and cycling spaces. In Chapter Ten, 'Making (up) the child cyclist: Bike Ed in South Australia', Anne Wilson examines how children and cyclists are produced as particular kinds of governable subjects in bicycle education ('Bike Ed') programs implemented in South Australia through the

early 2000s. Wilson recommends making changes to bicycle education programs so that they foster cycling mobility rather than simply focusing on cycling 'safety'. Finally, in Chapter Eleven, 'More than a message: Producing cyclists through public safety advertising campaigns', Rachael Nielsen and Jennifer Bonham apply Carol Bacchi's 'What's the problem represented to be?' analytic strategy to examine how cyclists are constituted in drink-driving commercials aimed at youth. These authors provoke cycling scholars to reflect on how they produce cycling and cyclists within their work, as well as on the potential lived effects of their research practices. In questioning categories such as 'woman', 'child' and 'cyclist', they consider what these categories 'make possible, what they prohibit, and whether their transformation would open new creative possibilities of life' (Sellar, 2012, p. 96).

Despite Eva Petersen's (2014) concern over the reinstatement of the privileged position of realist ontologies, there may be productive ways in which scholars working from different positions can engage with each other's work to achieve socially and environmentally just outcomes. Research informed by either social constructionism or ontological politics not only assists in critiquing existing categories, but also opens alternative ways of constituting objects and subjects of cycling, and these might be taken up and pursued by those working from realist approaches.

Strategies for cycling

Providing new ways of thinking about 'cycling' is one strategy for fostering cycling. Another is to remind Australians and New Zealanders of our cycling past. A considerable literature now exists on our varied cycling histories, including the role of the bicycle in unsettling gender norms (Mackay, 2012; Simpson, 2007; Kinsey, 2011); framing contact between settlers and Indigenous populations (Clarsen, 2014); providing a new sector of employment (Fitzpatrick, 1980; Kennett, 2004); and changing expectations about the construction and regulations of roads (Kennett, 2004; Mackay, 2012). Amongst the broader community, relatively little is remembered of our cycling histories, but available evidence indicates that cycling once equalled and often exceeded levels currently seen in the leading cycling cities of Europe (Knott, 1994; Kennett, 2004). Despite the work currently being undertaken into cycling histories, there is still much to be done. Recovering

these histories is one step in disrupting a motor-vehicle-oriented status quo and foregrounding the micro-political processes that have shaped contemporary travel practices across Australasia.

In his aforementioned chapter, Jim Fitzpatrick, Australia's foremost cycling historian, provides a glimpse of Australia's cycling history as he focuses on the introduction of the bicycle to Australia and its central role in rural Australia. Although Fitzpatrick's chapter is located in the first part of the book, it begins the process of recovering Australia's cycling past in order to take cycling into the future.

Following on from Fitzpatrick's work, an important question is whether cycling will suffer a reversal of fortunes as it has done in the past. Zack Furness (2010) provides an overview of the rise and fall of cycling in the United States over the past 120 years, and it may well be argued that, just as in the 1970s, the current interest in cycling will be short-lived not only in the United States but across the globe. However, it is instructive to examine how the 1970s 'rediscovery' of the bicycle was handled in the Netherlands. Cycling in Dutch cities in the 1970s was as precarious as it is in many Australian cities today (Directorate General for Passenger Transport, 1999, p. 30). The development of cycling knowledge by organisations such as Fietsersbond and CROW played an integral role in the formation of a cycling culture in the Netherlands (Jervis, forthcoming).

It seems that a key difference between interest in the twenty-first century in cycling and interest in the 1970s is the level of research currently being conducted into cycling, and active travel more broadly. A search of the Scopus database¹ shows a significant change in cycling-related literature published in the past five years. Of the 47 cycling publications identified in 1995, three-quarters (35 publications, or 74%) were published in sports medicine, physiology and biomechanics journals, and were focused on sport cycling. The number of peer-reviewed publications more than doubled by 2009, but they remained overwhelmingly concerned with medical and physiological aspects of cycling.

However, since 2010, an average of 206 cycling-related articles, book chapters and conference papers have been published each year, and 50% or

¹ This database searches peer-reviewed literature and includes more than 20 000 journals, books and conference proceedings.

more of these have investigated cycling as an everyday activity (Bonham, 2014). Cycling research now appears across a wide range of disciplines including sociology, anthropology, psychology, engineering, transport, urban planning, road safety, geography and public health. There have also been a plethora of studies undertaken by, or on behalf of, government and non-government organisations at local, state and national levels. The authority attached to academic and government-sponsored literature about cycling elevates its status as a field of research; and as this research is distributed across the media, government departments, community organisations and so forth, cycling is brought into everyday thinking. As individuals become practised in thinking about their mobility in relation to cycling, a space is opened up for more people to take up cycling. Beyond its policy impacts, the production and distribution of cycling research will itself bring about change.

Cycling journeys are often categorised in terms of transport, recreation, sport and so forth. However, like all journeys, the journey by bicycle is often many journeys in one. The habit of prioritising ‘transport’ as the essential meaning or element of the journey operates to marginalise other qualities and possibilities of the journey. The process of excising and creating knowledge about particular characteristics, qualities and practices over others — such as distance of a journey rather than calories used, people encountered, serotonin produced — is political. Such apparently innocuous processes have profound effects. Drawing on the governmentality theorists (Miller & Rose, 1990; Dean, 1999), the knowledge created through these processes — both the ‘how’ and the ‘what’ — both shapes how individuals can think about their journeys and renders mobility governable (Bonham, 2006). Scholars conducting research into cycling and active travel more generally are challenging traditional transport studies as they incorporate a new range of embodied responses, social engagement and environmental interactions into the journey. These discussions serve to demonstrate how the bicycle is integral to the process of reconstituting ‘the journey’ to include health, economic and social opportunities, as well as environmental interactions. As these scholars constitute journeys in new ways, they enable a shift in how the mobility of populations is governed.

Turning to more explicit strategies for bringing about change, in recent years researchers have directed attention away from ‘anticipating’ the future toward a critical interrogation of *how*, at different scales of analysis (from the sub-cellular

level through to society level), practices of anticipating the future bring that future into the present (Clough, Goldberg, Schiff, Weeks, & Willse, 2007; Anderson, 2010). Geographer Ben Anderson is fundamentally concerned with socio-spatial relations when he describes three practices of anticipating the future: 'calculating', 'imagining' and 'performing' (2010, pp. 783-787). All three practices are widely used in 'anticipating' mobility futures, and they are not mutually exclusive. For instance, the enumeration which informs calculating practices (such as trend analysis, cost-benefit analysis and impact assessment) is also used to inform imagining practices (for example, CAD models, visioning and scenario planning) and performing practices (for example, simulations, exercises and games). It is precisely these practices that bring the future into the present. As an example, the graph that tracks and then forecasts levels of motor vehicle use (see, for example, BITRE, 2014b) brings the future of motor vehicle use (whether high, low or static) into the present. Although these practices do not necessarily *cause* a particular future to come about, Anderson argues they give us pause to consider what life (or lives) and ways of living are valued in these futures and how the places we live in are gradually shaped by the constant folding of the future into the present (pp. 787 & 793).

Following Anderson, the future of cycling in Australia and New Zealand is already being created. The decisions taken on a day-to-day basis provide opportunities, or not, for cycling. Tactics such as budgeting for cycle tracks as an integral part of all new freeway projects, reducing speed limits, resuming car parking spaces for cycle parking spaces (City of Adelaide, 2012), and creating standards which invert the road hierarchy so that walking, cycling and public transport are fostered ahead of private automobile use (City of Yarra, 2006) operate to alter existing socio-spatial relations and make a different future possible. The final chapters of this book pay particular attention to measures that re-engineer relations between people, vehicles, buildings, street furniture, paint, vegetation, tarmac and so forth, and how these new arrangements produce new effects. There is a steadily growing literature on shared cycle-pedestrian spaces (for example, Haworth & Schramm, 2011; Brooks, 2013) and creating on-road conditions for cyclists (for example, Patterson, 2010; Cumming, 2012; McDonald, 2012). In Chapter Twelve, 'Spaces for cycling', Glen Koorey addresses on-road cycling treatments and how the familiar features of roads (signs, lines, surfaces and

so on) can be, and are being, reordered to produce more inclusive travel spaces. Koorey's practical advice is informed by a wealth of research from engineering and related spatial disciplines. By contrast, in Chapter Thirteen, 'Off-road cycling infrastructure', Narelle Haworth brings a psychological perspective to the infrastructure discussion as she examines the role that off-road infrastructure can play in facilitating cycling.

Chapters Fourteen, Fifteen and Sixteen, by Geoff Rose, by Wendy Bell and Donna Ferretti, and by Hilary Hamnett respectively, explore the cycling-related knowledge required by professionals working in key spatial disciplines. In 'Teaching Australian civil engineers about cycling', Rose has made a detailed analysis of the university courses available to engineers wanting to pursue careers in traffic and transport planning. His work demonstrates the need to rethink our current efforts to educate professionals working in the areas of traffic and transport policy and planning. Wendy Bell and Donna Ferretti continue the focus on socio-spatial relations in Chapter Fifteen, 'What should planners know about cycling?', as they demonstrate how strategic plans across Australia and New Zealand are using health, environmental and economic discourses to make the case for increasing cycling. However, Bell and Ferretti argue that strategic planning goals are not being adequately or appropriately written into planning policy and, consequently, cannot be used to implement change in the development assessment process. They provide a guide on what planners need to know to translate strategic objectives into local contexts and transform mobility in cities and towns. In 'Skilling landscape architects and urban designers for design of bicycle parking and network facilities', Hilary Hamnett provides practical advice for landscape architects and urban designers on how to address the needs of cyclists at the beginning and end points of the journey. Hamnett has examined the plethora of 'bicycle design codes' to identify treatments appropriate to the Australasian context. Many of the treatments she recommends could be written into development plans to assist land use planners when they assess development applications. In each of these chapters, the authors emphasise the need for collaboration amongst built environment professionals.

Alongside infrastructure and professional development, further research is required into the role of legal processes and knowledge in establishing and continuing to stabilise current mobility norms. A considerable body of historical

research exists on how certain mobility practices (such as the efficient journey) and affordances (such as motor vehicles) have been normalised as they have been incorporated into statutes and court processes (see for example, Bonham, 2000; 2006; Jain, 2004; Norton, 2008). However, this research has been undertaken by geographers, historians and anthropologists rather than academics in law, and there is very little work on the ongoing, day-to-day enactment of statutes and court processes which stabilise or disrupt prevailing travel practices. Studies have been undertaken by market researchers and social scientists into community responses to particular cycling-related laws, such as the Queensland Government's trial of the legislative amendment to specify a minimum distance when drivers overtake cyclists in 2014 (Queensland Government, 2014)². Australasian law academics (for example, Butler, 2008) have examined the relationship between the law, the production of norms, and road users/road space; but only Dent (2012) explicitly includes cyclists in his study. In Chapter Seventeen of this book, 'Cycling and Australian law', Margaret Grant, a legal practitioner, opens another front in the conversation on cycling and the law. Grant's chapter addresses current debates within the Australasian community, such as the law's impact on, and role in, cyclist safety and the issue of liability.

The substantive chapters in this volume are brought to a close with a contribution by Jan Garrard. In 'Evaluating cycle promotion interventions', Garrard discusses the importance of evaluation in developing an evidence base for action which aims to increase community-level cycling participation. Evaluation is essential if we are to determine the effectiveness of a program, yet often it is 'tacked on' at the end of a program and insufficiently funded. Garrard focuses on the evaluation of cycling interventions that specifically target cycling for transport, and highlights the importance of a reflective practice in cycling intervention evaluation. She identifies the need for evaluation to assess whether an intervention has been effective as well as, importantly, the reasons *why* the outcomes were achieved. Her chapter provides a critical review of evaluation approaches, and demonstrates the need for evaluation to be built into program planning to ensure that the effectiveness (or ineffectiveness) of actions are adequately determined.

² This legislation requires that drivers leave a minimum distance when overtaking cyclists (1 metre in speed zones up to 60 km/h and 1.5 metres in speed zones over 60 km/h). For more information, see <http://www.tmr.qld.gov.au/Travel-and-transport/Cycling/Parliamentary-inquiry-into-cycling-issues.aspx>.

Bringing the future into the present

The discipline of transport developed after World War II with tools of trade — investigative techniques, models, concepts and language — conducive to a motorised mobility future. Today a new set of social, environmental and economic issues demands innovation in our tools of trade. Cycling research in Australia and New Zealand is engaged in developing these new tools, and the field has rapidly expanded over the past decade. This volume provides an overview of the current status of cycling research for scholars, practitioners, cycling advocates and policy makers already working in the field. Some contributors have focused on reviewing cycling research in their discipline and provided suggestions for further work. Other contributors have undertaken new research specifically for this book or reported the latest findings from their current work.

Cycling futures also provides a starting point for people new to cycling studies, as each contributor recommends questions for further investigation within her/his particular field. Cycling research is being conducted by scholars from a range of disciplines including geography, public health, anthropology, engineering, sociology, road safety and psychology. We would encourage many more disciplines to join the conversation, and to this end we have invited practitioners from law, urban and regional planning, as well as urban design and landscape architecture, to take up the discussion in their respective fields. We anticipate that the chapters in this volume will bring more participants into the global conversation on cycling.

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