

2021

## The embodied dimensions of road cycling and the formation of gendered cycling identities

Lance Robert Barrie

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# **The embodied dimensions of road cycling and the formation of gendered cycling identities**

Lance Robert Barrie

Supervisors:  
Professor Gordon Waitt and Dr Chris Brennan-Horley

This thesis is presented as part of the requirement for the conferral of the degree:  
Doctor of Philosophy

This research has been conducted with the support of the Australian Government Research Training  
Program Scholarship

University of Wollongong  
School of Geography and Sustainable Communities

March 2021

## **Abstract**

This thesis aims to offer a better understanding as to why road cycling remains one of Australia's most popular leisure activities, despite a reported 38 road cyclists killed annually and another 12,000 seriously injured (AIHW, 2019). By investigating cycling sensations of the body and cycling, this thesis responds to calls from feminist geographical scholarship to embrace embodied approaches. Building on feminist readings of the work of Deleuze and Guattari (1987), this thesis offers the concepts of the 'cycling assemblage' and 'cycling refrain' to help rethink the relationship between mobility, subjectivities and place. Two important implications arise. First, attention is drawn to how road cycling is always more than a human achievement through the involvement of the topography, weather, bikes, clothes, light and so on. Second, identification as a road cyclist is never fixed or pre-existing, rather is always emerging through the sensations felt during the coming together of ideas and materials on the move. Insights into becoming a road cyclist build on methodological arguments that call for a sensory ethnography. Cycling sensory ethnographies designed for this project combined semi-structured interviews with go-alongs and qualitative geographic information systems. 27 people consented to participate. All identified as leisure road cyclists and lived in the car-dominated small city of Wollongong, on the east coast of New South Wales, Australia. The sensory analysis involved mapping affective moments that provide important insights into the gendered dynamics of leisure cycling and self-tracking technologies, the embodied dimensions of mobility justice, and rethinking wellbeing through cycling as a more than human achievement. The thesis concludes by highlighting contributions to the academy and future research.

## **Acknowledgments**

This PhD has been a seven year process and there are too many people to thank in this short space.

First, thank you to the people who took part in the study and for sharing your experiences. Within your stories there were moments of great pleasure and joy, but also pain and fear so thank you for sharing so openly.

My supervisors Gordon Waitt and Chris Brennan-Horley – thanks does not do you justice. The care and compassion that you both have shown me has been immense. I hope to take this with me moving ahead. Your sage advice, mentoring, motivation and patience has been amazing. To me, you both embody all that is good in human geography. Chris, thank you for selecting me for your PhD scholarship in the first instance. Although this is the hardest thing I have ever done, this project and new way of thinking has changed my life for the better.

My friends that made this possible. Thanks need to go to Carrie, Sophie-May, Rebecca, Charlie, Susie, Ryan and Razia. A shout out to my workmates who have been so kind, understanding, and generous – Kim, Willo and Leanne. Thank you. Thanks also need to go to Prof Lisa Kervin whose support whilst I have been working at the university has meant so much. Thanks also to Callum Byrnes-Krickl who assisted with some of the early mapping work related to this thesis.

Thank you to my family (Mum, Dad, Shane, Brydie, Banksii and my late Nan Nan) for your unwavering support and encouragement. Thanks as well to my Filo family for the care and understanding you have shown me.

Sophie – thank you for always letting me know to stop work at 4:30pm to feed you, for bringing a sense of calm to the day, and for generally being the best Phd dog.

Claudia – I could not have done this without you and I am forever grateful for your patience, care, love and strength. I love you and cannot wait for our next adventure.

Finally, I would like to acknowledge the Wadi Wadi people and Dharawal Country; the Traditional Owners of the land where I have carried out my research. I wish to pay my respects to Country and to the Elders past, present and emerging.

## **Certification**

*I, Lance Robert Barrie, declare that this thesis submitted in fulfilment of the requirements for the conferral of the degree Doctorate of Philosophy, from the University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.*

---

***Lance Robert Barrie***

*23<sup>rd</sup> March 2021*

# Table of Contents

Abstract.....	1
Acknowledgments.....	2
Certification .....	3
Table of Contents.....	4
List of Tables, Figures and Illustrations.....	7
Chapter 1.....	8
Introduction.....	8
1.1 Call to action: research is personal .....	8
1.2 Research context: Cycling trends and policy in Australia .....	10
1.2.1 Why Wollongong?.....	12
1.3 Research aim, questions and significance.....	15
1.4 The Chapters .....	17
Chapter 2.....	20
Literature review .....	20
2.1 Introduction.....	20
2.2 Corporeal feminism: thinking with Deleuze and Guattari .....	21
2.2.1 The cycling assemblage .....	22
2.2.2 The cycling refrain.....	25
2.3 Approaches to cycling geographies: beyond Euclidian space .....	26
2.3.1 Counting Cyclists – transportation geography and the scientific method.....	26
2.3.2 Political economy approaches to cycling.....	27
2.3.3 Right to the city.....	28
2.3.4 Embodied approaches to cycling .....	30
Chapter 3.....	35
Methods .....	35
3.1 Introduction.....	35

3.2 Thinking methodology through a feminist lens .....	35
3.3 Getting the body ready for research .....	38
3.4 Trialling methods: video ethnography .....	42
3.5 Negotiating Ethics in the field .....	45
3.5.1 Negotiating ethics on the move.....	46
3.5.2 Negotiating ethics from the chair.....	47
3.6 Recruitment and Sample .....	50
3.6.1 Sample.....	51
3.7 Go-along .....	53
3.8 Semi-structured mapping interviews .....	55
Chapter 4.....	63
Strava .....	63
4.1 Prologue .....	63
4.2 Introduction.....	66
4.2.1 Gender in leisure cycling research .....	67
4.2.2 Gender in self-tracking research .....	69
4.3 Conceptual framework.....	70
4.4 Participants' use of self-tracking apps and quote selection.....	71
4.4.1 Negotiating alternative femininity on-the-move with Strava.....	74
4.4.2 Negotiating conventional sporting masculinity on-the-move with Strava.....	79
4.5 Implications and conclusions .....	85
Chapter 5.....	87
The Road.....	87
5.1 Prologue .....	87
5.2 Introduction.....	88
5.3. Mobility justice and the road .....	89
5.4 Conceptual Framework.....	93
5.5 Research Context: NSW and Wollongong Road Rules .....	97
5.6 Participant selection .....	99

5.7 Interpretation.....	102
5.7.1 Jeff: cyclists as objects of hate and the road as a territory for cars .....	102
5.7.2 Michelle: classed aggression, strategies to belong and fear reimagined.....	106
5.7.3 Jodie: Cycling legitimacy on the road and for the love of cycling .....	112
5.8 Conclusion .....	117
Chapter 6.....	119
Wellbeing.....	119
6.1 Introduction.....	119
6.2 Key debates in wellbeing literatures .....	120
6.3 Wellbeing in Geography .....	123
6.4 Conceptual Framework.....	129
6.5 Analysis.....	132
6.6 Interpretation.....	132
6.6.1 Tim: rejuvenation, addiction and socialities .....	132
6.6.2 Emma: order.....	138
6.6.3 David: the healthy cycling body .....	144
6.7 Discussion.....	149
6.8 Conclusion .....	150
Chapter 7.....	152
Conclusion .....	152
7.1 Introduction: acting on the call to action.....	152
7.2 Revisiting the research questions: mapping contributions.....	152
7.3 Future Research .....	156
List of References .....	158



## List of Tables, Figures and Illustrations

Figure 1.1. Cycling participation by state. Figure taken from the <i>2019 National Cycling Survey Report</i> .....	11
Box 3.1: My personal embodied sporting and cycling histories .....	40
Figure 3.1: Still images from trialling video ethnography along common Wollongong roads used by cyclists. ....	43
Figure 3.2. An image of a participant’s detailed cycling diary prior to the advent of digital self-tracking technologies. ....	49
Table 3.1: Participant demographics.....	52
Box 3.2: Journal entry of a failed cyclist following a group ride with the <i>Sparrows Fart Cycle Club</i> .....	55
Figure 3.3: an example of a pre interview and post interview map. ....	58
Figure 3.4: Data analysis workflow detailing inclusion of participant GPX data and sketch maps into mapping outputs.....	60
Figure 4.1: Cycling log book image from one participant interview .....	65
Figure 4.2. Composite map of participant GPS routes incorporating key Strava segments in red, Wollongong, 2016/17. ....	73
Figure 5.1: Still shots taken from Harris’ phone video footage that he posted to social media...	87
Figure 5.2: Collective map showing all negative participant experiences while riding. ....	101
Figure 5.3: Roundabout locations along participant cycling routes from Wollongong City and south to Shellharbour. ....	105
Figure 5.4: Research participant cycling GPS trails compared against cycling infrastructure. .	114
Figure 6.1: Collective map detailing stretches of road indicated by participants as especially meaningful. ....	131

# Chapter 1

## Introduction

### 1.1 Call to action: research is personal

On the one hand, this project responds to calls for feminist corporeal engagement with mobilities studies to investigate how differentiated bodies experience everyday mobility (Creswell & Uteng, 2008). Embodied approaches may provide valuable insights to processes of inclusion and exclusion from cycling through bringing to the fore how bodies become gendered, sexed, classed and racialised. Most recently, Ravensbergen et al. (2019) call for engagement with feminist embodiment theorisations to better understand the power relations to help rethink how cycling subjectivities and places are co-constituted on-the-move. To interpret cycling practices, I take a feminist corporeal approach drawing on Deleuze and Guattari's (1987) ideas of the assemblage, the refrain and affect. Attention turns to understanding how cycling practices as embodied, as 'doing cycling'. I approach this research not knowing what road cycling is or what cycling bodies can do. Instead, I argue that cycling and cyclists are always a relational, more-than-human achievement. Attention is paid toward how road cycling is achieved through affective bodily capacities to act and be affected (desires). What might the less tangible (more sensuous) mobile and emotional geographies tell us about this popular leisure activity both in terms of participation and policy? With a focus on embodiment, affective intensities, performativity, digital technologies and materiality we learn how cycling bodies on-the-move become gendered using digital technologies (Chapter 4), embody and express fear and anxiety on the road (Chapter 5) and how wellbeing is made possible through cycling refrains (Chapter 6).

On the other hand, the project is a response to my own personal desire to better understand road cycling. Beginning this project I rode to excess, pushing my bodily capacities in line with traditional sporting masculinities. I wanted to be fitter, stronger and faster. During the project I became more acutely aware of my own performance and begun to question why desires to physically excel were such an active part of my own working arrangement. Currently, I no longer ride the same number of kilometres as when I first started cycling or when I was getting ready for data collection. Currently, I ride the same cycling route every Thursday morning with a friend. Most of the time, I

turn up on time and we ride for approximately 25-30 kilometres. Each ride, we see the sunrise, the symbolic start of a new day. Every sunrise is unique. Some are breathtaking. Every sunrise that my friend and I see makes a different impression. While I ride the same route on the same day, week after week, every Thursday morning cycle feels like a new way of doing cycling where new things, ideas, emotions and connections are made possible. It lets me slow down, speed up, to think, to not think, to escape, to explore, to connect, to converse and to open up. My senses come to life while on a ride. The sun kissing my skin, the wind hitting my body, the sounds of the road (wildlife, cars, silence, gears changing, heavy breathing), the cyborg connection with my bike, the smell of the ocean, and the conversations that ensue. It is a symphony for my senses. In part, this is also what it has felt like when reading through the work of the philosophers Deleuze & Guattari (1987) and the influential feminist scholars connected to this thesis. With each reading of their work and the various synthesis from other authors, new things always emerged. Difference was produced at each turn. Indeed, if I were to write this thesis again, I am sure it would look and feel different. New questions would be asked. New possibilities explored.

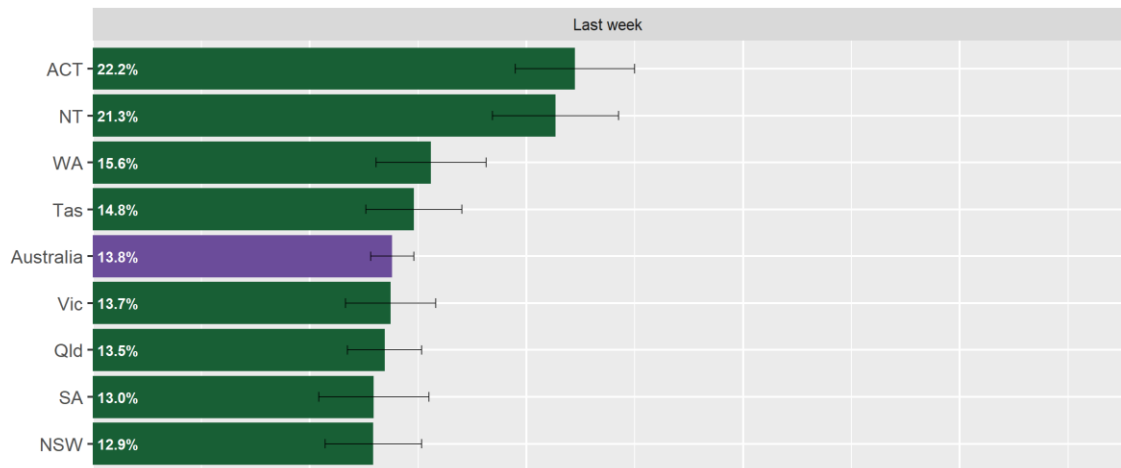
This thesis has challenged my way of thinking in many ways. The familiar has been rendered unfamiliar because of feminist poststructural and posthuman concepts. Past research training has taught me to think in terms of dualisms, linear time and Euclidean space. This thesis departs from this approach and instead thinks through intensities that enable connection to form, break apart and then re-form whilst on-the-move on a bike. Intensities were felt from my own riding that led me to a PhD. Intensities were felt during my interviews and through the process of writing and this project that confirmed established connections and opened up possibilities for new connections. To affect and be affected. A feminist corporeal examination of Deleuze and Guattari enabled 'a wild empiricism that can capture the unstableness of everyday life' (Renold and Mellor 2013), a characteristic that felt apt when thinking through road cycling. Consequently, this thesis is largely organised around a number of tensions that illustrate both how and why technology is never neutral, mobility is never disconnected from power, and health/wellness is always emerging.

The introduction is structured in four sections. The first section positions the thesis within the wider research context of cycling trends and policy at the national and state

level. The second section offers a justification of the field context, Wollongong, New South Wales, a small regional city of around 280,000 people some 80km south of Sydney. The third section outlines the project aim, research questions and scholarly significance. Last, I give an outline of each chapter in the thesis.

## **1.2 Research context: Cycling trends and policy in Australia**

The *2019 National Cycling Participation Survey*; and the *Ausplay Cycling State of Play* report (2019) highlight the gendered and leisure dimensions of cycling participation in Australia. The *2019 National Cycling Survey Report* illustrated that cycling in Australia is predominantly a recreational activity dominated by men. By purpose of cycling journey 81.8% of respondents in the *National Cycling Participation Survey* indicated a recreational purposes and 31.7% indicated for transport purposes. Although overall participation in cycling was estimated to have declined by 5% since 2011, cycling remains one of the most popular (5<sup>th</sup> overall) forms of physical activity in Australia. The *Ausplay Cycling Report* (2019) shows that an estimated 11.5% of the adult population (15 years or older) participate annually. This includes 14.5% of males and 8.5% of females cycling in the last year- highlighting clear gender differences. While New South Wales overall reported the lowest recreational cycling participation rates of all states and territories at 9.9% of the population (refer to figure 1.1), cycling participation increased as people got older, peaking at the 45-54 age bracket for both males (22.1%) and females (13.7%). This is compared to participation rates of 15-17 years old with 5.4% of males and 4.7% of females taking part. There are clear gender differences with the top three groups participating in cycling were Males- 45-54 (15%), 35-44 (15%) and 55-65 (11%), Whereas 2 of the bottom three groups were female- 65+ (3%), 15-24 (4%).



**Figure 1.1. Cycling participation by state. Figure taken from the 2019 National Cycling Survey Report.**

Cycling for recreation/fitness continues to be one of the few activities where participation is increasing, particularly amongst men (Baumen, 2019). This follows a broader trend in Australia where the number of people participating in organised sports is decreasing and informal participation is increasing (Baumen, 2019; O’Connor and Brown, 2007).

An understanding of cycling trends in Australia is important for this thesis because it demonstrate how cycling is understood primarily as informal leisure activity that is gendered, aged and classed. (Baumen, 2019; Titze et al, 2014). Only a small proportion of people cycle to work – approximately 1% (ABS, 2016) – further cementing cycling in Australia as a leisure activity. Cycling does not occur in formal competition where roads are often closed off to the public. Instead most leisure road cycling requires sharing the road with cars and other road users (O’Connor & Brown, 2007; Poulos et al, 2017).

NSW while being the most populous state in Australia reports the lowest cycling participation rates (Ausplay cycling report, 2019). In part, this may because of the perception that NSW had more aggressive drivers and less safe cycling conditions (Milman, 2014; Herrick, 2016). Poulos (2019) explored cyclists self reported experiences of aggressive behaviours while sharing roads and paths in NSW and concluded that NSW roads are a hostile environment for cyclists. The study found that over half of participants reported aggressive behaviour with most of these incidents

from motor vehicles (85.7) and occurring on the road (75.2%). The results also showed that female cyclists (compared with male cyclists), cyclists less than 45 years of age (compared with cyclists aged 60 years and over), and transport cyclists (compared with recreational cyclists) were statistically significantly more likely to report aggressive encounters from motor vehicles.

The dilemma of how difficult it is to address how motorists and cyclists share roads is evident in recent NSW road legislation reforms. In March 2016 (and at the beginning of data collection), a series of new laws were introduced for people who cycle under the guise of improving road safety, particularly for cyclists. The policy reforms were twofold. First, car drivers must now leave a safe passing distance of at least one metre when overtaking. In exchange, and with the express intent of bringing bicycle fines in line with ‘high risk’ car offences, previously minor cycling infractions like riding without a helmet or running a red light increased markedly. One year on, the perhaps unintended outcome was a further decrease in cycle participation in NSW. This regulatory backdrop is of importance to this thesis because it illustrates that creating a seemingly level terrain, where cyclists and cars face similar legal enforcement, cannot address more deeply held cultural assumptions about who belongs on the road. Indeed the laws may have further entrenched the notion among motorists that people that ride cycles on roads are hazards.

### **1.2.1 Why Wollongong?**

Four key points make Wollongong an ideal field site to better understand the experience of leisure road cyclists. First, Wollongong cycling participation rates illustrate a paradox found in many western societies that while cycling for transport falls or remains stagnant, leisure cycling increased. Wollongong is a car-centric city as evidenced by statistics reporting modes of transport to work. Transport patterns are dominated by cars on the road. Like other cities around Australia, commuting by cycle has stagnated. The 2016 census revealed that 4 out of 5 people travel to work by car compared to less than 1% who travel to work by bike (ABS, 2016). However, the interest in recreational riding with informal groups has increased. According to AuRoads, (2015), Wollongong has higher rates of recreational cycling compared to cycling for transport.

Second, Wollongong City Council appears to be pro-bike, as evidenced in its 2014 *‘City of Wollongong Bike Plan 2014-18’* with the aim of becoming a ‘bike-friendly’ destination. The creation of a bike plan demonstrated the municipal authority’s commitment to tackling both the obesity epidemic and contributing to sustainability goals. The bike plan objectives included:

- Increase participation in all forms of cycling
- Develop a safe, connected network of bicycle routes
- Facilitate growth in bicycle tourism
- Undertake promotion and education campaigns that will improve cycling awareness, safety and proficiency

Although the Wollongong strategy document advocates for cycling, it pays little attention to cycling diversity. This is highlighted by the first objective to ‘increase participation in all forms of cycling’. As Shove (2012, p. 368) states, “exactly what cycling represents depends, at any one moment, on the cohorts of cyclists who keep the practice alive, and on their relation to non-cyclists in terms of whom the meaning of the practice is also defined”. Cycling plans are limited by their inability to differentiate between different styles of cycling and the experiences in which they are embedded.

Third, Wollongong is an ideal context to participate in road cycling. Year-round cycling is possible due to its mild climate, coupled with an undulating main road with enviable scenic ocean views along the northern coastal strip. Longer and flatter rides are available on the coastal plain to the south. The entire city and southern suburbs are hemmed in to the west by a dramatic escarpment which provides numerous opportunities for cyclists to exert themselves on steep but sealed hill sections. Indeed, most recently, Wollongong has gained international attention by winning the bid to host the 2022 Union Cycliste Internationale (UCI) World Road Cycling Championships. As a result Wollongong was branded by as the first Cycling City in the Southern Hemisphere.

Fourth, previous research has brought to the fore how the dominant expression of

sporting masculinity in Wollongong are configured by its two dominant sports: rugby league and surfing. Particular expressions of hegemonic masculinity are apparent in Rugby League (Albury et al., 2011) relating to players being competitive, strong, aggressive and homophobic. Similarly, surfing in the Illawarra presents opportunities for young men to express similar sporting masculinities through waves, friendships and surfing bodies (Waitt, 2008). Furthermore, Redshaw (2008) argues that driving cars in Wollongong sustains what she termed a 'combustion masculinity', particularly for young men from lower socio-economic suburbs. Lean, Lycra clad cycling bodies therefore do not conform to dominant understandings of sporting masculinity in Wollongong.



### **1.3 Research aim, questions and significance**

The overarching project aim is to better understand the embodied experience of road cycling in Wollongong, NSW, Australia. To do this, I ask the following research questions to guide the structure of argument within the thesis:

1. How is gender lived through the social and material arrangements that comprise the subjectivities and places of road cyclists?
2. What does fear and anxiety do to mobile cycling bodies in the often hostile automobilised spaces of the road in Wollongong?
3. How do the affective moments encountered in the creation of cycling assemblages give social and material form to the process of becoming well?

To address these questions I build on a corporeal feminist theorisation of embodiment that draws on Deleuze and Guattari's (1987) assemblage thinking that enables the cycling body and its kinaesthetic and emotional capacities to be conceived as a 'working arrangement' of movement, ideas, spaces, emotions, affects, and materials. The experiences of road cyclists in Wollongong are conceived to offer insights to process of inclusion and exclusion from roads.

The thesis significance is threefold. First, in working with leisure cyclists, the thesis answers calls from scholars to bring diverse cycling experiences to the fore in research. Cycling for leisure is often absent from cycling scholarship, in the context where shorter cycling journeys are positioned in policy as a potential sustainable transport mode (Aldred & Jungnickel, 2014; Heinen, van Wee, & Maat, 2010; Spinney, 2009). The figure of the cycling commuter is pivotal within the growing literature on cycling in geography. Important insights are provided in this research to the material, embodied and cultural barriers to cycling as mode of everyday transport (Jones, 2005; Jungnickel & Aldred, 2014). Less attention is given to the embodied experiences of those who cycle long distance for exercise, recreation and leisure. Notable exceptions include Spinney's (2006) account of sport cyclists embodied experience climbing Mont Ventoux, Larsen's (2014) account of long-distance commuting and Fullagar & Pavlidis' (2012) research on women's cycling touring events in Queensland. This project seeks to address this gap in the literature. The insight that this thesis offers is an understanding of the embodied dimensions of road cycling as a leisure practice.

Second, significance arises from adopting a feminist embodied geographical understanding of road cycling (see Chapter 2). The feminist geographical research on the body is often framed around the related concepts of affects, emotion and viscosity (see Johnston and Longhurst 2012). This thesis extends the focus of affects and emotions that are part of an exciting conversation in cycling geographies that focuses on cycling bodies and what they can do (see Jones 2012). I draw on Deleuze and Guattari (1987) to offer the term ‘cycling assemblage’ and ‘cycling refrain’ to emphasise the importance of intensities and socio-material relationships that work towards making, remaking and unmaking cycling bodies. Thinking through assemblages and the refrain, I conceive that the cycling body and space as co-constituted, (re)emerging within the doing of road cycling as a working arrangement of cycling ideas, emotions, affects, bodies and things.

Third, significance arises through engaging in methodological experiments triggered by a corporeal feminism. If scholars are to answer calls for embodied theorisations, then this gives rise to important methodological considerations. Conventional qualitative methods tend to prioritise language over either emotion or affect. Consequently, scholars are experimenting with methods that may offer access to the non-conscious or pre-cognitive realm. This thesis embraces the call to experiment with qualitative methods by offering a cycling sensory ethnography that builds on methodological discussion in feminist geography. Here, the sensory cycling ethnography draws on mixed-methods that combined positionality (researcher diary), semi-structured interviews, participatory ride-along techniques (Larsen, 2014) with qualitative mapping (Gibson, Brennan-Horley, & Warren, 2010). A cycling sensory ethnography is a reflexive approach that argues that the situated knowledge is always co-produced through the relationship between researcher and researched. Analysis thus turns to mapping affective moments rather than coding.

## 1.4 The Chapters

This thesis consists of seven chapters. The thesis offers insights to road cycling experiences in Wollongong, NSW, Australia. The thesis is not intended to provide an overarching explanation for participation in leisure road cycling in Wollongong. Instead, the chapters draw upon affective moments to help understand how capacity to road cycle, or not, are enhanced or diminished, through the coming together of social and material arrangements or working orders. As such, each interpretative chapter offers insights to how Deleuze and Guattari's (1987) assemblage thinking offers possibilities to unpack the differential capacities of bodies to ride through the process of territorialisation, deterritorialisation and reterritorialisation.

Chapter 2 introduces the theoretical framework. I begin by discussing how post-structuralist feminist thinking is informed by the work of Deleuze and Guattari (1987). Next, I outline three pivotal concepts for this thesis 'affect', 'assemblage' 'refrain'. Finally, I review the cycling geographies literature. This section discusses how the thesis departs from scientific methods found in transport geography and builds upon arguments found within different embodied theorisations of cycling.

Chapter 3 discusses my methodology. I start by outlining my own positionality and question how my experiences informed the co-production of knowledge with participants. I build on conversation in feminist scholarship for the research to deploy their own body as a 'research tool' before, during and following conducting fieldwork. I came to this research with my own sporting identity that was tied to narrow understanding of sporting bodies. This discussion is followed by how I experimented with different methods to conduct a cycling sensory ethnography. This project combined semi-structured interviews with ride-alongs and qualitative GIS. The chapter ends with a discussion of how the analysis was guided the conceptual framework. Analysis turns to affective moments conveyed in semi-structured interviews, ride-alongs and qualitative GIS; that is, the coming together of social and material arrangements that increased or decreased the capacities of bodies to act and be affected.

Chapter 4 explores the gendered dynamics of a digital self-tracking platform: Strava. This chapter offers the concept of the cycling assemblage to explore how gendered

subjectivities are felt and gain legitimacy on-the-move through the ongoing negotiated relationship between cycling bodies and technology. Four vignettes demonstrate how Strava's incorporation within road cycling assemblages functions as a mechanism of gendered inclusion and exclusion. I point towards the tensions of Strava as site of excess, where the pleasures and pains of the 'quantified cycling self' may reinforce or challenge bodily and spatial boundaries associated with sporting masculine subjectivities and alternative femininities.

Chapter 5 aims to better understand the nexus between cycling, mobility (in)justice and affective fear. I bring Deleuze and Guatarri's (1987) related ideas of assemblages and territory into discussion with Ahmed's (2004) cultural politics of emotion (namely fear, anxiety, and pain) and Sheller's (2018) concept of mobility justice. Together, these concepts offer new ways of thinking about mobility justice as inherently emergent, embodied, spatial, social and material. Through these concepts I illustrate how the politics of fear operate as a processes of exclusion that remind participants that the road is territorialised by drivers for cars. Equally, the love of cycling keeps participants on the road despite the mobility injustice at work.

Chapter 6 follows on from mobility (in)justices to try and understand what keeps people cycling on Wollongong roads. I begin the chapter highlighting the various debates concerning wellbeing in geography. Next, I deploy related concepts of assemblage, territory and the refrain. These concepts resonate with post-humanist thinking (Braidotti, 2002) to think of becoming well as an affective force or intensity that is always unfinished. I deploy a narrative approach to present the experiences of three participants who cycle in Wollongong –focusing on moments of becoming well. Namely around pleasure, order, rejuvenation, socialities and healthy bodies. We learn of how the sensations of cycling are a crucial part of how individuals manage the pressures of everyday life, and sustain joyful connections to people and places.

Chapter 7 concludes the thesis by summarising its key contributions. I outline my theoretical, methodological, and empirical contributions to the field of human geography. First I discuss the contribution made by the concepts of 'cycling assemblage' and 'cycling refrain'. Second, I outline the innovative methodological contribution through my experimental cycling sensory ethnography. Finally, I chart how

my interpretation chapters extend the current literature on cycling geographies. Last, I will discuss the policy implications from the thesis and future research directions.

## Chapter 2

### Literature review

#### 2.1 Introduction

This chapter responds to Ravensbergen et al (2019) call to further engage with feminist embodied approaches to cycling. To do so, I build upon feminist corporeal thinkers, specifically those who work with the concepts of the philosophers Deleuze and Guattari (1987) such as Rosi Braidotti, Simone Fullagar, Elizabeth Grosz, Adele Pavlidis and Elspeth Probyn. Extending the conversation within corporeal feminism, I introduce the concepts of the ‘cycling assemblage’ and the ‘cycling refrain’ to problematise road cycling. Deleuze and Guattari’s (1987) concept of assemblage is foundational to this thesis. Assemblage thinking rethinks normative understandings of transport cycling geographies and draws on different approaches to challenge Euclidean notions of space and linear understanding of time. No longer can road cycling training regimes be thought about in terms of getting from point A to point B, nor can we view the city, road or backdrop of cycling journeys as a static, non-active entity/ies. Rather, cycling training regimes must attend to issues of identity, infrastructure, ideas, the body, policy, and affect. By problematising road cycling through assemblage and feminist theory, I begin to think through bodies, emotions, affect and power as a productive working arrangement and ask not what they are but what they can do. I ask what forces come together to create socio-material assemblages or arrangements that are productive. From this perspective, cycling is always more than just moving between two points as advocated by the ‘utilitarian’ model. Rather, to cycle is conceived as achievement of shifting social and material arrangements through and in which journeys unfold. Cycling is a relational achievement. Embodiment is at the fore at better understanding why people cycle. Second, the chapter illustrates how the thesis is situated within broader conversation about cycling in geography. I offer a brief review of the cycling geographies literature to illustrate how this conceptual framework builds upon and extends theoretical approaches found within geography and departs from others.

## **2.2 Corporeal feminism: thinking with Deleuze and Guattari**

The body is one of the key lenses through which feminist scholars are rethinking the politics of everyday life. Key corporeal feminist thinkers who are in conversation with the work of Deleuze and Guattari (1987) that encourage rethinking the body, and what it can do, include the work of Barad (2008) and Probyn (2000). Rather than assuming a given biological body, closer attention is paid to the sensuous body and the senses. How we experience our bodies is mediated by the senses. For example, the sensations of moving become a process of ascribing meanings through the body through interactions with the social and material worlds. Thus, attention turns to the importance of affectual and emotional response in the politics of everyday life. Affect as a term has been much debated in geography over the last decade (Pile, 2010). Taking the lead from Probyn (2005), I understand affective resonances or intensities as existing ‘pre-social’ forces that circulate within, between and through bodies through interactions with the social and material world. I understand emotional responses are as social, that is when a sensation is named as joy, pride, shame or anger.

Previous feminist scholarship critiqued initial applications of Deleuze and Guattari’s notion of affect found within the so-called ‘non-representational theory’ of affective geographies. For example, Thien (2005, p. 453) raises concerns that some application of non-representational theory did not take seriously feminist geographies when she says “this move to get after or beyond humanity in all our diversity also pushes us past the emotional landscapes of daily life”. The concern that corporeality, intersubjectivity and power are ignored become problematic for many everyday activities where white male bodies are centred. Probyn (2005) and Ahmed (2014) argue that feminist scholars should not slide into binary categories when conceptualising affect and emotion. We should appreciate instead how both affect and emotions inform each other in a reciprocal relationship that increases or decreases the capacities of bodies to act.

Two important points emerge from this discussion. First, corporeal feminist scholarship highlights how affect and emotions offer possibilities to rethink how subjectivities are made, remade and unmade in and through the body. Second, corporeal feminist scholarship demonstrates the application of the politics of emotion to better understand everyday life through our sensory engagements. Rethinking the politics of everyday life through the body is illustrated in a wide range of feminist scholarship including cycling (Fullagar & Pavlidis, 2012) and beyond, including walking (Clement and Waitt, 2017;

Boyer & Spinney, 2016), Roller Derby (Pavlidis & Fullagar, 2013; Pavlidis & Fullagar, 2015), drinking alcohol (Jayne et al, 2010), surfing (Evers, 2006; Olive , 2016), sweating (Waite, 2015), eating (Bartos, 2017) and mental health recovery (Duff, 2016). Attention thus turns to the corporeal politics of everyday life and the role of affect and emotion in the processes of inclusion and exclusion. The body is therefore important entry point to think about the corporeal sensations of cycling practices through the interplay between the social, the material, motion, affects and emotions. The next section introduces two conceptual lens that shape the analysis of the thesis; the cycling assemblage and cycling refrain. I offer a brief overview of these related frameworks that draw on Deleuze and Guattari's (1987) work to bring to the fore the embodied dimensions of cycling. In doing so, I conceive of cycling mobility as an ongoing temporary achievement from the sensations triggered by the ongoing coming together of social and material things into a working order.

### **2.2.1 The cycling assemblage**

What is an assemblage? Anderson and McFarlane (2011) highlight three ways that geographers deploy assemblage; as a descriptor, ethos and a concept. Assemblage as a descriptor is the simplest deployment and is basically using the word as found in the dictionary. Namely, as a collection or gathering of things or people. Buchanan (2015, p. 391) warns that the “concept of the assemblage is often indistinguishable from that of an adjective, serving more to name than frame a problem”. Consequently, the analytical power of assemblage is reduced when used in this way. Anything can be an assemblage. Assemblage as ethos is an experimental deployment in method and practice that attends to difference and processes of *agencement*. Assemblage as a concept, Anderson and McFarlane (2011, p. 125) explain, “takes on its meaning and function in relation to other concepts and conceptual problems”. DeLanda (2016), Latour (2005), Grosz (1994) and Barad (2008) have taken assemblage to task and added their own inflections and additions to the work of Deleuze and Guattari. This wave of assemblage thinking aligns with an ‘ontological turn’ in geography and other disciplines (Dewsbury, 2011). After Deleuze and Guattari's (1987) assemblage thinking, I focus on this third deployment in further detail to develop a conceptual framework for cycling.

The concept of assemblage may be traced to Deleuze and Guattari's (1983) book *Anti-Oedipus* and their discussion of the ‘desiring-machine’. The concept of assemblage develops in their next project and becomes the central concept that ties together A



*Thousand Plateaus* (1987). This is highlighted in the opening where they refer to their book; “As an assemblage, a book has only itself, in connection with other assemblages and in relation to other bodies without organs” (1987, p. 4). This small passage confirms the assemblage is not only important to the book but essential in how all things operate, how things connects and how assemblages are relational. Assemblages then becomes essential to their work moving ahead to the point where Deleuze and Parnet (1987, p. 51) conclude that “the minimum real unit is not the word, the idea, the concept, or the signifier, but the assemblage”. Therefore, thinking through assemblage is where this thesis begins. Engagement with these works guides the thinking in the thesis to problematize and interpret road cycling in the context of Wollongong.

From Deleuze and Guattari’s (1987) perspective, an assemblage is conceived to involve two axes: vertical (content) and horizontal (expression). An assemblage or socio-material working order involves the relationship between the two axes or components. First, non-discursive forms of content are conceived as the machine assemblage and include bodies, actions and things. Second, expressive forms of content include emotions, affects and ideas. Assemblage thinking encourage scholars to offer interpretations that are beyond individual elements, but instead in terms of how the ‘expressive’ and ‘content’ come together to form a provisional working arrangement. Following Muller (2015, p. 28) at its most basic, an assemblage is “a mode of ordering heterogenous entities so that they work together for a certain time”. Thought of in this way, cycling then becomes more about what comes together to form a working arrangement on the road and is less about quantifying how people move from A to B as much transport geography literature dictates (Spinney, 2009). In sum, cycling assemblages encompass diverse elements—including content (bodies, clothes, practices, roads, topography, technologies and weather and the expressive (emotions, affects, ideas).

The concept of affect is key to understand how the social and material elements coalesce into a provisional working arrangement. Following Deleuze and Guattari (1987), affects are pre-conscious forces that increase or decrease bodily capacities to act and be affected. Helpfully, Thrift (2004, p. 64) conceives of affect as ‘the push in the world’. The concept of affect enables possibilities to think through how cycling assemblages may foster sadness or joy that decrease and increase the capacities of bodies to affect and be affected. Thus, following assemblage thinking, attention turns to

socio-material arrangements that keep road cyclists on their bike to enable the emergence of the desire to cycle through the creation of the road as working arrangement or territory. Deleuze and Guattari (1987) state that all assemblages create a territory.

That said, Deleuze and Guattari (1987) argue that an assemblage is always working between forces that stabilise and force that disrupt the working arrangement. The forces that disrupt the working order are conceived as ‘lines of flight’ that operate through a process of deterritorialization. Deleuze and Guattari (1987) argue that the moment an assemblage deterritorialises, it tries to reterritorialise to restore order by keeping chaotic forces at bay. Therefore, territorialisation is a process that is never static; rather territorialisation is conceived as an ongoing process where “reterritorialized sides [...] stabilize [the assemblage], and cutting edges of deterritorialization [...] carry it away” (1987, p. 88). Müller (2015, p. 29) states, assemblages “establish territories as they emerge and hold together but also constantly mutate, transform and break up.” Understanding road cycling as an assemblage, thus draws attention to the opposing forces of affective intensities that play out through processes of territorialisation, deterritorialization and reterritorialization.

The notion of the assemblage invites us to consider how subjectivities are constituted through the affective forces triggered by the ongoing coming together of social and material things into a working order. Following Deleuze and Guattari (1987), subjectivities may not be conceived a static or pre-given categories, I follow Duff (2014) and concentrate on the ways in which subjectivities emerge in and through the circulation of affect within working arrangements comprised of expressive and content forces. In this way a gendered body is not a pre-existing biological thing ascribed at birth; but rather configured within a socio-material assemblage. The gendered body is conceived as emerging within the working socio-material arrangements and thus is always a temporary achievement. Extending such thinking to the mobile cycling body, the subject of the ‘cyclist’ is not a problem to be examined. Instead, attention turns to how the identification of being and becoming a cyclist emerges through the sensuous connections to both human and non-human forces. Likewise, how cycling bodies become gendered, classed or racialized is understood as a relational achievement.

### 2.2.2 The cycling refrain

I offer the concept of the cycling refrain as helpful to further thinking about the relational processes involved in becoming a road cyclist – in particular, how wellbeing is achieved. The mobilities literature points to how the affective capacity of the mobile body is always susceptible to change through the relationships with other people and things, including on bikes (see Jones 2012). Lefebvre's (2004) *rythmanalysis* has also been a useful conceptual lens to approach rhythms, however it is silent when it comes to the affective capacities of bodies and how to conceptualise wellbeing. Deleuze and Guattari's concept of the refrain offers an exploration of the affective capacities of rhythms and how they sustain our sense of self and society. This approach has been given limited attention within cycling, mobilities, and geography literatures more generally (Frazer, 2020). Through the notion of chaotic forces of molecular and rupture lines there are possibilities to think about how a sense of becoming well can be disrupted through changes to the social and material relations that comprise everyday routines.

That said, the analytical potential for mobility scholars and geographers is demonstrated in the work of McCormack (2014) through his interpretation of dance choreographies, and that of Frazer's (2020) discussion of becoming a volunteer refugee support carer. I argue that the concept of the refrain is helpful in considering how the repeated embodied routines and rhythms of road cycling may be conceived as choreographies that co-produce both subjectivities and space through the interplay of bodily affects, social norms and materialities.

In a *Thousand Plateaus*, Deleuze and Guattari (1987) illustrate the notion of the refrain through retelling a story. They refer to a small child who is frightened in a dark room. To bring about a sense of safety the child creates a rhythm through humming a known song. By humming the song, the child creates a rhythmic melody that reduces his anxiety and makes him feel safe through creating a territory in which the child achieves a sense of belonging. In more conceptual terms, Deleuze and Guattari (1987) argue that the refrain is comprised of three dimensions. First, the repetition of routine activities fosters a sense a sense of comfort and safety by keeping chaotic forces at bay. This suggests that cycling refrain is a way of bringing to the fore moments of affective intensity for analysis. Attention turns to how the bodies riding bikes, and their affective capacity is transformed by the proximity of other cyclists, cars, pedestrians, topography,

weather or transport infrastructure (road surfaces, cycleways, cycle lanes, roundabouts, traffic lights).

Second, the repetition of routines, Deleuze and Guattari (1987) conceive of as stabilising a territory, through creating order or working socio-material arrangement. In other words, socio-material arrangements that stabilise a territory are conceived to allow certain modes of transport, and exclude others. Holding together a territory is conceived to be the positive affective forces triggered by the relations between sensations, bodily fitness, speed and rhythms alongside materials such as weather, light, traffic conditions and topography. For instance, as Grosz (2008, p. 19) states, “the refrain is how rhythm stakes out a territory from chaos that resonates with and intensifies the body”. Jackson (2016, p. 183) further explains that “the refrain uses rhythmic processes that draw upon forces from multiple milieus in a temporary congealing that is unstable”. It is through the refrain, that the rhythms and repetition of routines can generate habits whilst on the move. I conceive these as both cognitive and non-cognitive. For clarity, there are various conceptual lens’ that engage with the term ‘habits’ (Pedwell, 2017) however for this thesis, I am thinking through habits in affective terms via the deployment of the cycling refrain.

Third, Deleuze and Guattari (1987) conceived of the refrain as temporary. Within each repetition change occurs. While the refrain creates a recognisable order, change is always possible. In this way, the cycling refrain points to processes to enter, stabilise and leave particular orderings. For example, each routine ride is always going to be different through how the social and material arrangements that comprise the ride come together. All routine rides contain the possibilities of negative affective forces, from close encounters with cars, verbal abuse, or an accident. Conceptually, these are conceived as opening the cycling territory to the forces of chaos that may reduce the affective capacity to ride particular routes.

## **2.3 Approaches to cycling geographies: beyond Euclidian space**

### **2.3.1 Counting Cyclists – transportation geography and the scientific method**

Assemblage thinking thus enables a departure point from utilitarian conceptualisations of cycling as movement between two points or locations – that is, moving from one place to another. Cycling literature that investigates movement between two points

draws on a scientific approach found within transport geographies. Underpinning much utilitarian transport modelling is the assumption that decisions of movement are taken by rational decision maker, that seeks to optimise efficiency and safety (Cervero & Radisch, 1996; Tilahun, 2007). Drawing on surveys and mapping techniques, transport models predict future travel behaviour, and thus aid urban infrastructure planning (Parkin 2003; Parkin et al., 2007). Quantitative techniques include statistically analysing modal choice by land use mix, sex (male/female), income, race and distance to public transport (Buehler, 2011).

Spinney (2009) framed the scientific approach as both ‘old’ and ‘outdated’ because it worked within the political status quo and overlooked the sensations and meanings of cycling. That said, the quantitative methods of transport geography have a long, influential and ongoing history in transport policy because the approach offered predictions, models and measurements, such as number of cycling facilities, near misses and participation rates. More recently, Geller (2003) suggests that the scientific method continues to inform much decision making behind the transport planning for liveable and sustainable cities. For example, Kingham et al., 2001 reported on survey results to help identify the barriers to cycling (e.g time and distance). The work of Algiers et al (2005) is an example of how transport planners generate mathematical models to work towards making transport (and cycling) more efficient and environmentally friendly. In the Australian cycling literature the scientific approach continues to inform research, including infrastructure planning (Johnson et al., 2010; Bonham & Cox, 2010), car-bike interactions and safety (near-misses) (Johnson, 2013; Poulos et al., 2012).

### **2.3.2 Political economy approaches to cycling**

Political economy approaches are an emerging strand with cycling geographies. Stehlin, (2014) argues that the geographies of cycling tended to overlook how the practice is embedded within broader political-economic processes, especially capital accumulation in western societies. Overlooked were conceptualisations of cycling within boarder neoliberal agendas in refashioning cities. Political economy approaches conceive the city as a site of capital accumulation. Specifically, a political economy approach draws attention to the relationship between mobility and capital accumulation and vice versa. Harvey (1982, p.381) argues that: “The more mobile the labourer, the more easily capital can adopt new labour processes and take advantage of superior locations”. As

automobility is becoming more paradoxically immobile as car sales and car trips continue to increase, other forms of mobility and capital must come to the fore. Thus, in car congested cities, cycling is imagined in economic revitalisations strategies as a fix for capital growth. As Stehlin (2014, p.22) argues that the importance of cycling is terms of contributing “to urban vitality, freedom, invigorated commercial districts and sociability”. Cycling becomes reconfigured to address traffic congestion, that works against the economic productivity of cities.

When cycling is conceived through a political economy lens as a spatial fix for capital accumulation, attention turns to the biopolitics and the uneven social geographies produced through who has access to cycling infrastructure (Spinney 2016). Biopolitics is the prevailing political rationality to govern populations and individual lives in ways that maximise and sustain life, nudging individual behaviours toward chosen norms, such as healthy cycling behaviours over sedentary motorised transport (Foucault 2010). In terms of neoliberalism and the biopolitics of cycling, Spinney (2016, p. 455) argues “that any spatial fix associated with cycling is a by-product and adjunct to its failures as a biopolitical mobility fix”. Cycling infrastructures tend to appear after cycling promotion campaigns fail to produce the required behavioural and modal shifts. Urban cycling infrastructure may also then only turn up in ad hoc ways that connect certain communities but not others, discounting many potential users and favouring the commuter cyclist.

In terms of neo-liberalism, social justice and the city, the building of cycling infrastructure often goes hand-in-hand with processes of gentrification. This is evidenced in the work of Danyluk and Ley (2007) and Bauman et al (2018) for Canadian and Australian cities respectively. Stehlin (2015) points out in his study of San Francisco that poorer neighbourhoods had significantly reduced cycling infrastructure in comparison to gentrified neighbourhoods, despite the evidence-based push for connected cycling networks to improve cycling participation.

### **2.3.3 Right to the city**

Mobility justice concerns have attracted increased attention in the past decade conceived in terms of cyclists’ right to the city. This work builds on the scholarship of Soja et al (2011) on spatial justice and the city. Soja (2010) focuses on understanding

rights to the city within broader political and social power struggles in the production of urban space. Soja's ideas offer insights to transport justice through paying attention to the urban politics of western cities, specifically local political movements that challenge the privilege of the car to access public space.

Taking a lead from Soja (2010), Furness (2010) is interested in better understanding local political movements that may emerge to address the marginalisation of cycling in cities. Cycling protest are usually about getting equal access to roads or better infrastructures. Furness (2010, p. 218) argues the politics of cycling is not about "merely changing the ways we get from Point A to Point B", but "a chance to figure out where we want to go". Polletta and Jasper (2001, p. 286) write about the politics of cycling movements as challenging "dominant normative and cultural codes by gaining recognition for new identities." Furness, (2010) draws on the example of Critical Mass, a cycling collaborative that emerged in San Francisco in 1992 to question car culture and its dominance in public space. Critical Mass deployed the strategy of 'organised coincidence'; that combines direct action protest with celebration. As discussed by Carlsson (1997), the idea of organised coincidence was simple to implement. The group would meet on the last Friday of the month and ride collectively through San Francisco. Early rides were designed to celebrate cycling and participants would regularly dress up, decorate their bikes and ride with noise makers to bring attention to the collective. Furness (2010, p. 80) describes Critical Mass as "essentially a direct action, anarchic event in that rides are unsanctioned by city officials and riders are motivated by self-determination, self-rule, and non-hierarchical organization". Given that there are no leaders of Critical Mass, only organisers, organised coincidence encouraged participation and pushed against social hierarchies. Furthermore, participants shaped the discourse and collectively gave meaning to the event through media and other channels. Critical Mass grew both internationally and in numbers. Direct Action rides in San Francisco were peaking with thousands of participants and events were organised in over 300 cities worldwide by 2003. Through riding in numbers, the aim of Critical Mass was to momentarily challenge ideas about public space in relationship to the car, and to think about public space differently, creatively, playfully, to create something new (quite the Deluzian idea). The on-the-move cycling party brought to the fore new questions around what public space could be rather than what is public space. Direct actions like Critical Mass speak to unjust transport systems and struggles over access to public space. Protests like Critical Mass do not replace formal advocacy (Carlsson,

2002; Mapes, 2009; Furness, 2010; Cox, 2015; Cox, 2019; Aldred, 2013). That said, Critical Mass speaks to the distributional injustices perspectives of automobility that restricts access to public space, and the possibilities through empowering thousands of people to take action and reimagine public space.

#### **2.3.4 Embodied approaches to cycling**

Embodied approaches to cycling aim to bring to fore the sensations and meaning of cycling. This strand of cycling geographies draws on a range of social theorisations of the body including phenomenology, social practice theory, feminism and non-representational theory. For example, Spinney (2006) draws on Meleau-Ponty's phenomenology. He follows work by Tim Ingold (2000) to argue for a focus on the body "in terms of how it develops according to what it affords and is afforded within the landscape" (2006 p. 715). Spinney (2006) argues that technologies play a vital role in defining the capabilities of the human body. In this case the bicycle becomes important to climbing and in particular, the gears on the bicycle allows the rider to create bodily rhythms:

Gearing is felt by the rider- the machine asking the rider to maintain a circular movement, perhaps lower or raise the speed of the rider but maintaining movement in the legs and lungs at a manageable pace (p.719).

Here, bodily rhythms are co-produced by the rider with the bicycle. In Spinney's (2006) account of sporting cyclists he draws on personal embodied accounts, combined with kinaesthetic ethnographic observations and interviews with other riders to explore different knowledges, technologies and practices whilst riding Mt Ventoux. Spinney (2006) argues that the longer a rider and their bike are conjoined, the more connected the relationship becomes. In this sense, studying technologies of cycling (bicycles or otherwise) through embodied approaches is instrumental for revealing how they influence movement, meanings and understandings of place.

A second strand of embodied approaches draws on so-called 'non-representational' thinking (NRT), informed by Nigel Thrift (2008) and the 'affective turn' in geography. Non-representational approaches conceive of cycling as more-than-a-human achievement, and pay attention not only to how everyday practices are sustained not only by social norms but by the affective 'push' of materials. NRT as Thrift & Dewsbury (2000) contend, "...emphasises the flow of practice in everyday life as embodied, as caught up with and committed to the creation of affect, as contextual, and



as inevitably technologised through language and objects”(p. 415). NRT emphasises smaller scale practices which at first may seem insignificant, however as Lorimer (2005) suggests, non-representation:

...offers an escape from the established academic habit of striving to uncover meanings and values that apparently await our discovery, interpretation, judgement and ultimate representation. In short, so much ordinary action gives no advance notice of what it will become. Yet, it still makes critical differences to our experiences of space and place (p. 84).

The conceptual framework outline for this thesis above strongly aligns with non-representational thinking, given they both draw on the writing of Deleuze and Guattari. This thesis shares Lorimer’s (2005) commitment to understanding life as it unfolds, and the possibilities for it to be always otherwise. With this in mind, like Spinney (2009), this thesis shares a commitment to how the non-representational qualities of cycling may shed light on alternative meanings which are absent or not immediately evident from observations and representations of them. As a result, NRT has the potential to highlight some of the conflicts and continuities between practice and representation. Central to this thesis is working with how the unfolding sensations of cycling reveal ambiguities, paradoxes and tensions.

The later work of Spinney (2009, 2011) and that of Jones (2005, 2012) are benchmark papers in illustrating the implications of non-representational approaches to cycling geographies. For example, Jones (2005) frames commuter cycling within sustainable transport debates and puts his body at the centre of his research, paying particular attention to affect. To rethink the cycling body, Jones (2005, p. 815) is influenced by Massumi (in Zournazi, 2003) who builds on the work of Spinoza:

What a body is, he [Spinoza] says, is what it can do as it goes along. This is a totally pragmatic definition. A body is defined by what capacities it carries from step to step. What these are exactly is changing constantly. A body’s ability to affect or be affected—its charge of affect—isn’t something fixed.

Jones (2005) illustrates two significant points for this thesis. First, he points to the importance of acknowledging the sensations of the cycling journey as both exhilarating and dangerous. In Jones’s (2005) words, this ‘stimulated me to think about how I relate

to and interpret this city in which I live; my body itself becomes a research tool' (p. 827). This brings to the fore how the sensations of cycling can help to better understand why people ride. Second, Jones points to the methodological challenges of non-representational thinking. If affects are pre-conscious, how are can we speak or write about them in our research? This challenge is addressed in Chapter 3.

Further adding embodied approaches to cycling is recent work from Lee (2016), who examines how bike to work programs create temporary bike-friendly spaces in Lake Tahoe in the US. Lee (2016) use multiple methodologies (interview, video and ride-along) to explore the embodied experiences of commuters. Lee (2016, p.403) applies 'pragmatism to mobility' meaning that "the way a person learns about and reflects upon mobility is predicated upon experience gained through transporting oneself in the world". The approach to embodiment is through the lens of Greene (1988) that works towards a 'dialectic of freedom' where individuals seek freedom through the breaking of routine and unconscious habits to look to new possibilities in their world. They argue that cycle to work programs, open up possibilities for embodied cycling knowledges to disrupt car-based habits and routines. They also found that subtle gender discrimination was present in cycle to work events through the expectations set on women to be 'good mothers' as well as appearing a certain way at work. This reaffirms the central cycling subject as white, male and affluent.

Pivotal to embodied approaches to cycling geographies are feminist theories of bodies, drawing on performative notions of identity. Rather than thinking of gendered identities as pre-configured at birth, attention turns to the processes of social discursive practice and exercises of power through which uneven movement are relationally made and remade. How cycling bodies are included and excluded from public places is embodied by highlight the importance of the repetition of everyday social norms through which transport modes and patterns materialise. For example, Hanson (2010) highlights the nexus between gender and mobilities to the point where they become almost inseparable. Clarsen (2008) illustrates how historically, western women have been less mobile, find it harder to be mobile (compared to men) and even when the routes travelled or modes of travel are similar to that of men, the meaning ascribed to the movements are very different. Through a feminist lens, constraints to mobility are explained through how sets of taken for granted ideas that configure masculine and

feminine norms in western society, operate to constrain the movement of white, middle class women's bodies, while allowing greater spatial movement to those of men (Pringle *et al.*, 2011). This thesis contributes to the large and growing body of literature on gendered mobilities, speaking to various scales of mobility (see Uteng and Creswell 2008; Clarsen, 2014; Hanson 2010).

As discussed within the conceptual framework, the thesis draws inspiration from feminist approaches through drawing on Butler's (1993) notion of performativity to argue that gender is never fixed, but possibilities always exist to step outside fixed identities and explore other identifications. An example of an application of this concept is found in the work of Fullagar & Pavlidis (2012) who explore the experiences of women in a mass cycle touring event. Attention is paid to the negotiated gender constraints to participate in the cycle tour event. A common constraint for women in the time leading up to the event was competing demands and desires in work and home life. Once on tour though, there were no gendered routines (e.g. meal preparation) of home life and they were able to embody a cycling identity as capable, socially connected and adventurous. For Fullager and Pavlidis (2012) the implications of conceptualising gender as performative "allows researchers and practitioners the opportunity to imagine and create more inclusive spaces for everyone" (p. 165). Moreover, the work of Fullager & Pavlidis (2012) demonstrates how convivial encounters of a mass touring cycling event may provide individuals with the ability to question the legitimacy of gender norms.

Two recent studies that critique cycling through feminist understandings are Heim LaFrombois (2019) and Ravensbergen (2019). Heim LaFrombois (2019) acknowledges that gender disparities still exist in cycling participation, particularly in low-cycling countries. To explore this phenomena, Heim LaFrombois (2019, p. 662) uses an intersectional feminist methodological approach to explore "the relationships and intersections among women, public urban space, and bicycling, and the gendered processes through which the use of space is claimed, negotiated, and constrained". They interviewed 13 women cyclists and 13 men cyclists to better understand their lived experience of cycling in public space. Not surprisingly, they found that women felt constrained when cycling in a space that was historically understood as (and remains) masculinist. There was also a clear distinction made between gender roles in private

space, where women carried much more of a mental load which impacted cycling, whereas men did not report this at all. The author calls for greater awareness of how gender ideologies affect mobility and mobility choices. This is further supported by Ravensbergen (2019) who conducted a literature review that addressed cycling participation that advocates for strengthening research that engages with feminist theories such as embodiment to advance cycling knowledges.

Central to this thesis is the potential of the sensations of cycling, not only to reconfigure taken-for-granted notions of gender through repetition of cycling routines, but how the sensations of cycling may also create possibilities for rupture and undoing taken for granted identifications by being drawn out of one's secure routine. One of the key contributions of this thesis is my focus on feminist embodied understandings of cycling and the deployment of the cycling assemblage and cycling refrain.

## **Chapter 3**

### **Methods**

#### **3.1 Introduction**

This chapter outlines the cycling sensory ethnography methodology developed and used in this thesis. In summary, I interviewed 27 participants about their cycling experiences in Wollongong. During the interview, I conducted a mapping exercise discussing places of enjoyment, places of displeasure and the social aspects of their regular cycling routes. These methods were used in combination with ride-alongs with 13 participants (riding either individually with participants or in a regular group of theirs) to gain a deeper understanding of what it was like ‘becoming-cyclist’ on Wollongong roads.

The methodology used contributes to discussions on feminist corporeal methods. To demonstrate this contribution, the chapter is divided into six parts. I begin first by reflecting on the feminist methodologies that inspired and inevitably shaped this study. Second, I think through my own body as a research tool by providing a short positionality provocation and shedding light on how I prepared my own body for this research. This corporeal thinking drew also upon feminist methodologies and together, challenged my own thinking around my body while enabling me to better understand the embodied experiences of the participants.

The chapter then turns to the practical implementation of a feminist and corporeal approach – fieldwork. In the third part of the chapter I discuss trialling video ethnography whilst cycling in Wollongong and the reasons why it was abandoned. I next discuss the negotiation of ethics in the field: thinking through cycling with participants, the challenges this presented, and the ethical concerns throughout data creation. Fifth, I justify and reflect on each of the methodologies used to collect primary data, which included ride-alongs and semi structured interviews in conjunction with a mapping exercise. The chapter ends with a discussion of the guiding theoretical principles for analysis.

#### **3.2 Thinking methodology through a feminist lens**

This study thinks primarily through feminist methodologies. As Moss (2002 p. 12)

states “making a methodology ‘feminist’ implies politicising a methodology *through* feminism”. From the initial conception, research design, data creation and interpretation, thinking through feminist theories and methodologies is key. It is also important to acknowledge that there is not a single, unified idea of feminist methodologies or a feminist subjectivity; thinking through feminist methodologies is thinking through multiplicity.

Exploring notions of power in cycling is particularly important, as it is often the white, male, fit body that is portrayed in research, media and policy (Osbourne & Grant-Smith, 2017; O’Connor & Brown, 2007). This study is inspired by multiple feminist thinkers, theorists and approaches that challenge dualistic thinking (i.e. male/female, mind/body) and view knowledge and power as requiring further critical examination through a feminist lens. The fieldwork component of this thesis applies feminist thinking to understand cycling in Wollongong as an embodied and generative knowledge practice.

The body has long been an important site for feminist geographers to develop as a site of thinking and knowing (de Beauvoir, 1953; Butler, 1990, 1993; Irigaray, 1985; Haraway, 1985; Moss, 2002; Ahmed, 2004; Braidotti, 2013). Throughout the doing and writing of this thesis, I have taken inspiration from the debates in Feminist New Materialisms (Thorpe et al, 2020; Lupton, 2019; Fullagar et al, 2019) and Post Qualitative Inquiry (Fullagar, 2017; Brice et al, 2021). These debates take seriously the performativity of research and desire to move away from representational models. It is through my own conceptual lens (Chapter 2.2) and by drawing on the above debates that I am able to connect and write through the body. The bodily politics of doing feminist research meant I continually would reflect on my mood, energy levels, desires, and how there were natural ebbs and flow to the research process. By focusing on my own and participants’ affective forces using the cycling assemblage and cycling refrain, I paid close attention to what moments went well, what moments went haywire, and how the different types of geographical knowledge were produced.

In this study, I pay particular attention to thinking through the ‘body’ and how affective, corporeal, discursive ideas come together and fall apart through the cycling assemblage (Braidotti, 2013). I lean on several feminist thinkers, including Espeth Probyn (2003); Sarah Ahmed (2004); Elizabeth Grosz (2008), Deborah Lupton (2016), and Rosi Braidotti, (2013) to interpret findings in the upcoming results chapters. Thinking of the

cycling body in this way means it is not a static object but a *relation*, something that connects with other things, ideas and affects. Longhurst and Johnston (2008, p. 208) in their exploration of migrant women offer that “bodies produce space and knowledge, and space and knowledge produce bodies”. Through exploring the role of food in migrant womens’ domestic lives and spaces, their work highlights the importance of the ‘body’ not only of the participants, but as an ‘instrument of research’. This challenge is taken up through a discussion on my ride-alongs as part of the data creation process later in the chapter.

Being attuned to the body – both as a research instrument and form of analysis – it was important that I chose a methodological approach that was alert to the full experience of cycling. Jones (2012) in his exploration of commuter cycling notes the intensities that cycling brings to the senses to the point where “it runs up against the affective limits of many individuals’ bodies” (p. 648). Even for the participants in this study whom I would consider highly skilled cyclists it has taken years of riding, thousands of kilometres in the saddle, and a plethora of on-road experiences to get to where they are. Their understanding of the road, their bodies, their bike/s, and others they ride with are not intuitive acts. They are experienced, knowing and emplaced cycling bodies, with skill and habit that is absorbed and embodied over time.

To further understand this subject formation I turn to sensory ethnography (Pink, 2009) to explore what cycling bodies do and in turn how they affect and are affected. Sensory ethnography encapsulates a range of qualitative research approaches that are reflexive and experimental, with an aim to find new ways of understanding and knowing. In essence, a sensory ethnography is a process that does not rely on a single methodology but explores and reflects on new ways to create knowledge (Pink, 2009).

Similar to Sarah Pink (2009), I push against using the term ‘data’ and think through the different ways of knowing through the body and embodiment. This approach diverges from my previous training in public health where data was collected, analysed and reported on. The data in most cases was static and one dimensional, both in the approach taken to collect it and how I thought of it. Seldom did I think reflexively and critically about what I was doing and how data was situated knowledge. This is one of my key learnings in moving to human geography.

In ‘doing’ a sensory ethnography, I acknowledge the historical and western preference for focusing on visual ethnographies and ways of knowing. In this study, I acknowledge the senses as multiplicity. As Ingold (2000, p261) argues,

...perceptual systems not only overlap in their function, but as also subsumed under a total system of bodily orientation...Looking, listening, touching, therefore are not separate activities, they are just different facets of the same activity: that of the whole organism in its environment.

This argument dovetails with assemblage thinking, where anything can be an outcome of a process of connections.

This thesis contributes to cycling methodologies by bringing feminist corporeal thinking into discussion with mobile/go along methods. In addition, it contributes to the more recent field of qualitative mapping to explore participant’s experiences of cycling in Wollongong and how cycling bodies affect and are affected. The next section will describe how I thought about preparing my own body for the sensory ethnography, followed by my trial and subsequent abandonment of a cycling video ethnography.

### **3.3 Getting the body ready for research**

In this section I explore the role of my own body as an ethnographic ‘research tool’. I take inspiration from Bain & Nash (2006), Longhurst et al. (2008), Spinney (2006) and Larsen (2014) when thinking about the body ‘in’ the field. This section begins with a brief positionality statement and my own embodied history of cycling and sport. I then follow Bain and Nash (2006) and highlight how I prepared, positioned and integrated my own cycling body through the project.

In Box 3.1 I first offer a short embodied history of my sporting and cycling endeavours to illustrate how I was trained to ‘do’ sport, following conventional ideas of sporting masculinity that foreground winning:

*Taking a reflexive feminist approach to my research (and my body as a research tool) meant paying close attention to and being critical of my own routines, experiences, histories and embodied understandings of sport and cycling. Simply put, this was and at times still is challenging. I grew up loving sport – as many young Australian boys do – through the lenses of discipline, success, teamwork and strength.*



*My younger sporting body was often playing and succeeding at various sporting endeavours. Throughout my whole life, sport (and being 'successful' at it) played a central role to my identity. Much like Drummond (2010), many hours of my childhood, teens and twenties were spent training, playing and embodying a masculine sporting identity. This meant disciplining my body in line with traditional masculine ideals as strong, fast and powerful (Connell, 1990). This for me was a positive experience as I was socially accepted and enjoyed peer acceptance.*

*As a child, I was a good swimmer and enjoyed surf club. Through my teens, I maintained a high level of swimming, I played football (or for some soccer) for numerous local and state representative teams, and was part of a successful group of surf lifesavers that competed locally and a state level. At high school, if there was an opportunity to play a sport and get out of class, I was first to put my name down. Towards the end of high school, I chose to focus on football. Upon finishing high school, I found myself in a privileged position where I had the option to pursue either a professional football career or go to university to study public health while continuing to play semi-professionally. I chose to study and played semi-professional football for the next 11 years. When my own body began to falter, I decided to take up cycling as a means to maintain a certain level of fitness without putting undue stress on my body. This was my path to cycling.*

*I initially approached cycling similarly to how I approached many of my other past sporting endeavours. I was ready and prepared to train and discipline my body to get the best possible physiological outputs. I was fortunate that I had some friends that were cycling and liked to push themselves and I fit right in with that group. I enjoyed using technology to record rides, to record specific attributes of my body (heart rate) to ensure I was improving and making gains. This was how I was trained to 'do' sport (Drummond, 2010).*

*Over time, my hunger for improvement waned. I distinctly remember one morning prior to commencing my PhD where I pushed myself so hard on a Strava 'segment' near my house that I vomited on my front lawn, much to the confusion of my neighbours.*

*That was the day that cycling changed for me. The day I took a step back from always trying to 'win' because I could no longer make sense of what I was actually winning.*

### **Box 3.1: My personal embodied sporting and cycling histories**

The sensuous turn to the body aligns with feminist thinking as it ‘attends to the question of experience by accounting for the relationships between bodies, minds and the materiality and sensoriality of the environment’ (Pink, 2009, p. 25). When the researcher becomes part of the research, being reflexive opens up questions by ‘thinking about personal beliefs, judgements, perceptions and multiple subject positions in a self-consciously critical manner and integrating these into the research process’ (Bain and Nash, 2006, p100). Bain and Nash (2006) offer reflection on three moments within the research process: *preparing the body*, *positioning the body* and in *interacting with the body* during the event. Following their lead, I discuss each of these three moments in this project below.

*Preparing the cycling body* is an ongoing process. For some participants, there was no start or end point to preparation. Food preparation, social lives and weekly routines were planned around cycling. My preparation always started the night before a ride. I have a mental checklist before I go to bed that must be complete so that I ‘feel’ ready for the morning ahead. My checklist involves:

- Checking the weather forecast (particularly wind and temperature) on my phone;
- Laying out the appropriate cycling attire (bib shorts, jersey, undershirt, gloves, arm warmers, socks) in my spare room;
- Checking my bike (tyre pressure, wheel alignment, punctures, anything strange etc);
- Ensuring my front and rear lights are charged as these are key to keeping me safe in the early mornings;
- Ensuring my cycling computer is charged (common in the cycling world and to the participants is the saying “if it is not on Strava, did it really happen?”);
- Getting my money pouch ready for a mid or post-ride brew and making sure the garage controller is in there to get in and out of the house
- Last thing before going to bed is to set my phone alarm (x3) and putting my phone on charge.

On the morning of a ride, there is a strong sense of bodily routine and movement.

Similarly, a checklist of sorts occurs before taking my first pedal stroke:

- Drag myself out of bed
- Visit the lavatory (very important as it is very difficult to do once the ride has begun)

- Get dressed in to my cycling kit
- Wake up my wife and tell her ‘I love her’ (she has requested this just in case I get in an accident whilst riding. It is a little grim but is based on a well-established fear for many Australian cyclists- also see chapter 5).
- Make my way to the garage where I check my lights again, put on my shoes and helmet, make sure I have my money pouch, check the pressure of the tyres one last time and start my cycling computer, before opening the garage and slowly start on my cycling journey.

I offer these anecdotes for two methodological reasons. First, similar to Bain and Nash (2006), I aimed to ‘blend in’ with participants and I dressed accordingly. How I dressed when riding with participants became a well thought through activity that brought with it some trepidation. I have had previous experience riding with groups where what I wore became a site for ridicule and I was labelled a ‘hubbard’. Being a hubbard can mean a few things but generally it is someone who will ride in mismatched kit, have limited ability on the bike and/or poor bike handling skills. When I was a labelled a hubbard, my kit did not meet a previously unknown benchmark of quality and I was later told I was riding too close to another rider while in the peloton. This ride and the conversation that followed stays with me even today.

Despite its petty nature, I had found that feelings of belonging and shame were very apparent in the cycling community (Probyn, 2005). What my previous experience showed was that I needed to coordinate my cycling kit. Practically, this meant some colour coordination between my jersey, bib shorts and socks. In many of my interviews, participants would often talk about this as a signifier of the competent cyclist. My hope in coordinating my outfit was that participants would accept and interpolate me as competent.

Second, I am an introvert. This had several implications. I would often find myself quite anxious before riding with participants as I am not the most talkative person and I would potentially be spending several hours with participants on the bike. I would find it difficult to get to sleep the night before and turn up to a ride tired. I also found it challenging to negotiate how much personal information to share. Over time I got better at answering questions about myself and the research as the project developed. Early on in the fieldwork process I was unsure as to what influence I would have on the participants. However, as time went on and I rode with and interviewed more cyclists, I

became more comfortable.

Thinking of interacting and interviewing participants in Deleuzian terms was most helpful: in particular, the rhizome (Deleuze and Guatarri, 1987). Thinking through the rhizome means thinking through connections and multiplicities. This is a flat ontology – unlike a tree and more like a surface of connected roots, moving in multiple and new directions without hierarchy. The rhizome helped me think about the conversations I had as connections and not as entry points that had to lead ‘somewhere’.

Riding with participants was often the first time I met someone face to face. The cycling route would be loosely agreed to prior to the ride, provided it was a regular cycling route for the participant. I always tried to arrive at the meeting point five minutes prior to the agreed time as turning up late is another cardinal cycling sin. Some of the interactions I had with participants were a little awkward and felt at times as both the participant and I (as researcher) didn’t quite know how to act. To prepare for such occasions (and partly due to my introversion), I had a suite of topics and questions to chat through which made the journeys easier. One of my favourite stories from a participant involved a friend of theirs riding south of Wollongong in farmland. Their friend was so caught up in their surrounds and the moment, that they did not notice a herd of cows crossing the road ahead and unknowingly crashed in to one of them, much to the cow’s displeasure. Thankfully, neither cow nor human were injured, just a bruised ego of the rider.

At the conclusion of the data creation phase, I came to the simple conclusion that participants love to cycle and also love to talk about cycling. The next section briefly discusses trialling video ethnography on Wollongong roads and why it was left out of the final methodology.

### **3.4 Trialling methods: video ethnography**

In my initial proposal, I was excited to trial and use video ethnography to capture the rhythms, routes and fleeting cycling experience. Inspired by the work of Spinney (2011), I opted to trial this particular methodology on some of my training rides before submitting my ethics application and commencing data collection. I used a GoPro camera mounted to my handlebar. Below are a few still images from my cycling journeys.



**Figure 3.1: Still images from trialling video ethnography along common Wollongong roads used by cyclists.**

The benefits of using video technology as outlined by Spinney (2011) are noteworthy. The incorporation of video technology has been previously used to capture cycling commuting (see Pink et al, 2017; Laurier and Lorimer, 2012; McIlvenny, 2015). Laurier (2010) highlights that this method is a way of ‘seeing’ and capturing the ordinary and somewhat fleeting moments that are often missed using ‘static’ methodologies. Being able to capture the pauses, occasional banter, the flows, the reactions, the speed, the slowness, and people and landscapes appealed to my own sense of cycling. I was drawn to the idea of capturing the moments that are taken for granted whilst riding – hence why I trialled the incorporation of video during rides on Wollongong roads.

As I started to capture my own cycling journeys, my romanticised notions of capturing ‘everything’ were disassembled. The reality and challenges of video ethnography set in. Two practical limitations ultimately led me to other methods. First, my training rides at the time were approximately two hours in length. I knew that riding for 3-4 hours per ride was common for some of the potential participants. The GoPros I used had a battery life of approximately three hours, meaning for some participants would not be able to capture their full ride. Second, recording 1-2 potential rides with each participant (3-4 hours at a time) meant that there was going to be a lot of video data to review, edit and cut together. The challenges became apparent early on when editing my own two hour rides to a 20 minute ‘mini-ride’ video. Not only were my technical abilities in cutting together video data limited, but I was often left questioning what the ‘right’ moments were to take-back to participants. If I could not do this confidently for my own rides, I did not feel like I could do the same for participants. Asking participants to help in the editing process was too burdensome. These challenges are not dissimilar to the ones mentioned by Vannini (2017), Waitt and Stanes (2022), Brown and Spinney (2010), and Spinney (2011).

Second, while trialling video methods, I spoke to long-distance cyclists about what they would feel comfortable recording for a project. Using a GoPro or similar recording device was often spoken about as something people who commute might do (as a method of evidence keeping if they get in an accident or hit by a car). However, incorporating a video camera on a training ride for a road cyclist was not common practice. This cultural barrier may have negatively impacted on uptake and overall recruitment.

Instead, my preliminary discussions with potential participants revealed a far more common practice: recording their rides as spatial data (GPS with associated health statistics) and uploading them to a social cycling platform such as Strava or Garmin Connect. Phones would be produced to show me a ride as a digital map on Strava. They would then ask me if I was on Strava and if we could follow each other.

As I spoke to more potential participants, it became clear that everyone held a unique embodied knowledge of Wollongong roads that were also rehearsed through social tracking platforms. Cycling routes were ingrained in their bodies, and reviewing Strava maps often became a prompt to share stories of particularly memorable events (such as near-misses) and the role cycling played in their lives. These informal conversations shaped the research design into a sensory cycling ethnography, which combined a semi-structured interview with a qualitative mapping exercise based around their spatial cycling data.

### **3.5 Negotiating Ethics in the field**

Ethics is integral to research design. Ethics may be envisaged as guided by formal national guidelines alongside a reflexive practice (Dowling 2016). The first component encourages reflection on key ethical considerations, and how the benefits of the research design outweigh the risks. Ethics approval was secured through the University of Wollongong Social Sciences Human Ethics committee (HE15/499). I developed a series of ethics documents for participants; I acknowledge the role of the HREC in conducting ethical research alongside the Participant Information Sheet and Consent Form.

One key ethical consideration was the potential risk of harm from recounting stories of being hit by a car, getting ‘doored’, and/or being intimidated or abused by a driver. For some participants, these were extremely traumatic events. During interviews, I ensured that participants felt comfortable to talk about them and paid attention to any changes in body language (becoming fidgety, turning their body away from me and so on). When this happened, I would let participants know to only share what they wanted and we could stop the interview or this particular section of the interview at any time. I had on hand the details of a counselling service to pass on if required.

The second component of fieldwork ethics alerts the researcher that ethics is always

more than a formal procedure that is finished when an ethics application is approved. An ethics of care during fieldwork requires constant reflection on the relationships between the researcher and participant as the project unfolds (Dowling, 2016). This means paying attention to power relations throughout the research process through being alive to what emotions do. Balancing the risks and benefits of cycling sensory ethnographies is complex. As explained in the previous section, at all stages of the research there is a need to be reflexive and critical of my position within research interactions. My focus here is on ethics in the field as intensities – an understated and undervalued topic in many qualitative studies (Hitchings, 2020). I paid attention to the affectual moments that played out in the field so that I could critically reflect upon them as ‘researcher’ across the entire process.

### **3.5.1 Negotiating ethics on the move**

Thinking through cycling with participants as part of the methodology prompted a range of ethical considerations. These may be thought about in terms of an ‘ethics of attunement’ that is sensitive to how social categories impact on relationships with participants (Wilson 2017). For example, as a white, young, sporting man from a sporting family (Dowling, 2016), I already had access to the required equipment for riding with participants. Furthermore, I dressed in a manner to deem myself competent. That said, on the ride, many events and moments unfold that evoked a sense of danger which left me grappling with my understanding of the ethics and politics of cycling.

In my own cycling practice I usually ride either by myself or with a small group (2-3 others). It has taken many months to familiarise myself with the people I ride with on a regular basis. When roads would narrow or a car would approach from behind, my regular group would ‘naturally’ move in to single file in an orderly manner. When approaching a roundabout, there was a learned flow to how we entered and exited the space to keep everyone safe. This was not always the case when riding with participants. I was often riding with people for the first time, in unfamiliar settings. To feel safe thus required constant negotiation and communication before and during the ride.

Prior to the ride I would ask the participants for our route and try to familiarise myself with it on my phone via google maps and Strava. Building on previous research I was made aware of certain route elements during the ride: for instance, Simpson (2017)



highlighting both the positive and negative atmospheres that emerge when interacting with infrastructures and other road users, and Popan (2020) discussing his need to improvise when riding on roads. Both the former and latter were regularly the case on the roads of Wollongong. For example, there were times when we would be yelled at by a passing driver, be involved in a close pass (less than one metre) and managing aggressive drivers. In these moments, we negotiated our cycling bodies with safety at front of mind and ensured that we did not put ourselves in harm's way.

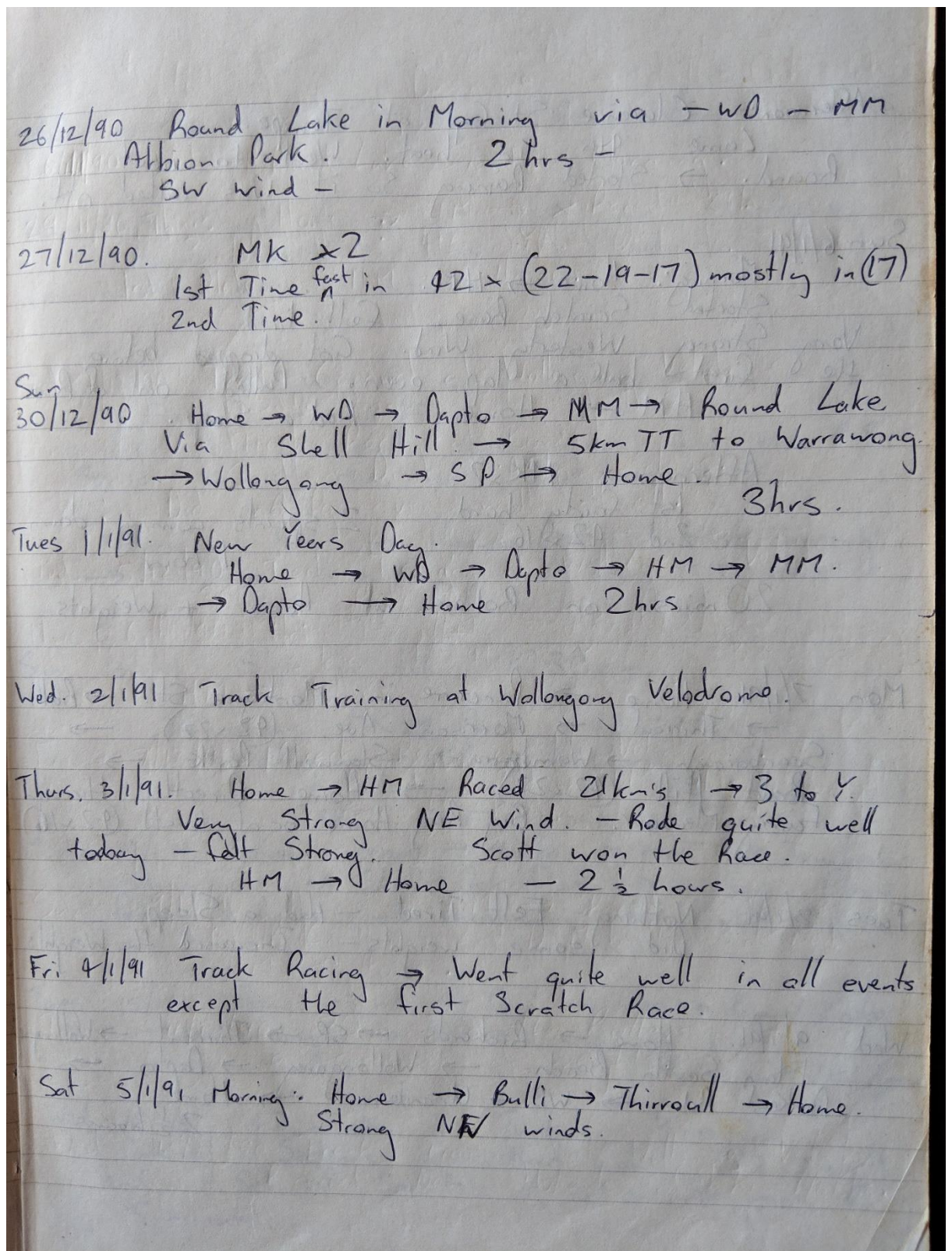
That said, the dangers of fieldwork were felt on the body with participants. A quick discussion would ensue if we could hear a car approaching us too quickly from behind or if we were coming up to an intersection or roundabout. If we were involved in a close pass or near miss event, the participants and I would often chat about this immediately after to check in with each other. With the participant's permission, I would also discuss our ride and any memorable incidents during the mapping interview. Sharing these experiences (both good and bad) added additional depth to the interview through the bonding that took place on the road. These affective intensities were often replayed through the mapping exercise and subsequent discussion.

Fieldwork therefore grappled with risk-taking as something performed by participants on-the-move. I would consider myself a low risk cyclist who follows traffic rules. Yet, Johnston (2013) argues that around 40 percent of people who cycle have ridden through a red light. Reasons for these infringements vary from safety concerns, sensor faults, to impatience. Indeed, participants would at times ride on the footpath and ignore traffic signals and I would follow to not ruin the flow of the trip together. In these moments, I became aware of the ethics and politics of cycling (Cresswell, 2010). Cycling through Wollongong is different to hearing narratives about cycling in Wollongong, because of how the affective intensities that can be missed in storytelling that play out through the body. How gender and class operate through risk taking cannot be overlooked. In some instances I felt anguish, but at the same time recognised their actions in certain situations as valid and safe. These moments of divergence away from what I would usually do, through relating to others, presented moments for my sense of self to become undone. I felt torn, but at the same time I was building reflexivity regarding the actions of others and their validity.

### **3.5.2 Negotiating ethics from the chair**

Feminist ethnographic research is key to thinking about relationship with participants as cycling-researcher (see Skeggs 2001). As Davis and Craven (2016) remind researchers, they must be alive to how participatory practice where the research work alone with participants often give rise to dilemmas. One dilemma raised by this research was around building trust and friendship with participants. That said, friendship is always strategically framed by the research. As Ahmed (2000, p66) argues; ‘ethnographers need to make friends with strangers, and in this relationship, some people are knowers and others are known’.

To build friendly relationships with participants, decisions as to where the interview was to take place were left entirely to the participants. Interviews were conducted either at local cafés, in participant’s homes or on university grounds. Small things made a difference in addressing the asymmetrical relationships between researcher and researched when conducting interviews in the home. For example, to build rapport and trust, if I was offered a drink or snack, I would accept these kind offers. Sometimes, prior to the interview beginning, participants would show me around their house and share insights into their lives. On one such occasion, a participant showed me medals and prizes won at past masters cycling events and also went out of their way to find an old woollen cycling kit to discuss during the interview. Another (see image below) gave me permission to use select photos of their cycling diaries. During the interview, we were talking about the use of cycling computers to record rides and the participant went to find a series of hand written diaries from the 80s and 90s that documented every cycling journey. These moments affirmed my becoming a cycling-researcher. Through reflecting on how cycling is embedded in sporting gender norms I was posed with the dilemma of being respectful with their narratives, while at the same time being alive to the asymmetrical power relationships that configure the road cyclist. In my research diary I reflected upon such encounters as ‘special’ and ‘beyond expectations’.



**Figure 3.2.** An image of a participant's detailed cycling diary prior to the advent of digital self-tracking technologies.

Each ride was written in the diary with a short summary about how they were feeling, weather conditions, and what else was happening in their lives.

### 3.6 Recruitment and Sample

Participants were recruited based on three selection criteria:

- The individual was an adult aged over 18 years of age
- The individual has lived in Wollongong for at least 1 year
- The individual rides a bike (on road/shared paths/bike paths) and;
  - Rides at least once a week (on average) and;
  - Consistently rides over 30km in a single ride (on average).

A purposive sampling method was deployed to recruit participants from road cycling groups or individual road cyclists in Wollongong. Participants were recruited via numerous strategies including:

- The UOW media team wrote an article based on my study (<https://www.uow.edu.au/media/2015/on-your-bike-understanding-the-culture-of-cycling.php>). This article was used as a call for participants and was shared on my personal and my affiliated research groups social media accounts. The article directs potential participants to email me directly if they were interested in taking part.
- I engaged local bike shops with information on the study, contacted local interest groups including the Illawarra Bike User Group (iBUG) and the UOW Bike User Group, and used snowballing techniques following each interview.
- An email invitation was sent to numerous informal cycling groups in Wollongong. Informal cycling groups were generally organized through social media or email lists. I would contact the leader/organiser of the group to inform them of my study and seek permission to email an invitation to the group. I would also enquire about potentially riding with the group so I could speak to people if they had any questions.

Following these recruitment strategies, I recruited 27 people in total (15 male, 12 female) for the qualitative interview and spatial mapping exercise. This occurred between April 2016 and June 2017. During data collection, I rode with 13 of the 27 participants. I stopped at 27 participants as by that stage data saturation had been reached.

Through the recruitment process, I found that being a cycling-researcher assisted the

recruitment process. At the time, I was cycling regularly (3-4 times per week) and riding with different groups and different people. There was a word of mouth effect from the study. I received several emails from interested road cyclists who had heard about the study (but without direct contact from me). I think what underscores the recruitment was not only the popularity of road cycling in Wollongong, but how a love of cycling facilitated willingness to participate. Hence, the participants might vary in terms of numbers of years cycling or experience on the road, but what they have in common is that cycling plays an important role in their lives.

### **3.6.1 Sample**

There are over 20 informal road cycling groups that I became aware of in the chosen study area. Membership numbers and gender composition varied between groups, however based on my own observations and Wollongong Council documents, men overall are significantly more likely to cycle compared to females. Of the six largest road cycling groups – with upwards of 40 members each – two were men only (Tarawanna Mens Cycle Club, Pinarello Boys Cycle Club), while one was women only (Wollongong Women's Cycle Club). These larger informal groups tended to attract more competitive cyclists where bunch rides were faster and rides were organised via email or social media. Below is the demographics of the sample that was collected prior to interviewing participants.

Age		
18-30	1	3.7%
31-45	12	44.4%
46-60	12	44.4%
61+	2	7.4%
Gender		
Female	12	44.4%
Male	15	55.6%
County of birth		
Australia	23	85.2%
New Zealand	2	7.4%
Other	2	7.4%
Time lived in Wollongong Local Government Area		
1-5 years	3	11.1%
6-15 years	4	14.8%
More than 15 years	20	74.1%
Km's in a week		
0-50km	1	3.7%
51-100km	8	29.6%
101-150km	7	25.9%
150km +	11	40.7%
Occupation		
Professional/Manager	18	66.7%
Technicians or Trade Workers	3	11.1%
Administration	3	11.1%
Sales Worker	1	3.7%
Domestic Duties	1	3.7%
Community/Personal Service Worker	1	3.7%
Cycling history		
Less than 1 year	2	7.4%
1-5 years	7	25.9%
6-15 years	6	22.2%
More than 15 years	12	44.4%

**Table 3.1: Participant demographics**

### 3.7 Go-along

The go-along is an important method for scholars interested in how mobilities generate affect and emotion (Jones, 2005; Jones, 2012; Kusenbach, 2003; Pile, 2010). A go-along cycle was added to the sensory ethnography to gain a better understanding of the sensation of cycling in Wollongong. The aim of the go-along was to access how participants ‘felt’ cycling journeys and better understand their ‘affective limits’ (Jones, 2012). Conventionally, the go-along combines talking with walking or driving. However, road cycling and talking was not practical (nor safe) when riding in some parts of Wollongong. Here, following the advice of Coleman and Ringrose (2013) I deployed my body as research tool, and kept a journal of the affective intensities of the rides. Consequently, the follow-up conversations focussed on talking and mapping specific intensive moments along the journey.

The go-along must be understood as one way that trust was built with participants. The shared and often joyful experience of cycling (Mcilvenny, 2015) was a powerful tool to enhance the connections in which friendships could flourish. Consequently, follow-up conversation with these participants were often more relaxed and richer compared to participants whom I did not ride with.

The go-along may be conceived in this research as form of participatory practice where the researcher cycles alongside the participants. The dilemmas that arise from a cycling go-along as participatory practice exemplify how road cycling is always embedded in asymmetrical power relationships. The journal entry in Box 3.2 illustrate the dilemmas, frustrations and stresses that arise from cycling with participants in a group aptly name *The Sparrows Fart Cycle Club*. At the time of this ride, I was the fittest I had been for cycling. However, I finished the ride at the limit of my bodily capacities having become a ‘failed cyclist’. The narrative illustrates the dilemmas of the cycling-researcher negotiating social hierarchies within a well-established cycling-group with more empathetic and caring research-researched relationships.

*I had heard that this was a fast and friendly group and thought that after increasing my cycling kilometres, feeling stronger than I had ever felt before on the bike that I should be able to keep up on one of their ‘easier’ 50-60km cycles. How wrong I was. I slept horribly the night before and was tossing and turning all night. I was nervous about the ride, I was nervous about meeting 10-12 new people, I didn’t know if I would keep up*

*and I had less experience riding in a group. I slept for a total of 3 hours prior to the ride.*

*This morning's ride with the sparrows was a new experience for me. The ride started at 4:15am with five of us meeting at North Wollongong Surf Club. As we made our way through to Sandon Point on a relatively flat section of the ride, the group increased to nine. As we rolled on, we rotated the lead positions and everyone took a turn on the front to set the pace. I knew almost straight away that this was going to be a tough ride for me.*

*Riding so early in the morning meant that roads that I had not previously thought of as safe, we now accessible due to the silence of the morning. There were so few cars on the road even compared to 6am when I usually ride. It was peaceful, there were no cars, we owned the road and it felt good. As we were riding, I noticed a few of the riders had SFCC designer kits. There was a logo, a sponsors logo adorned on the back of the jersey and it looked pretty sleek. What I thought (and what I was told) was quite an informal group, was turning out to be very organised group with its own unique identity.*

*As the bunch was rotating through with different leaders every couple of kilometres, on my second turn on the front I told the person riding next to me, "mate, I have to get off the front as I don't think I will last much longer". He was polite and rotated to the back of the bunch with me. All of the riders were comfortable with the pace due to the conversations that were taking place. For myself, my lungs – even at this early stage – wanted to jump out of my chest.*

*Shortly after my turn at the front, I reached for my bidon to soak my dry mouth and after taking my first sip, the bidon slipped out of my hands and I watched it bounce away to the side of the road. If I had any chance of keeping up, there was no way I could stop to collect it. As we made it to the first incline along the coast road, I dropped off the back of the group in what felt like a second and I was now riding by myself. The movements of the group were in stark contrast to my own movements on the bike. All the other riders were seated when we made it to the incline, in control and still chatting. I was still struggling to breathe and as soon as we made it to the incline, I was out of the saddle, swinging my bike from side to side to find the strength to keep up.*



*I soon lost sight of the flashing rear lights and was riding alone in the dark. After another 500 metres or so, the leader of the group dropped back to check that I was ok. I let him know that I wasn't able to keep up and that he and the group should ride ahead. I would turn around when the group passed me on the way back. When I eventually turned around with the group, I was dropped another two times on the way home. The group politely waited for me at two checkpoints but I could tell they were a bit annoyed as I had broken the group's rhythms. By the time I reached the turn off to my house, I could not ride any further and I was not in the mood to talk to people at the cafe. I was exhausted and a bit embarrassed.*

*When I returned home at around 6:10am, I mustered the little remaining energy I had to have a shower. Once I got changed, I fell back asleep, missed the start of work, eventually waking up at 10:30am. I embarrassingly called my boss to explain what had happened.*

**Box 3.2: Journal entry of a failed cyclist following a group ride with the Sparrows Fart Cycle Club.**

I only rode with this group once as it was clear that my own abilities were limited compared to others in the group. I could have investigated the possibility of using an electric bike to ride with this group and others like it however the cost of an electric road bike is several thousand dollars which was not possible at the time of data collection. Riding an electric bike also would have positioned me as a 'cheater' within these groups, making me a problematic outsider to these cycling groups.

### **3.8 Semi-structured mapping interviews**

Along with riding with some of the participants, a semi structured interview and mapping exercise was deployed to think through cycling bodies and assemblages. Interviews have long been deployed in social sciences research (Dowling, 2016). Indeed, much of my previous research (Barrie et al, 2011; Jones et al, 2012; Jones et al, 2010) used qualitative methods to investigate attitudes, behaviours and beliefs about alcohol use, drug driving and alcohol sponsorship of sport. What differs in this study and what Dowling, (2016, p. 680) highlight is how the semi-structured interview has been enriched to aid "understanding interpretations, experiences and spatialities of social life". Dowling et al, (2018, p. 785), in the same series of reports on qualitative methodology in *Progress in Human Geography*, states there has been "an upsurge in

embodied, experimental, multi-sensory methodologies and a range of innovative approaches which are challenging and expanding the discipline in practice as well as in thought". For example, Waite (2015), used interviews to better understand 'knowing sweat' and how sweat is 'done'. Thinking through bodies that sweat, the interview can be a relational and embodied approach for researcher and participants. Other studies that have approached interviews as a relational achievement (Bondi, 2014; Longhurst et al, 2014; Waite & Welland, 2019) highlighting how affects, emotions and performative aspects of our daily lives can come alive through these interactions.

Following on from this and adding to the interviewers' toolkit, feminist scholars have advocated for a qualitative GIS/mapping approach, combining GIS technologies with qualitative research. This is despite cartography's traditional positivist epistemology (Leszczynski & Elwood 2015). Qualitative GIS is considered a productive method for not only empowering participants to share experiences but to investigate mobile bodies (Jones & Evans, 2012). In addition, qualitative GIS is underutilized in cycling research, with GIS traditionally being used in transport geography to determine cycling routes, traffic flow, and assessing cycling safety for commuters (Krenn & Titze, 2014; Winters et al, 2013; Yiannakoulis et al, 2012).

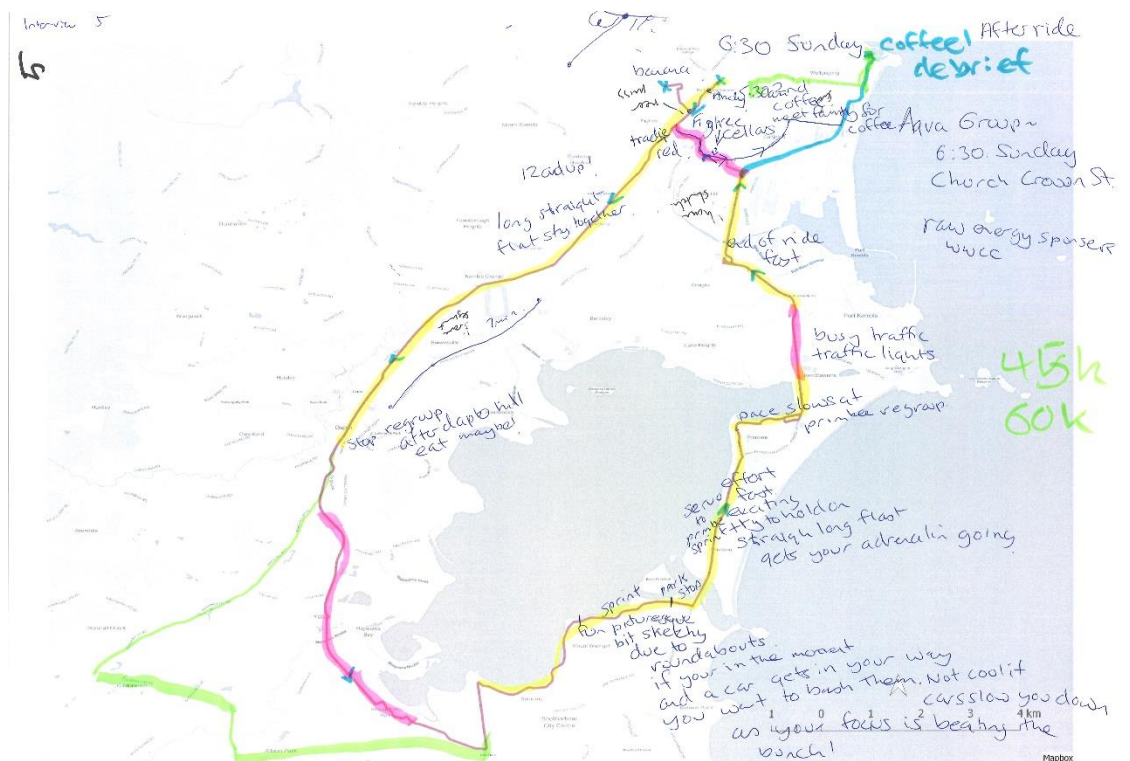
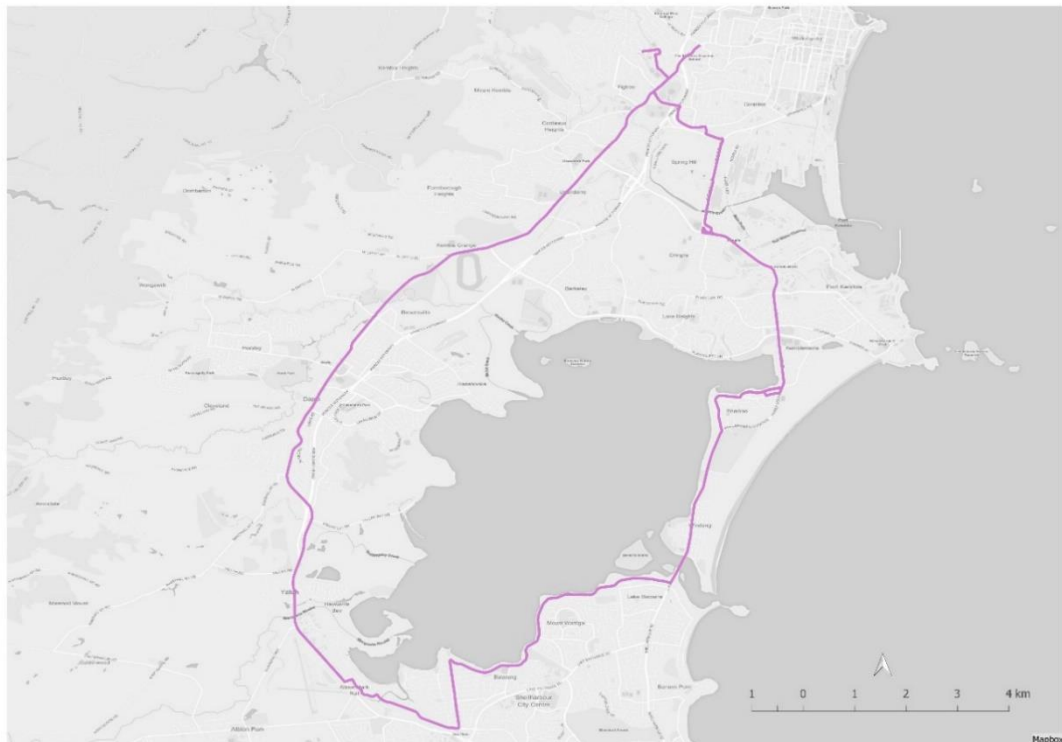
There have been increasing calls for mapping and interviews to be merged in cultural geographic research (Brennan-Horley et al, 2010). For example, in their Wollongong study, Gibson et al, (2012) gave participants a cartographically standard map and asked people to identify local cultural assets upon the map and explain why these places were important to them. This sketch mapping method was powerful in that it not only produced visually appealing spatial data, but rich narratives that gave the data additional depth (Boschmann and Cubbon 2014).

In this study, I adapted the sketch mapping approach for road cycling. As previously discussed, participants were familiar with spatial technologies through the GPS recordings of their rides. They were also familiar with interacting with maps through popular cycling apps Strava and Garmin Connect. Prior to the interview, participants were asked to send one or two of their GPS recorded cycles to myself as a .GPX file. These GPX routes were then transferred on to a paper map which was printed out and used as the base sketch map during the interview (refer to figure 3.3). To guide the conversation, participants were given different coloured highlighters to draw

particularly meaningful places on their cycle route. This meant places that they enjoyed cycling, places they didn't enjoy cycling, social stops and other places or stories that came up during the interview.

Being engaged with feminist methodological approaches, thinking through cycling bodies/senses, and paying close attention to the intensive forces of cycling, the maps triggered affective moments of their journeys. I would encourage participants to draw/write as much as they wanted to and if an interview's flow began to waiver, the map was a useful tool to re-engage and focus the conversation. Thinking reflexively through this, the maps also gave 'power' to the participants as they could easily reflect on their experiences through the personal cycling journey laid out in front of them. Although it was common for me to share some of my own cycling stories during the interview, my stories were used as a way to recount and connect with participants about particular places and spaces shown upon their map.

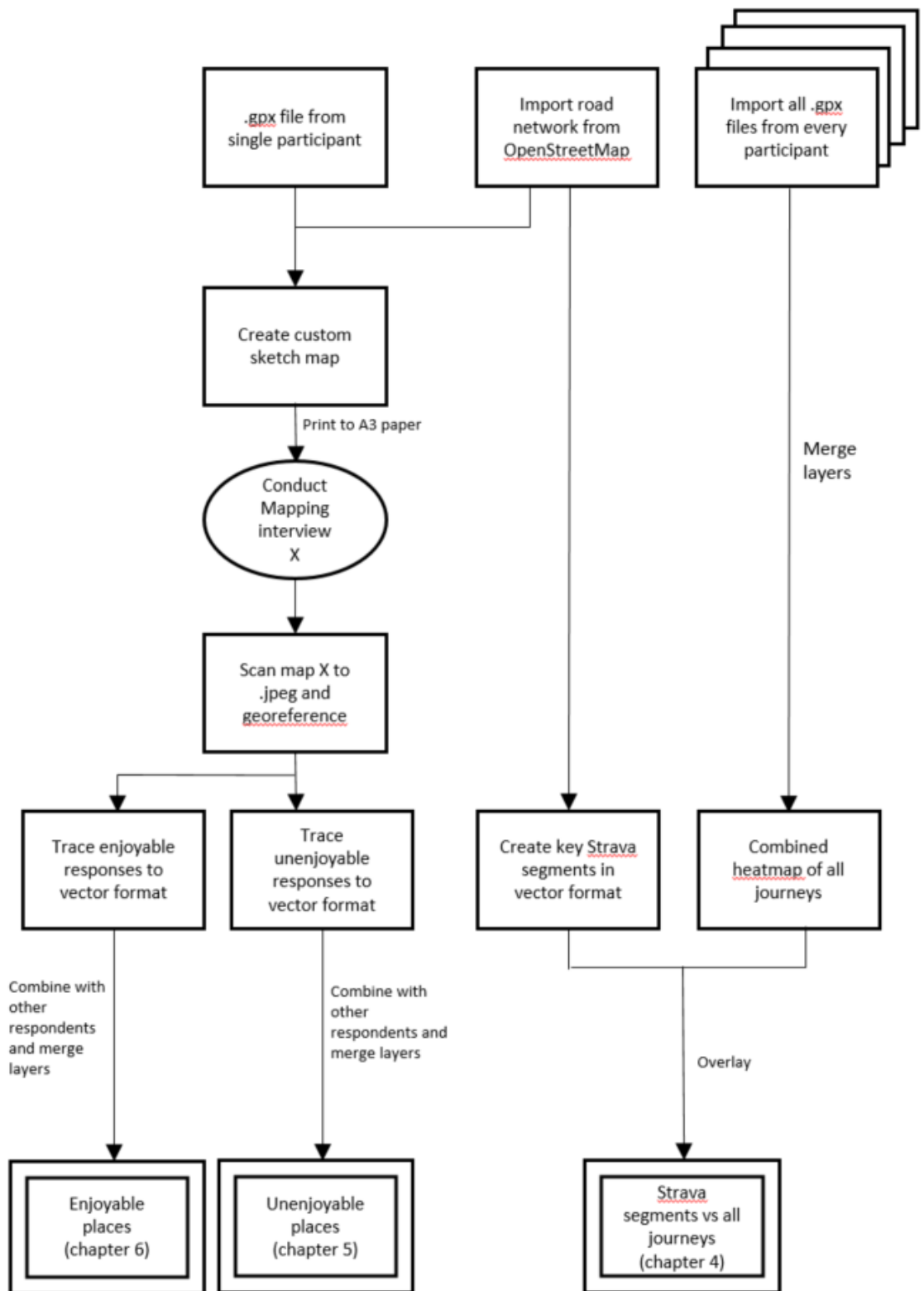
Figure 3.3 is a pre interview and post interview map that highlights the spatial mapping exercise as a generative knowledge practice. The post interview map shows the richness of the data that can be collected using this method. Most participants were engaged with the mapping process and once orientated, could colour and write over the paper map to share stories and zone in on particular locations. In each of the interviews, a blue highlighter was used to orientate participants to the map and key locations, yellow highlighter indicates places the participant enjoys riding, pink highlighter indicates places they don't enjoy riding or have had a negative road incident, and green highlighter represents social spots along the ride that have meaning to them. The various highlighted sections from the participant maps were used to develop the maps throughout this thesis as explained in figure 3.4.



**Figure 3.3: An example of a pre interview and post interview map.**

The post interview maps highlights the interaction between the interview and the affective intensities that emerge on the road.

Figure 3.4 outlines the workflow of the participant GPS data through the sketch mapping process. Following each semi structured mapping interview, the paper maps were scanned and converted to .JPEG files. They were then georeferenced against the previous participant .GPX files using ArcMap 10.4. Areas that were identified on the paper maps as meaningful (enjoyable, not enjoyable, social and other) were then traced for storage as vector layers. Maps were then overlaid across the full interview cohort according to each of the three key interview questions that promoted discussion about the most enjoyable places to ride, the least enjoyable places to ride and any social or other meaningful places on their cycling journeys. These various data were combined in a GIS to aid in making sense of participant narratives. A select few have been reproduced in the various results chapters.



**Figure 3.4: Data analysis workflow detailing inclusion of participant GPX data and sketch maps into mapping outputs**

### **3.9 Conclusion: Principles of Analysis**

This section describes the broad thinking towards the interpretation of the data created for the results chapters that follow. Although often treated as a distinct and separate part of the research process, Pink (2009) notes that by taking a sensory ethnography approach, analysis is not separate but always an ongoing process that should be considered throughout the research journey. Across the research design and data collection I lean heavily on Deleuze and Guatarri and in particular concepts and ideas from *A Thousand Plateaus* to guide the study. Assemblage, territory, becoming, affect and the refrain feature prominently in the three results chapters. I have described these terms in chapter 2 as well as the respective results chapters (Deleuze and Guattari, 1987).

Prior to commencing in human geography, my background (nearly ten years) was in public health and social marketing. In these disciplines, health is commonly thought of in linear, logical and categorical ways. Moving to human geography and encountering Deleuze and Guatarri's (1987) concept of the assemblage opened up new and exciting possibilities for understanding health and wellbeing, bodies and space. It challenged my previous research training and forced me to think beyond determinants of health and populations interacting in Euclidean space toward relations. Assemblage thinking remains open to the possible. As Colebrook (2002 p. xvii) notes, "we destroy common sense and who we *are* in order to *become*". Influenced then by Deleuze and Guatarri (1987), my results chapters predominantly follow the lines of assemblages and territories. I am drawn to these concepts because they offer transformative ways to understanding the cycling body as continually being remade through relations and (re)territorialisation.

Leaving from Sarah Pink (2009), I approached the ethnographic analysis with the view that knowledge is co-produced between researchers and participants. I remained wary of concerns regarding the active role of researcher in the co-production of knowledge and attempt to be reflexive throughout this process. As Pink (2009, 120) writes, 'creating an analysis is not an activity that is itself isolated from 'experience' or from the researcher's embodied knowing.' Hence, I understand the importance my own positionality within the research to give power to the participants as co-producers. The analysis is therefore embedded within feminist scholarship (Moss, 2002) that is alive to being mindful of my own lived practices and experiences.

Each results chapter that follows takes a slightly different path toward interpreting the

data. The specific approaches to analysis are outlined in each chapter, however, similar across each is the desire to think through connections, possibilities and becomings. To this end, it is helpful to think about the results broadly as a rhizoanalysis. This involves being attuned to the assemblage and what connections fold through them and what new things they connect to. Important to this discussion are the ‘forces that make and unmake territories’ (Livesey 2010). In the making and unmaking of territorial assemblages, attention turns to corporeal feminist scholars (Waite and Welland, 2017; Pavlidis et al, 2013; Fullagar et al, 2018, Braidotti, 2013; Probyn, 2003; Ahmed, 2004) to think through the affective intensities of life. How do these intensities territorialize, deterritorialize or reterritorialize relations in the various assemblages at play? The analysis chapters proffer a series of becomings, connections, tensions and possibilities for road cycling.

In the results chapters that follow, Chapter 4 focuses on the gendered subjectivities that emerge and unfold through a digital cycling assemblage. In chapter 5, I explore what fear and anxiety do when cycling on the road, thought of in terms of the process of territorialisation. In chapter 6, my attention turns to possibilities. Despite the fear and anxiety that emerge and dissipate while riding, other powerful forces of wellbeing come to the fore to keep people returning to specific cycling routes/journeys. I examine the wellbeing assemblage through the refrain and how rhythms, routines and forces help to arrange wellbeing on-the-move along repeated routes.



## Chapter 4

### Strava

#### 4.1 Prologue

This chapter predominantly comes from a journal article – authored by the PhD candidate (lead author) and supervisory team (co-authors) – that has been lightly edited for the purpose of fitting into this thesis. This chapter explores the gendered dynamics of one particular self-tracking platform: Strava. It offers the concept of the cycling assemblage to explore how gendered subjectivities are felt and gain legitimacy on-the-move through the ongoing negotiated relationship between cycling bodies and technology. Four vignettes demonstrate how Strava’s incorporation within road cycling assemblages functions as a mechanism of gendered inclusion and exclusion. It points toward the tensions of Strava as site of excess, where the pleasures and pains of the “quantified cycling self” may reinforce or challenge bodily and spatial boundaries associated with sporting masculine subjectivities and alternative femininities. A focus on cycling assemblages enhances our understanding of the spatiality, fragility, vitality, and multiplicity of gender-on-the-move.

Further details about the methods and recruitment can be found in Chapter 3: Methods.

The article citation is:

- Barrie, L., Waitt, G., & Brennan-Horley, C. (2019). Cycling Assemblages, Self-Tracking Digital Technologies and Negotiating Gendered Subjectivities of Road Cyclists On-the-Move. *Leisure Sciences*, 41(1-2), 108-126.

During data collection, it became apparent that participants were heavily dependent on technology for a range of activities whilst cycling. For some, not recording a ride was perceived as not riding at all. Technology ranged from self-tracking equipment (cycling computers, power meters, heart rate monitors, cadence monitors), phones (to capture images, to call for help), self-tracking apps (Strava, Garmin connect, Zwift) and for the most participants, their well-researched bikes and cycling attire. Self-tracking apps such as Strava became the collection point for a lot of this personalised data (heart rate, cadence, power, photos, distance, speed, routes and weather). However, it is worth pointing out that tracking and recording rides did not start with self-tracking apps. Prior to cycling computers and self-tracking technology, there were several participants who

had kept logs of each and every ride and race they had completed. During one interview, a participant was kind enough to share several of his log books to look through and discuss. An image from one of the log books is below (Figure 4.1). Although self-tracking apps have made different kinds of data more accessible and easy to collect, for a dedicated few, collecting, monitoring and assessing data has always been a part of their cycling practices and was used mostly used to assist with overall performance and training.

26/12/90 Round Lake in Morning via - WD - MM  
 Albion Park. 2 hrs -  
 SW wind -

27/12/90. MK x2  
 1st Time <sup>fast</sup> in 42 x (22-19-17) mostly in (17)  
 2nd Time.

Sun 30/12/90 Home → WD → Dapto → MM → Round Lake  
 Via Shell Hill → 5km TT to Warrarong.  
 → Wollongong → SP → Home. 3hrs.

Tues 1/1/91. New Years Day.  
 Home → WD → Dapto → HM → MM.  
 → Dapto → Home 2hrs

Wed. 2/1/91 Track Training at Wollongong Velodrome.

Thurs. 3/1/91. Home → HM Raced Zlka's → 3 to 4.  
 Very Strong NE Wind. - Rode quite well  
 today - felt Strong. Scott won the race.  
 HM → Home - 2 1/2 hours.

Fri 4/1/91 Track Racing → Went quite well in all events  
 except the first Scratch Race.

Sat 5/1/91 Morning: Home → Bulli → Thirroull → Home.  
 Strong NE winds.

Figure 4.1: Cycling log book image from one participant interview

## 4.2 Introduction

Corporeal feminist theories problematise taken-for-granted humanist notions of gendered bodies as socially constructed. Corporeal feminism acknowledges the importance of sets of ideas that forge understandings of gender but also draw attention to the embodied dimensions of gender. Following Deleuze and Guattari (1987), corporeal feminism conceives gender as always contingent and incomplete rather than fixed and social. In this article, I offer an embodied engagement with road cycling to understand the gendered practices and experiences that emerge in the context of road cycling cultures in Wollongong, Australia. Thinking through a corporeal feminist lens (Probyn, 2000; Braidotti, 2002), I extend the important theoretical and empirical contributions from physical cultural studies (PCS) (Olive, 2017; Thorpe et al., 2011), leisure studies (Waitt & Clifton, 2013), and digital cultures (Lupton, 2016a) to explore gendered cycling assemblages. In particular, I aim to better understand how gender is lived through the presence and absence of a self-tracking digital fitness application, Strava.

Introduced in 2009, the official objective of Strava (Swedish for ‘strive’) is twofold. First, it aids users in recording aspects of each ride to improve their physical fitness. Second, it builds and sustains social relationships regardless of ability, seemingly unified by a shared love of sport (Strava, 2017). Strava not only tracks the cycling body (heart rate, distance, times, routes, speed, cadence, power, elevation and calories burnt) but also shares this data within a social network of athletes underpinned by the myth of sports as an egalitarian activity. Hence, competition becomes possible.

Strava users can participate in monthly challenges, typically distance or elevation goals within a given period, or against others along “segments” of road, trail, or path. Barratt (2017) argues that Strava gamifies the cycling experience, tapping “into the basic desires and needs of the users which revolve around the idea of status and achievement” (p. 3). Consistent with other self-tracking fitness applications, it is not enough to be active, healthy, or “normal”; one must also be “the best” or “the best that you can be,” otherwise you are a failed “athlete” (Neff & Nafus, 2016). The self-tracker with the fastest time for a specific segment is crowned either “king” or “queen” of the mountain (K/QOM). Consequently, Strava provides possibilities to reinscribe conventional gender binaries that are dominant across many sporting codes and discourses.

Capturing and showcasing movement and fitness through digital technologies brings up important questions about data generation, storage, and use (van Dijck, 2014). For example, in 2018 Strava was embroiled in controversy after its global heat map exposed secret military bases (Hern, 2018). Equally, important questions remain around the politics of self-tracking (Silk et al., 2016). That said, I follow Lupton (2016a) and what she terms the vitality of self-tracking technologies. That is, we are interested in what the quantified numbers can do and how they can provide an affective account of gender. Like Pink and Fors (2017) and Lomborg and Frandsen (2016), I seek to better understand the sensory and affective dimensions of self-tracking data. Using a corporeal feminist approach, the gendered dimensions of self-tracking cycling data can be thought of as an expression of contingent becomings. In doing so, I help address a gap in the leisure and PCS literature on self-tracking and digital technologies.

This chapter is structured in four parts. It begins with a brief overview of gender in leisure cycling and self-tracking research. Following this, extending the work on digital data by Lupton (2016b) and Sumartojo et al. (2016), I outline what the concept of cycling assemblage might offer to thinking about connections among Strava, gender, and road cycling. Third, I discuss the sensory cycling ethnography that combines geographic information systems (GIS) and semi-structured interviews. Fourth, four vignettes are offered to illustrate how Strava's inclusion within cycling assemblages generates sites of excess and tension, prompting pleasure, pride, and sometimes confusion, anger, pain, and shame. The embodied experience of encounters with Strava may subvert or assert bodily and spatial boundaries associated with masculine sporting subjectivities and alternative femininities.

#### **4.2.1 Gender in leisure cycling research**

Cycling research in the automobilised global north focuses on urban transport, specifically the absence of purposeful cycling (Aldred & Jungnickel, 2014; Handy & Xing, 2011). In the context of changing climates, this strand is underpinned by the imperative to rethink transport futures beyond fossil fuelled vehicles (Banister & Hickman, 2013). Urban transport research points toward deficient cycling infrastructures (Bonham & Cox, 2010), the perceived dangers of cycling (Johnson et al., 2013) and taken-for-granted understandings of cyclists as both vulnerable road users (Australian Government, 2015) and deviant risk takers (Fuller, 2017). Mobilities research, on the other hand, seeks to better understand the embodied knowledges of

cycling through the intersections of bodily competencies, ideas, and materialities (Spinney, 2009; Jones, 2012). However, gender is left untroubled in this literature.

Nonetheless, road cycling for exercise is an emerging strand in leisure studies (O’Conner & Brown, 2007; Falcous, 2017; Glackin & Beale, 2018) and PCS (Brabazon et al., 2015), partly attributed to increased participation beyond conventional sporting structures; commonly men ages 35–44 riding in informal bunches. Since the 2000s, numbers of men who cycle long distances for fitness increased when most other activities declined (O’Conner & Brown, 2007; Titze et al., 2014). Well established in the literature is female underrepresentation (Heesch et al., 2012; Fullagar & Palvidis, 2012).

This literature demonstrates how leisure cycling is central to changing, circulating, continuing, and creating the practices and meanings of gender. For example, Falcous (2017) draws on mixed-qualitative methods with an informal road cycling group in New Zealand. Despite its underrepresentation of women who ride, participants did not view gender as a significant barrier. Falcous (2017) explains this contradiction via a middle-class ethic that foregrounds individual achievement, ability, and norms that dictate dismissal of structural barriers to participation. Thus, the research question was not how does gender shape physical cultures and mobility or vice versa, but rather how the proliferation of road cycling as an “alternative,” informal middle class sporting/leisure practice is entangled with technology (Wheaton, 2013).

These case studies illustrate how gendered power dimensions and identity relate to road cycling for fitness. For example, O’Conner and Brown’s (2007) ethnographic work revealed road cycling as central in the social construction of gender. Membership of informal road cycling groups provided opportunities to produce the gendered ideology, practices, and identity of the so-called “weekend warrior.” Cycling mobility induced fundamental changes in personal identity through informal competition on public roads. As Fuller (2017) argues, the growth of these groups, with varying codes of exclusivity and levels of risk-taking, fuels dominant media narratives of the “selfish, risk taking, vulnerable road user that hampers the flow of traffic and assumes a self-righteous social position relative to the mainstream car driver” (p. 301).

Likewise, Glackin and Beale's (2018) phenomenological analysis of 11 men who use racing bicycles demonstrates how the sheer joy of moving is deeply related to gendered ideologies along dualist lines, equating masculinity with public, expansive movements, and femininity with home, domesticity, and immobility (Cresswell & Uteng, 2008). This example reveals gender identities as bound up in the thrill, freedom, and sense of well-being from the physical activity, movement, and interaction with the English countryside.

#### **4.2.2 Gender in self-tracking research**

Research on self-tracking technologies, both conceptually and empirically, is an emerging strand requiring further attention. Increasingly our everyday lives are subject to quantification via mobile applications, bringing issues of surveillance and privacy to the fore (van Dijck, 2014; Andrejevic, 2005). From medical procedures, family life, and finances to sleep and fitness, a much greater emphasis on individuals taking control over their lives and bodies is in line with wider neoliberal rhetoric. Wearable technologies become part of a connected network of bodies and things, sharing physical activity data on social networks and fitness applications (Stragier et al., 2015; Lomborg & Frandsen, 2016).

Lupton (2013) identifies a need for work that seeks to better understand "how these technologies may operate to construct various forms of subjectivities and embodiments" (p. 257). To answer that call, Sanders (2017) takes a Foucauldian approach to analyse digital self-tracking to better understand the Western obesity crisis. Through a public health lens, she explores how postfeminist patriarchy and neoliberal-era biopower are aided by self-tracking to maintain, monitor, and regulate norms, encouraging practices that produce particular idealistic gendered bodies. Far from being gender neutral, white, male, fit bodies become privileged. "True" selves are attained through the defined parameters of a quantified body, and these parameters are visible and felt on bodily exteriors. Gamifying such endeavours are rarely fun, playful, or pleasurable.

This chapter illustrates how gender, self-tracking, and road cycling are conjoined, each shaping the other in both significant and understated ways. Addressing the social implications arising from the growth of self-tracking technologies like Strava in road cycling requires building upon research exploring reciprocal relationships among gender, physical culture, and mobility in leisure activities. In the following section, I

proceed through a corporeal feminist paradigm because of concern with articulating bodies, affective sensuous dispositions, doing, matter, discourse, and relationality.

### **4.3 Conceptual framework**

Drawing on theoretical work across the related fields of lively data (Lupton, 2016a), assemblage thinking (Deleuze & Guattari, 1987), and corporeal feminism (Probyn, 2000; Braidotti, 2002), I analyse the connections among digital technologies, cycling mobility, and gendered subjectivities. These fields come before relationality, bringing discursive interpretations into conversation with more affective and material modes of analysis. Influenced by the work of Savage (2013), Lupton (2016a), and Pink and Fors (2017), advances are made to the notion of lively data and the mind-body-environment relationship. I acknowledge that personal digital measurement provides not only new insights to bodies and selves but also has its own vitality, circulating within various social platforms, shaping peoples' sense of self, social relationships, contexts, and behaviours. Informed by Anderson's (2009) concept of transpersonal intensities (1987), Sumartojo et al. (2016) offer the concept of "datafied space" to reveal matter's agentic properties and specifically digital technologies in shaping cycling as a transport mode. This work is centrally concerned with embodied experiences of peoples' encounters with digital technologies and data. To do so, Sumartojo et al. (2016) use Lupton's (2016a, p. 336) notion of "digital data assemblage" conceived as:

...configurations of discourse, practices, data, human users and technologies. Digital data assemblages, while they are material, are also ephemeral and motile, constantly changing as users' new encounters with digital technologies occur and as different data sets come together and interact and are taken up for a range of purposes by various actors and agencies.

These interventions are important for what they reveal about digital data and technologies as nonhuman actors in shaping mobility choices. Also, this relational thinking holds utility for PCS scholarship concerned with gender, which is currently lacking. This chapters shows how "lively data" and "datafied spaces" can be extended by drawing on corporeal feminism, providing insights into how gender is constituted on-the-move somewhere through engagements with digital technologies, self-tracking, and the data itself.



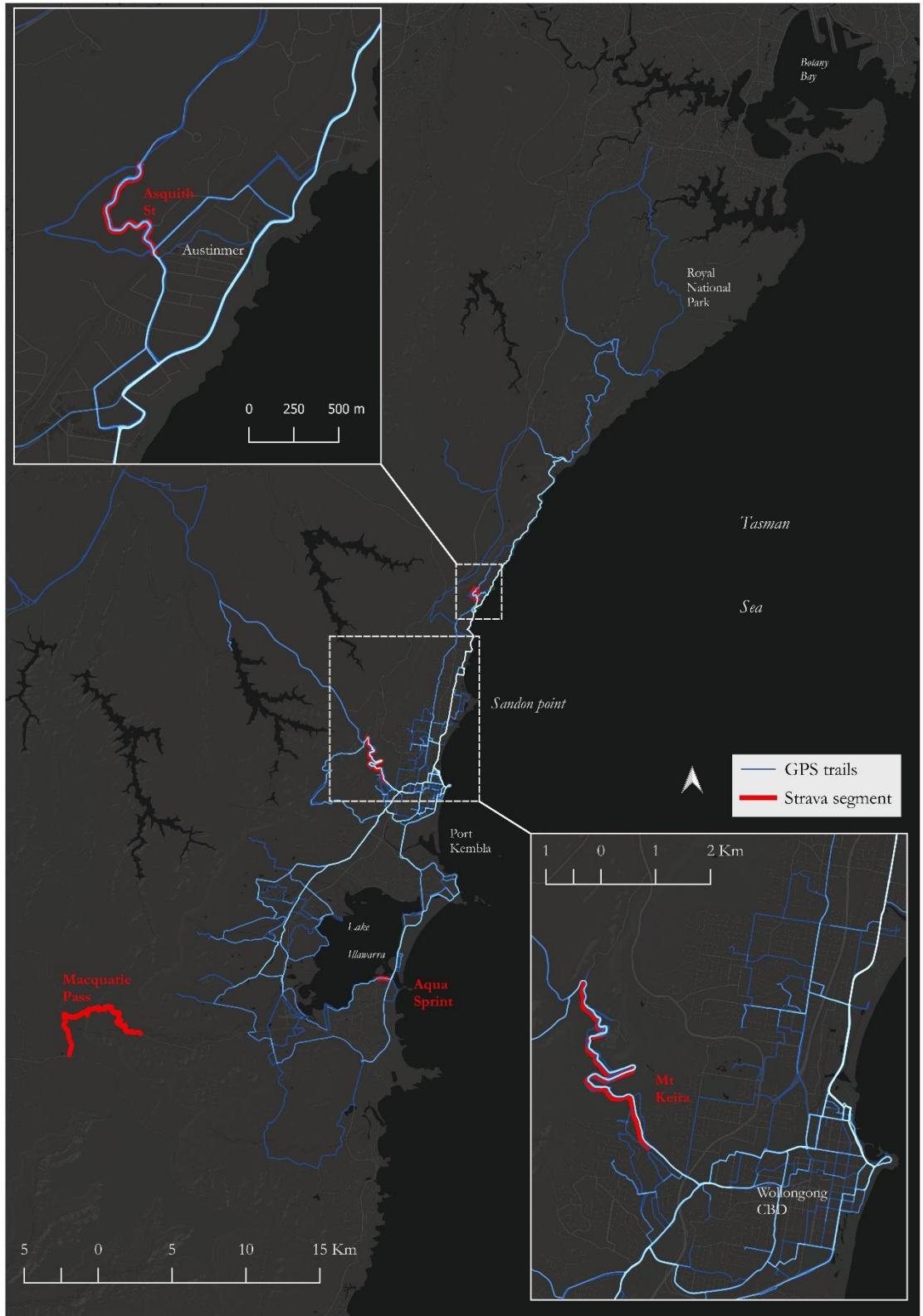
Deleuze and Guattari's (1987) concept of assemblage is helpful in conceiving how people come together with bicycles, Strava, cyborg bodies, public roads, policies, ideas about cycling, and people who cycle to achieve gender on-the-move somewhere. The cycling assemblage reveals the material and social entities at work in stabilising cyclists' gendered subjectivities. Thus, gendered cycling bodies are conceived as felt while on-the-move, an ongoing relational process of both subject and place-making. After Braidotti (2002), I understand gendered cycling bodies as an example of "the actualisation of the immanent encounter between subjects, entities, and forces which are apt mutually to affect and exchange parts with one another" (p. 68). Within the cycling assemblage we focus on encounters between connected cycling bodies and Strava. After Deleuze and Guattari (1987), Braidotti (2011) argues that bodies are sites where both expressive (ideas, affect, and emotion) and content (space, human and nonhuman bodies, and objects) forces operate. This establishes our concern with how the emplaced sensations of mobile bodies, things and material contexts, alongside social and cultural norms, may operate to arrange spatially contingent understandings of gender while road cycling.

This relational approach gives greater agency to the nonhuman world, including digital technologies, and avoids reducing the self to just the body by acknowledging the place, ideas, things, affects, and emotions that help stabilise the subject. In this sense, the gendered bodies of road cyclists are in part arranged through taken-for-granted ideas that shape routinised practices, including dressing for cycling, routes, conversations, and technologies. Simultaneously, gender is understood as assembled by specific material and social configurations; however, there is an important visceral, affective, and emotional dimension to the gendered cycling body that is always spatially contingent. Poststructuralist feminist scholars point to the context specific practices and embodied knowledge of gender (Fullagar & Palvidis, 2012, 2018). Hence, gender is conceived as always spatial, multiple, vital, and fluid rather than fixed, dichotomous (male/female), biologically determined, and natural.

#### **4.4 Participants' use of self-tracking apps and quote selection**

All participants used global positioning system-enabled bike-mounted computers. Eighteen uploaded their rides to Strava. This diversity allowed us to engage with a wide range of cycling life narratives, routes, performances, and experiences. During

interviews, participants often deviated from their showcased routes to share experiences and events from other places in and around Wollongong. For example, David discussed an overwhelming moment near Macquarie Pass (see Figure 4.2) despite this not being part of his showcased route at the time. Figure 4.2 illustrates the Strava segments that the participants identified as changing their bodily capacities to affect and be affected. We concur with Merchant (2017) that maps are helpful “tools to instigate deeper qualitative reflection and engagement on social and cultural practices that foreground the role of the mobile body in space” (p. 184). Participants’ reflections of the data generated by self-tracking, stored and shared in Strava, provide key insights to how gender is experienced on-the-move.



**Figure 4.2. Composite map of participant GPS routes incorporating key Strava segments in red, Wollongong, 2016/17.**

I approach the ethnographic analysis with the view that knowledge is coproduced. As Pink (2009) writes, “creating an analysis is not an activity that is itself isolated from ‘experience’ or from the researcher’s embodied knowing” (p. 120). Hence, it is important to understand my own positionality within the research to give power to participants as co-producers. As lead author, interviewer, and road cyclist I became acutely aware of how my own gender was intimately connected to experiences of cycling with Strava. Prior to the study, I used Strava to achieve a sense of masculinity configured by narrow understandings of what it means to be a sportsman — speed, fitness, and strength. Alive to the gendered dimensions of digital technologies, my cycling style subsequently changed. Despite still recording most rides, I now pay less attention to competition, speed and distance and at times ride technology-free. This opens up possibilities that are more attuned to the sensuous experience that cycling affords. Our analysis is therefore embedded within feminist scholarship that is mindful of the researcher’s lived experience.

Using an ethnographic narrative analysis, transcripts were reviewed under thematic ideas, including thrill, risk, pleasure, danger, anger, frustration, shame, and pride in the first instance. The key idea of excess emerged through road cycling with and through digital data. We follow the lead of Anderson and Austin (2012) and Parry and Johnson (2007) to learn more about gendered subjectivities as an ongoing achievement, assembled within the relationships between material and social entities. The following four vignettes provide important insight to the embodied knowledge of Strava as a site of excess, challenging and reconfiguring social and spatial boundaries of masculinity/femininity. In their emergent gendered subjectivities, digital data and technology played a key role in understanding themselves as cyclists that were made and lost in particular segments of the ride while on-the-move.

#### **4.4.1 Negotiating alternative femininity on-the-move with Strava**

Liz, a fitness coach, rides with several predominantly male cycling groups and is also a member of a women-only group. Liz strongly identifies with cycling sports culture. She refers to herself as a “cycling chick.” Liz has a personal history of competitive cycling, but she no longer does so due to family commitments and time constraints. Similar to Barratt’s (2017) findings, Liz enjoys the competition and gamified elements that Strava provides, placing great value in holding numerous QOMs. Liz embraces some of the

“masculinists” norms of sporting cycling culture however patriarchal they may appear to others, including ideas of “being the fastest.”

Liz illustrates the gendering of social relations amongst road cyclists through monitoring activities on Strava. In the male-dominated cycling bunches, Liz illustrates the sexualisation of women that comes from the surveillance imposed on her through Strava:

It depends, I like to move around a lot of the groups so I’m never stuck with one particular person, whereas a lot of people that I know, they call you a “cycling slut.” [Laughter]

There’s like terminology for it. If you’re wholly and solely stuck with that one group forever, if you just like bar them, it’s like you’re divorcing them. You know what I mean? ... And it’s like offensive, they find it offensive... And I try and move around so no one sort of gets too offended. And they’ll see your Strava, they’ll go, “You didn’t ride with us today but you rode with them today. What are you doing?”

Cycling masculinities involved the sanctioned sexualisation and surveillance of women. As a way of negotiating cycling-sanctioned femininity underpinned by sexualisation and surveillance, Liz moved between rather than remained with one group. Liz, a skilled and experienced woman who cycles, is interpolated by these recorded movements in Strava within men-dominated cycling groups in terms of sexual promiscuity rather than ability. Liz’s bodily experiences, once tracked, are felt in shameful, sexualised, and public ways which reinforce gender inequalities. Confirming Barratt’s (2017) concern, Liz perhaps colludes with the social norms of sexism rather than rejects the term “slut” for fear of being excluded from the groups and their social interactions on Strava.

Liz took obvious pleasure in competing against men. Strava heightened this pleasure, providing credibility by recording times over a defined segment. Her alternative cycling femininities were performed over these segments. Liz describes how embodied senses were critical for racing along one of her favourite Strava segments: “Aqua Sprint to park,” a short sprint (0.6 km) near Lake Illawarra that has been cycled 25,713 times by 2,143 Strava athletes (see Figure 1):

*And most of these guys don’t race. If you race, it’s all tactical. As soon as they go, you can hear the gears, you know you’re on your drops, you’re gone, you’re*

*out. If you falter, you're gone, you're off. So, you see people, "Oh, how do you do that?" I go: "It's all like you put yourself in a position where you can find the best wheel, hold onto that wheel and don't let anyone muscle in."*

Like Spinney's (2006) account of the rhythmic hybrid cyclist, the competencies required to race are deeply embodied and felt on-the-move. Unlike Fullagar and Palvidis (2012), where a "slow mobilities" is embodied by women in a cycle touring event, racing Strava segments requires a different set of abilities such as speed, aggression, and strength. Liz performs her alternative cycling femininity, challenging the social norms and power structures of the road when riding with men who cycle. She asserts her body and position within the group by taking on masculine traits privileged in these groups by not letting "anyone muscle in" on her territory.

The orientation toward digital platforms in road cycling illustrates how gender identities are constructed, negotiated, and contested temporally and spatially. Strava enables Liz to construct her gender identity as QOM on specific segments of road, a gender identity that is informed by classed, sexed, and racialised ideas of sporting masculinity (Wellard 2002).

*Yeah, no question. [Laughs] You can see it, it's super competitive. Whereas your friend, their ultimate goal, and chicks have told me, that I've trained, my ultimate goal is to go out and beat you on your QOMs blah blah blah." I'm like, "Go on, then." [Laughter] "And if you do, good on you, that's good, but I'll go back and try and get it back."*

The case of the "cycling chick" challenges pervasive notions around femininity and cycling in the context of racing specific segments on Strava. Reproduced through these close, personal exchanges and social relationships are the power, authority, and control associated with road cycling masculinity that prioritises competition, risk, winning, speed, and physicality. On the bike, friends become rivals and a social hierarchy is produced through cycling masculinities, enhanced by the affective qualities of self-tracking data and surveillance. The differences Liz perceives within this group of women and her sense of self as a "cycling chick" is assembled in relation to her embodied knowledge of Strava segments and shared data. One unintended consequence of Strava is that by creating a space for sociality and competitiveness, it also creates a site of exclusion for those who do not wish to compete or are further down the gendered hierarchy that Strava privileges through the QOM achievement.

In Liz's narrative, a topography of risk taking emerges through the repertoire of Strava. Creating situated risk practices as "fun" is both an integral and normative part of becoming a racing cyclist (Albert, 1999). The social norms associated with masculinity in road-cycling culture encourage risk taking, facilitating alternative gender experiences to come to the fore. For example, Liz distances herself from the feminised domestic realm of home one Christmas morning to exercise risk taking on Mt. Keira. Mt. Keira (both ascending and descending) is a prized segment in Wollongong (see Figure 1). The segment named "Keira: Descent" has been attempted 25,965 times by 1,452 riders. The descending average gradient is minus 6% and the segment is 5.7 km long.

*Christmas Day. Kids got up at like 4:30, they woke me up; they had all their presents. Pete went back to sleep. I go, "I'm just going up Keira."*

*[Laughter]*

*6 o'clock in the morning, no cars, public holiday, nothing open, no one there. Perfect wind, westerly, I had it all planned, right. Got on my bike and just floored it, no brakes, nothing, it was all on. Tight on the corners. But that was risk taking, I'd never ever do it again. If anyone gets that off me, good on them.*

Liz demonstrates how her cycling subjectivity is embedded in specific places as Strava segments. Through understanding gender as an assemblage that folds together material and social entities, a better understanding is given of the connections cyclists have with places they move through. Liz illustrates how highly valued traits with racing cycling practices are associated within sporting masculinity, including risk taking, toughness, speed, physical strength, balance, and agility (Albert, 1999). These provide Liz with resources to construct an alternative form of self-presentation, critiquing traditional domestic femininity and motherhood and purveying a strong sense of self.

Simultaneously, embodied senses (feel, touch, and sight) are crucial for understanding aerodynamics, speed, and knowing the location of every bump in the road. Liz's gendered identity emerges within a cycling assemblage through the lived spatial (and digital) rivalries, temporal and topographical understandings of place, digital technologies, physical training to fine tune bodily competencies, and sensuous cycling experiences. Strava enables Liz's plan to execute the perfect segment, writing herself into Mt. Keira as "Queen of the Mountain."

Mary is an occupational therapist, mother, and cyclist with more than 15 years' experience. She primarily rides for fitness; she is between the ages of 40 and 60. Mary cycles alone and with others. While using Strava as a self-tracking technology, she no longer shares data within the social cycling realm, hinting at tensions produced by broadcasting her "quantified self" on public domains as a form of dataveillance (van Dijck, 2014; Sanders, 2017). Mary illustrates how self-tracking and data sharing may result in unhealthy competitive behaviours:

*I don't follow anyone. I don't know if anyone follows me, but I don't try to follow, I'm not interested. I just think it sets up competition, you can't help it then. I think once you've got numbers you want to see them change, and I'm aware I do that but I don't know that's a healthy thing....because each time you want to go faster.*

Mary illustrates how technologies and the practices they encourage generate a site of excess, where the pleasures of a digital record collide with intense pressures of internalised competition. Mary's quotation raises an important question in the coming together of digital and bodily experiences, namely, "is road cycling still considered leisure when reconfigured as a competitive digital practice?" Mary attempts to distance herself from Strava's self-tracking cultures that prioritise chasing segments and going "faster." On the other hand, she recognises the affective qualities of data and how they may enhance the pleasures and pain of cycling.

Mary explained how she is alert to the gendered politics of personal data generated by self-tracking when shared on Strava:

*I know I've had a friend who said, he's the same, he exercises quite regularly, most days, and he had someone comment to say, "You've exercised for sixty-something days without a break." And he went, "Wow, I think this guy is stalking me. I didn't even know that."*

Accessibility to behaviours, routes, and times of others gives the potential for digitised monitoring of the body to be interpreted within the gendered sporting discourses of cycling as "stalking." In this case, sharing on Strava allows bodies to become "amenable to regulation, promote normalisation, and lead to individuals to adopt self-disciplinary mentalities" (Sanders, 2017, p. 39). This is particularly troubling within the



sporting realm of the masculine since particular “fit” bodies are normalised and celebrated; by broadcasting your ride, you broadcast your body to be judged. Mary points to the major repercussions on the privacy of women who cycle and share information. Moreover, Mary demonstrates how sharing digital data within self-tracking cultures opens possibilities for bullying:

*I enjoy this and it's for me. It doesn't matter what anyone else thinks,” and I don't want to deal with people saying, “That's too much,” or, “That's not enough,” or, “Have you done this?” I'm not really that interested ... I'm not one of those people if I haven't recorded it I haven't done it; I have done it. It's just a bummer you can't look at it and go, “Oh, that was a bit faster today,” or, “I did that a bit better.”*

Mary alerts us to how surveillance occurs within the social realm of Strava and how this tension is felt. For Mary, the meanings and values of digital data are in terms of increasing bodily capacities and capabilities along the conventional lines of sporting masculinity. However, she switched off data sharing because of the pervasiveness of competition, monitoring and positioning of digital data as proof the ride took place, unlike riders in Barrett (2017) and Sumartojo (2016). Here we see Mary challenging masculinist knowledges of the quantified-self produced through self-tracking by embracing her embodied cycling knowledge. Similar to Mary, the majority of our participants mentioned the phrase, “if it's not on Strava, it didn't happen,” pointing to feelings of shame and perhaps fear of not keeping a digital record of every ride. Concurrently, her experience points to how the bodily experience of the ride itself become secondary to the pressure (internal and external) and disciplined nature of the digitised realm.

#### **4.4.2 Negotiating conventional sporting masculinity on-the-move with Strava**

David is a 40-something exercise scientist with more than 15 years' cycling experience. He cycles for exercise and transport. For exercise, he cycles both alone and with a men-only group. Strava plays a critical role in his experience of his sense of self through converting the expectations within the road cycling assemblage. Initially, David had a sense of inclusion within the Strava cycling community. The affective economies generated by the digital-self and Strava brought specific kinds of arrangement of disciplined and dominating bodies on bikes, confirming his investment in sporting masculinities as “natural” and “given.”

*Yeah. Consumed. Wanting to beat segments, and that's typical of early users. I loved it. Absolutely. This was fantastic. Who's giving me "likes" and stuff like that. And it was good, because I also, I needed to lose weight, it served a purpose, and still does.*

David illustrates how he derived subjective legitimacy as a trim, healthy, and strong cyclist. The affective economy of digital output shared through Strava transformed roads into competitive segments associated with masculinity, mastery, and speed. The social capital attached to each segment enabled David opportunities to become a winner by achieving personal bests. This is recognised by Strava in the "achievements" page displaying "trophies" or personal best times. David was proud of his bodily achievements shared within Strava's digital economy. After Deleuze's use of the affective capacities of bodies, Probyn (2000, p. 129) reminds us corporeal pride prevents the capacities of our bodies to be "a judge of ourself." For David, Strava became fundamental within a cycling assemblage in the achievement of a conventional sporting masculinity and social identity. Far from spontaneous play and ludic activity, cycling bodies become disciplined through the intrusion of Strava's formalised administrative structures and social hierarchies, accompanying particular versions of cycling masculinity associated with riding in pelotons.

Heikkala (1993) argues that without reflection, the pursuit of competition may sustain a fascism based on a love of power. David goes onto illustrate one such reflective moment after being struck by a car:

*And, it was a ride recently ... See, I got hit by a car six months ago. We'd just gone up Macquarie Pass, I was cool with that, and all of a sudden we were racing on that single lane road and I had a 10-second peak of 650 watts. And then a car came the other side, overtook a car, and that was too much. I didn't say anything to anyone; I just needed to get home, to escape. But, that really turned me against the group.*

David demonstrates how gendered bodies are shaped by expressive and material forces. Bodies are always characterised by their mobility, transitory nature, and changeability. Cultures of speed help demonstrate commitment to the hierarchy. Risk is crucial, and racing enhances the risk. A car crash undermined any gendered subcultural benefits and meanings arising from mastery over the road. David needed to "escape" the gendered subcultural values, practices, and meanings of road cycling. Being hit by a car and then

returning to cycling may be understood as an effort to reaffirm patriarchal gendered subcultural practices, for example, as a painful badge of honour (Evers, 2015). However, for David, his experience of vulnerability on the road became a turning point to how social hierarchies operate with road cycling groups that empowers “top dogs” that express mastery through digital-tracking, and persecutes others (Daley & Rissel, 2011).

*You have your top dogs within the group I ride with. I have had others voice the opinion, “Why are we racing all the time?” I went on a long ride, 110 km, and at one section I was pushing over 500 watts, and I’m going, “What are we doing this for?” ... I’ve actually switched-off all the alerts, all the segment stuff, to say how I’m going, because I don’t ... the technology promotes too much racing, so I’ve switched all that off.*

After incurring injury, David actively questioned the prominent cultural roles and identities embodied through Strava. In this sense, his lived experience of Strava constituted cycling as a site of excess through the congruence of that which appeals and disgusts, and thus is a contested social and cultural terrain. At the same time, Strava is hurtful by how this digital technology is employed (bullying) to reassert gendered and classed boundaries between bodies on and off the road. This is an important point about the excess and politics of Strava, which David discusses:

*You’ve got people who are from Shellharbour who are coming riding in to meet, to ride, and then you’ve got people from the north. With Trump, the people from the south have nominated themselves as the Mexicans, but socially it’s started to heat up. There’s this rivalry going, within the group, to the point where some people from the north went out and intentionally beat KOMs of people ... And I’m just thinking: “Boys ... this is not going to end well!” And, that’s what disappoints me about Strava, is it’s not this ... And that’s why I try to normalise it. It’s not about the competition it’s about you being in your middle-age as healthy.*

Strava complicates any health and social benefits arising from road cycling by heightening difference along lines of geography, class, and gender. David calls the affective economies of masculinity generated by Strava into question when it operates to exclude middle-age men based on ability and class rather than encouraging

participation to maintain a healthy mind and body. The dynamics of shame start to reconfigure the pride that David once felt towards his men-only group.

Despite feelings of shame toward the practices encouraged through sharing digital data, within his men-only group, being free from the Strava provided David with opportunities to explore alternative ways of being a cyclist. David became invested in out-of-the-way places. David's talk to his experience of cycling these places is oriented by the "flow" rather than "hammering." Without Strava dictating how to ride, David anticipated a cycling assemblage as sustaining a place to relax and refresh stressed bodies rather than to compete and reconfigure patriarchal hierarchies.

*I think the reason why I enjoy cycling ... is that I can interact with the environment and I get this flow experience. And my absolute favourite section of road is closed at the moment, Clive Bissell (Drive), at the top of (Mt) Keira. I never go hard on that section, I just get to the top of Keira, hammer myself, then I get to Clive Bissell, roll down, turn around and really flow right up. And, I just look around and quite often I'm on my own, and that to me is the absolute favourite spot. No cars, birds, I just feel like I could be hundreds of kilometres away from home, so that's really nice, particularly if I've had a shit day at work, I'll do that one.*

The flow is important to how David's body is orientated while cycling certain outlying places alone and nurtures his sense of wellbeing. A powerful set of ideas about pristine nature as the antithesis of the city help assemble an alternative sense of self through "flow" that is incompatible with speed and hammering oneself. This disrupts the emotional and gendered norms predicated in Strava. Peripheral places become mingled with ideas of pristine nature and a slower pace of life, offering escapist pleasures (physically, emotionally, and spatially) (Glackin & Beale, 2018). David experiences these pleasures viscerally through the absence of everyday sounds and objects such as cars and the presence and soundscape of birds on a tree-enclosed section of road. Sounds rather than Strava now play a key role in the cycling assemblage bringing together meanings, subjectivities, bodies, and cycling technologies. Hence, alternative cycling masculinities are made possible through radically different senses that accompany cycling beyond the metropolis and hegemonic masculine ideas.

Peter embodies the white, middle-class, masculine sporting body after years playing competitive football. He started cycling after recurrent football injuries and is in his late

30s. Self-tracking and sharing times from Strava segments became a way to keep fit and perform a conventional sporting masculinity in the presence of other men while managing his bodily capacities. He has around five years of road cycling experience. He is a full-time tradesperson, married with small children. At the time of the interview, Peter rode several times a week, self-tracking each ride on Strava accompanied by either a close friend or as part of a men-only cycling group.

Peter illustrates how road cycling bodies and space may be understood as sites of excess. The pleasures and pains of self-tracking and sharing via Strava were associated with a “sickness” that prevented him from spending time on the weekends with his family. The fear of becoming a failed cyclist in the digital realm only served to reinscribe the win/lose mentality of past sporting endeavours.

*And I knew, probably shouldn't have even been out because it was raining but obviously because I was like, I had a sickness for cycling then. If I don't do this 40k's today then I'm finished, I'm done. That was my mindset back then. It was, it was a sickness. We were riding morning and night... Yeah see, I blame Strava for a lot of craziness.*

Peter provides insights to this “craziness,” illustrating how this men-only cycling group competes on Asquith Street, Austinmer, a steep uphill segment (700 m, average gradient of 9% with 40,287 attempts by 1,712 cyclists; see Figure 1). Working within the naturalised assumptions of sporting masculinity, a competitive ride was organised just prior to Christmas to re-establish the cycling group hierarchy through the dynamics of pride and shame tied to bodily capacities, fitness, and performance showcasing on Strava. Peter is complicit in these activities to prove his manhood:

*So, this ride here was actually to see who would be eating chicken nuggets at the Club for the Christmas party. So, from Christmas to Christmas, if you don't get a sub 3 (minute) on Asquith; then, you're eating off the kid's meal at the Club at the Christmas party, okay; and that's where the banter kicks in too. They're a few blokes drinking fire engines, red fire engines with their nuggets.*

How ridicule is employed to sustain sporting social hierarchies is well versed within the literature (Thorpe, 2012; Waitt & Clifton, 2013; Evers, 2015). This coming together of the digital, the body, and the environment is further solidified in Peter's narrative,

illustrating the bullying culture that occurs within this group, reliant upon a socialisation process to enable a specific version of masculinity to fluoresce. For a version of cycling masculinity closely aligned to bodily fitness, speed, and risk taking to emerge, slower bodies must be shamed and understood as less valued. To gain legitimacy and secure distinction in this group, cycling bodies do so forcefully within gendered desires, movement, and styles of riding. Here it is the affective and emotional response of not achieving a “sub-3” riding Asquith Street that alerts us to the fragility of masculinity. The affective and emotional forces of shame are used to sustain the bonds of masculinity among self-identified men.

For Peter, becoming a father acted as a moment of reflection on how far he was prepared to go with the “craziness” of his cycling practices that achieved a specific gendered subject position. Peter began to question the performative dimensions of cycling masculinity that are conceived as a becoming-with Strava and other digital technologies:

*I actually felt a sense of I'm lost. Was that slow? Was that fast? Is my heart rate alright? Am I going to collapse here? 'Cause you could always just monitor it. But yeah. That's how bad, that's how much it plays with your mind. Just having a little piece of technology on your bike, man ... Some days I'll just go out and leave the Garmin at home. Just so I can ride. So, you're not, but, and they're good days too. Where you just enjoy it. Instead of trying to, heart rate's up or speed's down, cadence is low. Just leave it at home, just go for a ride out to Austi(nmer) or something and then it makes a big difference, too.*

Peter illustrates how his sense of self is always being judged by the digital measurements provided by Strava and technology. He further illustrates how he was constantly policing himself and finding legitimacy while riding according to a specific version of cycling masculinity as fast and fit aided by Strava. The internal emotional conflict on technology-free rides is clear; however, Peter is rediscovering the pleasures of cycling and reconnecting with his bodily senses and environment when not invested in the activity at a subjective level. This is felt through not knowing his heart rate at specific times and having to relearn to trust his body after a reliance on technology telling him how he is feeling and when he is feeling. Trusting his body opens new possibilities for Peter outside the world of the conventional white male sporting body

where he can simply “enjoy it” without the pressure of self-tracking. For Peter, this form of leisure is liberating.

#### **4.5 Implications and conclusions**

‘When we designed Strava, we wanted it to be additive to the way you already were an athlete. We didn’t want to distract you and make you do something different’.

Michael Horvath, Strava co-founder, Runners Connect (2016)

This quote illustrates Strava’s design intentions were not to make users behave differently. However, leisure practices and subjectivities are constantly changing, through their relationships among materials, technologies, and bodies, alongside embeddedness in social structures of gender, class, and ethnicity. Self-tracking digital technologies are now integral to making these relationships present.

Extending the work of Barratt (2017), this chapter illustrates how experiences of self-tracking profoundly affect road cyclists’ gender performances. Through engagement with corporeal feminism, I conceptualised the road cyclist’s gendered subjectivity as emergent — a spatial achievement contingent upon bodily encounters and entanglements with discursive, affective, and material entities accompanying road cycling mobility. The concept of cycling assemblage was offered that conceives gender as multiple, fragile, and vital. Cycling assemblage locates gender neither solely biological nor socially constructed but as an ongoing achievement through the interplay between the messy entanglement of materials (including bikes, digital technologies, digital data, plants, roads, and weather), sets of ideas (including those of sport and gender) and the immaterial (including affective intensities that increase or diminish the body’s capacity to act and be affected). The messiness of the lived experience of cycling is highlighted through the four vignettes, where participants perform and feel a range of gendered subjectivities. The analysis illustrates surveillance fears, the pleasures and pressures of winning according to patriarchal sporting values and both losing and finding oneself in the embodied knowledge of digital data and digital technologies. Like Sumartojo et al. (2016, p.39) the chapter illustrates how digital data are “related to being-in-the-world” and part of how “the everyday world is felt that includes the sensory and affective.” Crucially, these arguments are extended by illustrating how the

sensual experience of digital data as a site of excess may either subvert or assert bodily, spatial, and social boundaries along conventional gendered sporting masculinities/femininities. I illustrate the vital qualities of digital data in measuring cycling performance and how the cycling assemblage is converted, bringing forward alternative ways of experiencing the gendered dimension of being and becoming a road cyclist.

This chapter provides a first cut in thinking about the role of self-tracking, digital data, and digital technologies in gendered dynamics of road cycling cultures. While road cycling with self-tracking technologies can sometimes create thrills that reconfigure gender along conventional dualistic categories of men and women, the embodied knowledge of digital data can also create unexpected possibilities from the dominant spatial practices. For example, cycling bodies when materially unencumbered from digital technologies activate an expression of self-care and wellbeing. Future digital leisure culture research will benefit from corporeal feminist thinking that conceives gender as a material and expressive force produced in specific assemblages comprising a variety of practices and animated by experiences. To better understand the pleasures and risks of digital leisure culture, I encourage others to explore how gender is lived in and through bodies. Future research may wish to pay closer attention to how people choose the “right” choice in relationships to recording, sharing digital data, or jettisoning self-tracking altogether as part of a leisure assemblage.



## Chapter 5

### The Road

#### 5.1 Prologue

In January, 2019, Thomas Harris approached two road cyclists riding two abreast in Jamberoo, 20 minutes south of Wollongong. Illegally positioning his vehicle on the parallel shared pedestrian/cycle path, he drove alongside the cyclists riding on the road, recording his abuse on his smartphone:



**Figure 5.1: Still shots taken from Harris' phone video footage that he posted to social media**

Harris: "What's the point of us spending this money if you're not going to use it [the shared path], you f---ing d---heads,"

Cyclist: "Pull over, so I can have a chat,"

Harris: "F--- off, f---ing idiot. Use the f---ing bike track, you dumb c---."

The footage gained significant media attention. Reactions varied across drivers, cyclists and the police. Harris' aggression highlights his complete disregard for cyclist and pedestrian safety. Of particular note was his ignorance of the road rules and overt desire to exert authority as a driver over the road.

The two riders that Thomas abused were off duty policemen. They pursued the matter further. Within days of the footage appearing on social media, the driver was identified and subsequently handed himself in to police. He was charged for driving while using a

mobile phone, offensive language and driving on a path. Although Harris was charged for his blatant negligence in this instance, usually these aggressive and dangerous behaviours towards people who cycle go unreported. Harris's infringements were only brought to light by his post on social media.

Upon being charged, a crowd funding campaign was started to assist paying for the fines. The final amount raised well exceeding the total; for donators the legal penalty was understood as unjust. The social media backlash around this incident points to a pernicious but dominant discourse circulating in Australia: *bicycles have no place on the road*.

## 5.2 Introduction

The aim of this chapter is to better understand the nexus between cycling, mobility (in)justice and affective fear. Mobility injustices are “the process through which unequal spatial and differential subjects are made” (Sheller, 2018, p33). I argue that even for the most competent of cyclists in Wollongong, mobility injustice is a common and deeply embodied experience that is felt whilst on-the-move. I argue the fear triggered by the proximity of vehicles or abuse of drivers adds to understanding of mobility justice.

Why mobility justice for road cyclists? Cyclists and drivers hold equal legal status on the road. Indeed, NSW state policy documents promote motorists and cyclists to share the road (Transport for NSW, 2020). Yet every single participant in this study provided at least one example of drivers yelling at and intimidating them and/or being involved in an accident or near miss where the driver was at fault. Visceral fear of being seriously hurt or killed was conveyed in the retelling of these incidents through tone and body language. Mobility (in)justice is integral to the experience of most road cyclists.

Two questions are addressed in this chapter:

1. How is mobility (in)justice embodied?
2. What affective and emotional forces work against and towards mobility (in)justice for road cyclists?

To answer these questions, I interpret and map road cycling experiences through

employing a feminist corporeal approach to understand mobility (in)justice. To do so, I bring Deleuze and Guattari's (1987) related ideas of assemblages, territory and bodily capacities into discussion with Ahmed's (2004) cultural politics of emotion (namely fear, anxiety, and pain) and Sheller's (2018) concept of mobility justice. Together, these concepts offer new ways of thinking about mobility justice as inherently emergent, embodied, spatial, social and material. Thinking about traffic assemblages as configuring territories or 'working arrangements' for different modes of mobility draws attention to processes of inclusion and exclusion. The traffic assemblage is constantly undergoing processes of territorialisation in which cars and bikes may be at odds with one another. Mobility justice is conceived through assemblage thinking as an embodied process of inclusion and exclusion, in terms of who and what belongs on the territory of the road.

This chapter contributes to the theoretical discussions of an embodied and spatial reading of mobility justice when conceived as a territorialisation process. In doing so, it begins with a brief account of the notion of mobility justice. I then turn to my conceptual framework: a productive conversation between Deleuze and Guattari's (1987) notions of assemblage and territory, Sheller's (2018) mobility justice, and Ahmed's (2004) cultural politics of emotion. Following Ahmed (2004), emotions circulate and work within socio-material assemblages that may intensify and become embodied. Key to this chapter is what does fear, anxiety and pain *do*. The chapter then turns to fieldwork insights: first, how the road becomes embodied as an unjust space for cyclists through the analysis of moments of abuse, intimidation and ignorance, and second, the implications arising from cyclists' embodiment of fear. Roads (mundane or otherwise) are primed with heightened intensities because of embodied histories of violence and intimidation from past car-cycle encounters, specifically at roundabouts and intersections. I conclude by thinking through how fear and love operate to keep cyclists returning to the road.

### **5.3. Mobility justice and the road**

Progress since the 'mobilities turn' or 'new mobilities paradigm' (Sheller, 2006) is notable. Indeed, in Kramer & Schindler (2016, p8), Peter Adey states that: "We are

perhaps seeing the maturing of the field of mobilities, pushing and deepening new kinds of issues and questions”. One of these expansions is toward what Mimi Sheller (2018) calls ‘mobility justice’. Mobility justice is a provocation to engage with how uneven (im)mobilities are produced, transformed and/or maintained. According to Mimi Sheller, mobility justice operates as “an overarching concept for thinking about how power and inequality inform the governance and control of movement, shaping the patterns of unequal and uneven mobilities that impact everyday life at all scales” (2018, p1). Mobility justice is therefore inherently about power, politics and belonging and asks: who, what, where and how do people, goods and capital move?

One of the limitations of the recent major works on mobility justice (Sheller, 2018; Cook and Butz, 2019) is that there is not agreed definition of what mobility justice is (Everuss, 2019). Sheller (2018) goes as far as developing a series of principles (n=28) of Mobility Justice. For this chapter, the most relevant principles are related to the bodily scale and include:

- Each person’s freedom of mobility shall be constrained by the rule of mutuality: i.e., not trampling, endangering, or depriving others of their capability for mobility.
- Individual mobility shall not be involuntarily restricted by threats of violence, either physical or symbolic, including enforced forms of clothing, segregated means of movement, or unevenly applying temporal or spatial limits on mobility.
- Gender, sexual identity, and other markers of identity shall not be used as the basis for restricting mobility or exclusion from public space.
- Universal design should be required in all public facilities to ensure accessibility to all people and especially access to all modes of public transportation and media.

Theorising mobility justice moves beyond theories of transport and spatial justice and challenges static conceptualisations of justice and place. For Sheller (2018) the research agenda set by mobility justice includes aligning struggles for accessibility and bodily freedom of movement, with equitable infrastructures and spatial designs that support rights to movement, for fair and just forms of sustainable transport. Here, a mobile ontology is essential to thinking through cycling bodies on-the-move.

For Sheller (2018), mobility justice concerns itself with how different geographical scales, from the body to the global, and regimes of power are entangled to produce unequal rights to mobility. Tim Cresswell (2011) refers to this as the ‘politics of mobility’, where mobilities are both productive of social relations and produced by them. From this, important questions arise around gender, race, ethnicity and sex and how (im)mobility informs and shapes sets of social relations alongside subjectivities and an individual’s sense of belonging. With mobility justice expanding its methodological and empirical reach, the notion of mobility justice has been used to examine, migration (Barker, 2012), urbanisation and transport (Attard, 2020), tourism (Hall, 2015), disasters (Cook, 2016) and climate change (Mullen and Marsden, 2016). These examples illustrate that (im)mobility cuts across various fields and scales – from the most basic forms of bodily mobility such as walking (de Certeau, 1984) to the globalisation of the automobile and its impact on public life (Sheller and Urry, 2000). My empirical focus is on mobility (in)justices at the bodily scale – however, by nature this incorporates systems of power at other scales including ideas about automobility, sport, and heteropatriarchy.

The chapter acknowledges mobilities research that draws on Foucault (1977), non-representational theory (Thrift, 2007) and actor network theory (Latour, 2005). That said, I use Deleuze and Guattari’s (1987) concept of territory to discuss how mobility (in)justice is felt on the move in Wollongong. In this frame, it is important that (in)justices do not simply happen when people or things enter a pre-configured space. Instead mobility justice is about the broader processes which allow unequal mobility to occur. This chapter addresses people who ride bikes on the road. That said, the reader must understand that it is just as much about how cyclists are perceived by other road users and the community more broadly, who has a legal right to the road (and other infrastructures), how is it governed, and what systems or regimes of power seek to restrict or permit cycling bodies to move.

Sheller’s (2018) call is to take more seriously the ways in which mobility justice can be conceptualised through Foucault’s ideas of regime of truth –and how mobility injustice is constituted through the ways that automobility has become take-for-granted. Here the car, representing automobility, is understood as efficient, convenient, cheap, stylish,

modern, democratic and liberating. Despite some of these ideas being contradictory, they are taken as the ‘facts’ about automobility and the car (Bohm, et al, 2006). Urry (2004) identifies six components that work together to create a culture of dominance:

- (1) The car being a quintessentially manufactured object by leading industries;
- (2) It is a momentous item for individual consumption that imparts a particular status to the user;
- (3) It is connected to other powerful social and technical forces such as road-building, sales and repair, urban sprawl and upward mobility;
- (4) It reorganises social life and how we live to the point where it subordinates all other forms of mobility;
- (5) It dominates discourses around culture and ideas of what makes the ‘good life’ and lastly;
- (6) It bears a high cost to the environment.

Most relevant to this chapter and the injustices felt on the road are components three and four. For example, cyclists and drivers should have equal access to road infrastructures as per the road rules in NSW. In Wollongong, as elsewhere, this is illustrated through dedicated cycle lanes. Inequalities occur when these road elements are not maintained and/or repaired with the same duty of care. For example, local road re-surfacing in Wollongong sometimes leave the bike lane incomplete – literally creating an uneven surface for cyclists.

As Doughty and Murray (2014, p. 306) argue, “the material configuration of automobility is here thought to be actively implicated in the production of a range of mobile practices emerging around it, anchoring discursive knowledge production in materiality”. Automobility not only generates car (im)mobility, but subordinates all other forms of mobility. Road infrastructures designed for cars creates an impasse: first, by sustaining the immobility of non-motorised road users, such as cyclists, and second by setting up ideas of entitlement about who can and cannot use particular infrastructures and how they ‘should’ be used (Aldred, 2016; Aldred, 2014).

Therefore, thinking through cyclist’s experiences of the road becomes essential (Spinney, 2009; Van Duppen and Spierings, 2013, Simpson, 2017). This is often done by thinking about barriers to cycling. Only recently have researchers started to explore

the more sensuous and felt experiences of cyclists whilst on the road (Jones, 2005, 2012; Simpson, 2017; Popan, 2020). Simpson (2017) brings into conversation the affective dimensions of cycling with infrastructures, using the conceptual tool of affective atmospheres. Simpson (2017) found that when there was ambiguity with different mobile bodies in shared spaces (shared paths in particular), cyclists were made to feel most unwelcome through the atmospheres that emerged.

In many non-cycling countries, drivers do not want to share the road with people who cycle (Rissel et al, 2002; Falcous, 2017; Aldred, 2014) – this sentiment reinforced in practice by drivers and in print through the media (Fuller, 2017). Rissel (2011) identified that in Australia drivers get frustrated sharing the road with cyclists, believing they should not be there to begin with and think that cyclists do not follow the road rules. Further, these interactions can sometimes be violent. For example, Balkmar (2018) analysed violent mobilities between cyclists and drivers in Sweden through a gendered lens, finding that cyclists develop a range of coping strategies to negotiate their vulnerable status when next to cars (such as avoidance and emotional control). Similar to Balkmar (2018), this chapter will focus on cyclist's experiences of the socio-material arrangements that enable particular road users to feel as if they belong, to the exclusion of others.

The following section outlines the conceptual framework of this chapter. I pay close attention to Ahmed's (2004) work on affect and emotions alongside Deleuze and Guattari's (1987) notion of territorialisation to understand felt and embodied interactions with road users and infrastructures that enables a sense of belonging (or not) on the road.

## **5.4 Conceptual Framework**

This chapter's primary theoretical contribution is via the deployment of Deleuze and Guattari's (1987) concept of territorialisation in conversation with Ahmed's (2004) cultural politics of fear, and Sheller's concept of mobility justice (Sheller, 2018). This framework is a response to the call from Sheller (2018) to pay more attention to the spatial, sensuous and experiential dimension of justice that dovetail with more structural

dimensions. How justice is felt on the move impacts the use and operation of mobility spaces, these feelings linked to broader structures of power such as the ‘system of automobility’ (Urry, 2004). Feeling and experiencing cycling places are only beginning to emerge in transport geography, where the focus has tended to be on distributional justice and if cyclists are given access to appropriate facilities (Simpson, 2017).

This chapter argues that feelings and experiences must be considered side by side to help inform the creation of better cycling environments. To begin, I draw on Deleuze and Guattari’s (1987) concept of territorialisation to better understand how experiences of belonging and/or vulnerability are felt on-the-move. Thinking through the process of territorialisation in the cycle-road/car-road assemblages offers a way of thinking beyond representation and dualisms (Spinney, 2009). Instead, cycling is achieved as an experimental achievement – a ‘working arrangement’ of ideas, spaces, emotions, affects, and materials. A working arrangement generates order in the world; temporally, spatially and socially. After Deleuze and Guattari (1987) all assemblages are territorial:

Every assemblage is basically territorial. The first concrete rule for assemblages is to discover what territoriality they envelop, for there always is one...

Following Deleuze and Guattari, territorialisation involves two inter-related processes – re-territorialisation and de-territorialisation. Re-territorialisation is conceptualised as the coming together of socio-material arrangements in ways that stabilise taken-for-granted connections. Conceiving the road as a territory/assemblage, drivers of motorised vehicles territorialise the road as an automobilised traffic space through the coming together of ideas about driving, experiences of convenience and road infrastructure. Driving is an assumed part of everyday life: integral to parenting (Waite and Harada, 2016), consumerism (Urry, 2004), and social norms that sustain the ‘good life’ (Furness, 2010) while restricting urban walking (Clement and Waite, 2018). How automobility is aligned with ideas of ‘freedom’, ‘independence’ and a ‘right’ create powerful affective forces that stabilises driving as ‘proper’ (Kent, 2015), and creates consistent habits of driving that often culminates in a love affair with cars (Sheller, 2004; Redshaw, 2008). Cars can also become objects of love (Ahmed, 2004).

In Wollongong, where approximately 73.6% of trips to work are done via car and less than 1% via bicycle (ABS, 2016), the bicycle is not part of this working arrangement



that territorialises the road. Bodies cycling in a peloton (and taking up the physical space of a car) challenges the status quo that the road is for drivers (and cars). After Deleuze and Guattari, cyclists may be conceived as a force of de-territorialisation by how they disrupt traffic flow. Possibilities arise for the road to becoming something other than the territory of the car. Some drivers may concede territory to the car. Other drivers may force cyclists to the margins of the road. And yet, others may re-territorialise the road through excluding cyclists altogether through violent acts, including verbal abuse and intimidation.

Two important theoretical implications arise from the notion of the road as a territorialised space for motorised vehicles. First, the road as never fixed, but always in a process of becoming. Therefore, who and what belongs are never static but constantly negotiated. Second, the body offers access to the process of inclusion and exclusion through the affective forces triggered between the corporeal intersections with material and social forces. In the case of cycling bodies, the socio-material process of territorialisation (maintaining and expanding territory), when on-the-move in the relations that comprise traffic, may bring to the fore contradictory experiences including, on the one hand, joy, and on other, vulnerability, violence, and intimidation.

Fear of riding with cars was often conveyed by participants. Drawing on feminist approaches to emotion and affect (Ahmed, 2004; Longhurst et al, 2012; Pavlidis & Fullagar, 2015; Waitt and Knobel, 2018) enabled an understanding of fear as relational, structural and mediated. Ahmed (2004), inspired by Spinoza, thinks through how emotions shape what bodies can do and asks: ‘What do emotions do?’ Fear for Ahmed (2004) is considered an ‘affective politics’ which is sustained through threats of violence or the potential loss of life. Threats then dovetail with authorisation of narratives about what is and is not threatening. Fear in this sense has an object – for cyclists, it is the car and equally for drivers it is other forms of mobility that are on the road. This has important temporal and spatial considerations. We fear an object as it gets closer to us or threatens the way something is done. Fear also takes us forward in to the future as a bodily intensity. Someone who suffers from arachnophobia, may sweat, shake or have their heart rate increase at the mere prospect of holding a spider. Fear through these bodily intensities is anticipated as pain in the future. Most participants expressed this anticipated pain as a reminder of their vulnerability despite their love of

cycling. Following Ahmed (2004), fear can then be thought of as constantly changing, moving and sticking to bodies.

As Ahmed explains “fear is felt differently by different bodies, in the sense that there is a relationship to space and mobility at stake in the differential organisation of fear itself” (Ahmed, 2004, p68). Fear is important because it serves to protect bodies by serving as a warning felt on the body. Cars travelling at speed always have the capacity to kill cycling bodies. Hence, fear may circulate as an affective force moving between cars and cyclists, particularly on streets dominated by motorised vehicles. Fear may point to mobility injustice through how potential threats of violence may operate against equity and for self-exclusion. For example, fear may prevent cyclists from cycling specific routes or at specific times.

However, fear does not always work to exclude. As Saville (2020) shows, fear can work to mobilise some bodies. Saville explores the activity of parkour, where fear becomes more a ‘playmate than paralysing overlord’ in the process of making an object more than it once was (e.g. a park bench). In this context, Saville (2020) explains that fear works hand-in-hand with training that generates controlled repetitive bodily movements. For some cyclists main roads are a fearful place to be avoided. For others, usually those who are training to generate controlled repetitive bodily movements aligned with sporting masculinity, the embodied risks of main roads and potential collisions with cars, are integral to cycling pleasures.

Thus, fear does not work in isolation. Alongside fear, participants expressed love, hate, anxiety and pain. How these emotions come together, break apart and go to work, all help to shape the cycling assemblage. For Ahmed (2004), emotions and actions cannot be untied: “how emotions operate to ‘make’ and ‘shape’ bodies as forms of action, which also involve orientations towards others”. In this way, I conceive the road as an affectual economy where “emotions do things, and they align individuals with communities – or bodily space with social space – through the very intensity of their attachments” (Ahmed, 2004 p. 120). Mobility justice must address the emotional and affectual forces that emerge while riding in proximity to cyclists, pedestrians and drivers. These forces intersect with access to infrastructure, priorities in transport policies, and representations of people on-the-move, including cyclists.

In summary, the conceptual framework of this chapter offers a spatial and embodied understanding of mobility justice through combining Deleuze and Guattari's (1987) notion of territory or working arrangement with Ahmed's (2004) discussion of the politics of emotion. In using this framework the road can be understood as an ongoing affective process of territorialisation, reterritorialisation and deterritorialisation through which particular transport modes are understood to belong, and others excluded. In car dominated societies such as Australia, roads are territorialised as the taken-for-granted domain of automobiles through the coming together of social and material affective forces. Drawing on feminist scholarship, I conceive mobility justice as operating through the process of territorialisation, and as an embodied process. Attention then turns to how affective forces increase and decrease capacities of bodies to act and be affected. Affective forces may be conveyed as emotions: fear, anxiety, love, hate, and/or pleasure. Drawing on Ahmed (2004) I pay particular attention what emotions do in working for and against mobility justice for cyclists, expressed by increasing or decreasing the capacity to ride different routes and at specific times.

### **5.5 Research Context: NSW and Wollongong Road Rules**

In Australia, each State and Territory employs its own road rules and laws. In New South Wales (NSW), cyclists are permitted to ride on the road unless there is a specific bicycle only lane provided. Despite much confusion, shared paths for pedestrians and cyclists are not considered specific bicycle lanes<sup>1</sup>. When a shared path is present, it is legal for people who cycle to use either the road or the shared path. Importantly, in NSW, people who cycle are not permitted to use footpaths unless they are 16 years old or younger or riding with a child who is 12 years old or younger. When riding on the road, the legal classification of cyclists are as 'vehicles'. Cyclists therefore have the same legal rights as drivers. Cyclists are permitted to ride two abreast, riding no more than 1.5 metres apart from each other as a safety measure.

In the absence of dedicated cycling infrastructure in NSW, in March 2016 (during the data collection phase), the state government trialled a series of new laws for people who

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<sup>1</sup> This is the specific legal point detailed at the chapter's opening.

cycle and drivers under the guise of improving road safety. One change included increases in fines for various cycling related offenses (to bring them in line with driver fines). A second change stipulated a safe passing law for drivers when interacting with cyclists; drivers are required by law to give one metre when passing a cycle in a 60km/h or less zone and 1.5 metres when the speed limit is greater than 60km/h. In March 2017, these two new laws were made permanent.

In conjunction with these legislative changes was a New South Wales (NSW) government campaign titled. “Go Together”. The campaign pitch stated that:

*“...cyclists and pedestrians all need to Go Together safely. We should all respect each other's space and ensure that everyone stays safe.” (Go Together Website)*

*“Like drivers, the majority of bicycle riders have safety in mind most of the time. The increased penalties only apply to riders who behave dangerously and break the law. Fines for five offences increased on 1 March 2016, so that bicycle riders receive the same fines as motorists for high risk behavior”. (Go Together Website)*

The road rule reforms were justified to keep cyclists accountable as a ‘vehicle’ (the only state to do so in Australia) in order to improve road safety for cyclists. Since these laws were passed, there has been a disproportionate increase in cycling related offences (e.g. not wearing a helmet) compared to previous years. From 2012-12 to 2018-19 the number of fines for not wearing a helmet doubled and the amount of money raised for the NSW government from these fines increased from \$143,484 to \$1,870,687 in the respective years (Hogg and Quilter, 2020). Rather than in being in the interest of safety, Hogg and Quilter (2020) suggest that the primary outcome has been revenue raising.

Further, Hogg and Quilter (2020, p.274) show that following the increase in helmet fines – in particular NSW local government areas – this particular law was exploited “for a range of purposes clearly unrelated to bicycle safety, including to gather intelligence about other offences and suspects, to justify searches and to harass targeted individuals (particularly among young people)”. These law changes, despite being pitched as beneficial for cyclists, do not help to bring about mobility justice on the road,

but reinforce that cycling bodies are treated and policed differently. In what follows, I argue that cyclists and drivers are distinctly different road users despite their equal status by law to the road. I outline how emotional forces work towards and against unjust mobilities through the process of territorialisation that configure roads as the domain of cars and drivers.

## **5.6 Participant selection**

The resulting analysis follows four participants, selected not by emerging themes but by moments of heightened affective intensities (fear, anxiety, thrill and pain) while road cycling. Participants commented that cycling can be a mundane activity however this is contrasted with moments of driver road rage, the competition for space on the road or anxiety when drivers or infrastructures become too close. In these moments, emotions and intensities are heightened. The interview process as a co-production of knowledge informed the selection process. As participants recounted their road cycling experiences, I remained alive to changes in bodily gestures, tone of voice and at times pauses in conversation for people to gather their thoughts. Hearing about serious road accidents was at times difficult for participants to express and saddening to hear, but important to consider when mapping moments that shed insights to mobility injustice.

Overall participants' experiences conveyed not having an equal footing to drivers on the road. All participants conveyed and mapped becoming vulnerable on the road at particular times and places (refer to figure 5.2). All participants described at least one near miss or accident with drivers where they were not in control of the outcome and serious harm or injury was a possibility. The majority of participants narrated similar encounters with drivers where they felt their life was in danger, or where they had been hit by a driver whilst riding their bike. Through an understanding of the cycling-car-road assemblage, the road is constantly being re/de/territorialised. Vulnerability is conceived to emerge within a socio-material arrangement involving cycling bodies, driving bodies, cars and the infrastructure that acts to support them. Moments of heightened vulnerability, conveyed as fear, illustrate unjust cycling mobilities on roads territorialised by cars.

The following participant portraits illustrate how cyclists become objects of hate and class-based aggression on the road (Lupton, 2004). Attention then turns to the thrill and pleasure associated with fear. In theoretical terms, fear operates as a force of de-

territorialisation that is associated with opportunities for the pleasures associated with risk-taking. Finally, insights are offered to how mobility (in)justices are reproduced by some of the strategies cyclists employ. Again, drawing the notion of assemblage, these strategies illustrate how the road is taken-for-granted as the territory of the car, including riding as a group (becoming car), only riding at 'safe' times, only riding on 'safe' roads and employing individual strategies to gain and sense of belonging or even just to avoid getting hurt.



**Figure 5.2: Collective map showing all negative participant experiences while riding.**

A slight deepening of the red hue, most evident in West Dapto and into the Northern Suburbs, indicates multiple participants reporting and discussing significant experiences of mobility injustice along those particular segments.

## 5.7 Interpretation

### 5.7.1 Jeff: cyclists as objects of hate and the road as a territory for cars

Jeff (25-34 years old) works in commercial research and is an experienced cyclist who has ridden on Wollongong's roads for approximately 5-10 years. He rides for fitness and competes semi-regularly in local triathlons and cycling events. He has acquired good bike handling skills through his years riding and knows the roads in Wollongong. He only rides in the mornings to avoid traffic.

Jeff tells of often being yelled at unprovoked by drivers whilst riding. In his words:

*“Get off the fucking road”; “you’re an f’ing idiot”, all that sort of stuff is the main stuff. And I think it just comes down to people not realising it’s actually illegal for us to be riding on the footpath. I’ve been told to learn the f-ing road rules. Yeah they’re the general ones. Nothing too specific, it’s just been someone who’s angry, yelling something out.*

In these moments of intimidation by drivers, Jeff is made to feel in a subordinate position on the road. Common amongst all participants were the cries by drivers to: “Get off the fucking road, you’re a fucking idiot.” The tone of the comments is usually aggressive, unexpected and may be accompanied by the driver using the car's horn. Being yelled at to ‘learn the fucking road rules’ is a confusing – and ironic – slur used to subordinate cyclists.

Thinking through the work of Sheller (2004), Kent (2015) and Ahmed (2004), cyclists are viewed as objects of hate whilst on the road through the process of deterritorialisation. Kent (2015) explores how drivers want to feel a flow experience when driving, with constant movement enhancing the affective forces of driving and stabilising peoples' love of driving. Consequently, this means that other road users who take up, inhibit or slow drivers down on the road become a threat to the love of driving through the process of deterritorialisation. Cyclists therefore are positioned as objects of hate through the love of driving. Verbal abuse is one strategy employed by drivers to reterritorialise roads as the domain of cars.

Alongside verbal abuse, Jeff experienced drivers use their cars to exert authority:

*Yeah definitely, I’ve had quite a few, where people have either beeped at me. I’ve had people pull up alongside me and abuse me for being on the road. I’ve had a person deliberately cut me off at a roundabout, so I couldn’t get to the*



*roundabout. I've had people go over the top of roundabouts as I'm going through them.*

Jeff shows how drivers reconfigure the road is taken-for-granted territory for cars by aggressive and purposeful acts of intimidation. When riding with Jeff early in the morning, I recall being yelled at by a driver to “get out of the fucking way”. This was despite riding two abreast on a wide road in the early hours of the morning. For the driver, we were in the way, taking up space that was predetermined not to be ours. In this moment, I immediately recoiled – the anticipation as to what might come next was filled with anxiety. Will the driver throw something (experiences of bottles, cans, and sticks thrown at cyclists were mentioned by participants)? Will the car behind yell something or drive too close as they pass? This is one instance of a bodily response to what fear does on the road: a constant feeling of ‘looking over your shoulder’.

At other times when riding with Jeff, despite a legal right to ride two abreast, we would move to single file as a car approaches us from behind to appease the drivers wishes to not take up their space. This is done in the hope that we do not get yelled at or abused. In doing so, we become submissive or subordinate the drivers around us. This is the power of the system of automobility (Urry, 2004). People-who-cycle often become objects of hate (Ahmed, 2004) through a driver’s love of driving and the threat of taking up space that is not meant for them. This hate is felt on the cycling body through the process of exclusion on the road. Participants described drivers becoming infuriated with people who cycle for slowing down their journey, and for ‘not allowing’ them to overtake. The anticipated sensations of driving, conveyed as love, position cyclists as objects of hate that must be marginalised, if not removed, to restore a working order.

Roundabouts recurred as places of heightened affective intensity for all participants conveyed as fear. At roundabouts, cars and cyclists are brought into close proximity that make plain cyclists’ vulnerability. For example, approaching a roundabout, Jeff explains how he has become attuned to the potential dangers of cars at roundabouts.

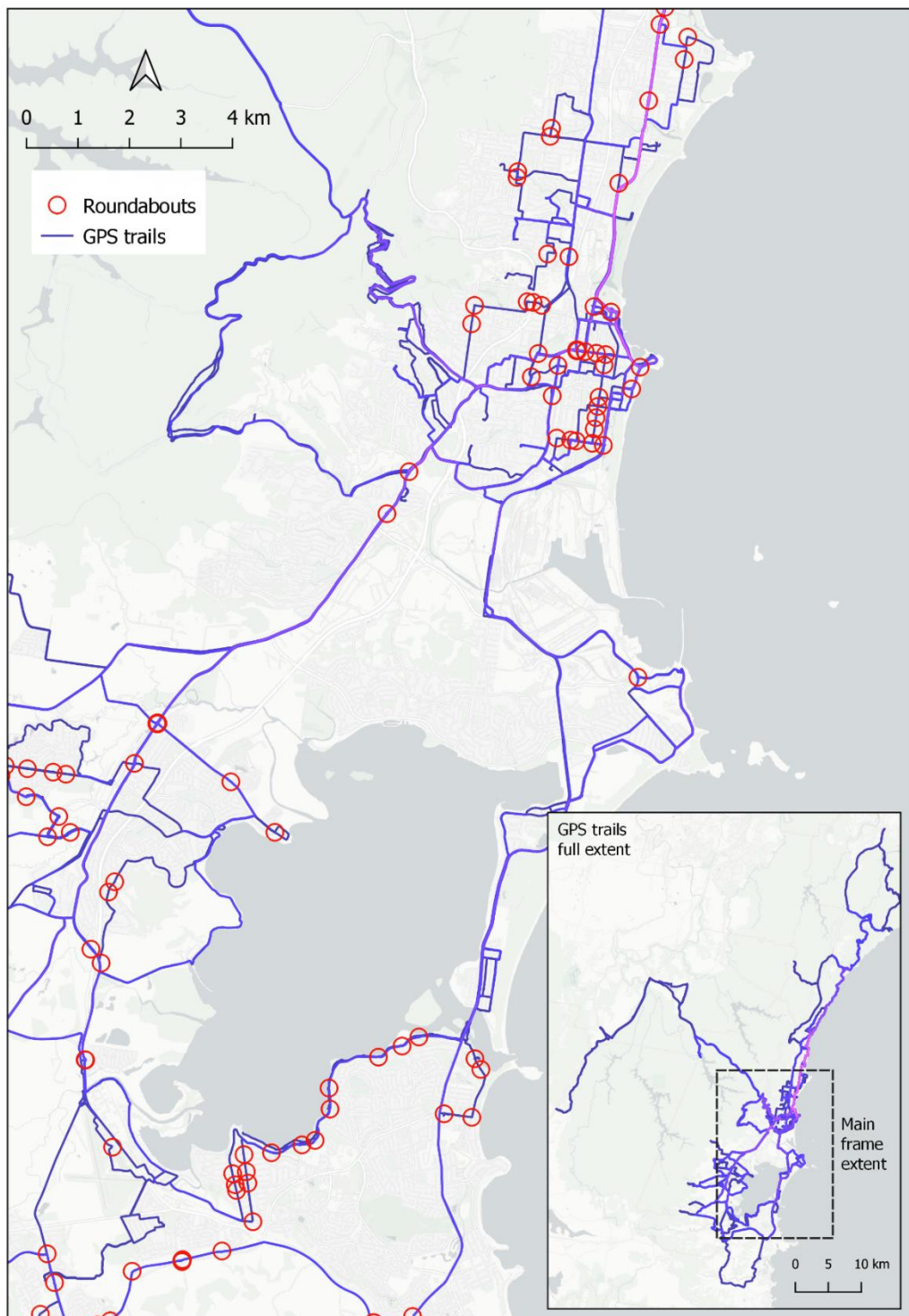
*Yeah, so first instinct kicks in, so survival mode. Make sure I get myself out of the way, actually just recently I was at the roundabout here down on Mt Ousley, coming across. No cars coming from my right.*

Jeff anticipates the dangers of roundabouts from previous experiences. Anticipating

danger, Jeff went on to explain how he managed to avoid being run-over by a semi-trailer:

*There was a car on my left who thought he'd get away in front of me and there's a semi-trailer behind him. He's gunned it through, so the semi-trailer just rolled through as well. I have instinctively unclipped the left foot, hit the brakes, turned, so I've gone alongside him, and got myself up onto the roundabout. And then after that, I have just let loose with a whole heap of expletives. And he sort of just waved and said sorry. Yeah sorry is great mate, if I'm stuck under your wheels. So yeah, the first instinct is survival, and then I get a bit angry.*

Incidents such as this and drivers trying to get ahead of cyclists are common (Aldred, 2014). In this case, the affective economy of fear that circulates at the roundabout worked to protect Jeff's vulnerable cycling body. In Jeff's recount, his 'survival instincts' came to the fore: his body reacting before he has time to process his actions. As fear dissipates, anger came to the fore, swearing at the at fault driver. While the driver apologised, to Jeff it was seemingly without much concern of the life of the cyclist. As argued by Butler (2010), some lives are considered more grievable than others; cyclists are often thought of as sub-human whilst on the move (Delbosc et al, 2019).



**Figure 5.3: Roundabout locations along participant cycling routes from Wollongong City and south to Shellharbour.**

Each is a potential site of heightened danger for road cyclists. The spread and density of roundabouts makes routing around via back streets difficult and at odds with maintaining a cycling flow, despite these streets having generally lower speed limits.

### 5.7.2 Michelle: classed aggression, strategies to belong and fear reimagined

Michelle (first introduced in Chapter 4) is a cycling instructor that has lived in Wollongong most of her life. She is a very experienced cyclist, aged 31-45 and rides approximately 150-200km per week. She is part of a group that teaches women how to cycle in Wollongong. Lessons include how to select the best bike for you, bike maintenance, skills training (both on and off road), and riding in a bunch.

In this section I first explore how particular roads and drivers become classed and emotions fold through these decisions. I then discuss how fear can be reimagined through sporting masculinities such as risk and thrill seeking that in part keeps people cycling. Finally, I argue that the dominance of cars on the road and cyclists' clear necessity to avoid traffic pushes cyclists to only feel safe when riding when traffic is minimal (i.e. the early morning).

Like Jeff's time on the road, Michelle tells of being yelled at as a cyclist by drivers. In addition, Michelle notes that she has become wary of particular drivers and particular cars.

*It depends like, you know, but yeah, no. So they will yell and like I find it's always, I have like the three cars that I hate are P-platers, Holden utes, or utes, Commodores with revved up wheels, those three cars, and they're always green, ugly dodgy Daptoid people (people who live in the suburb Dapto) that want to kill you. I just go, "What is your problem?" ....Yeah, they're rednecks. They're rednecks or P-platers that have no patience and they just don't love us. Yep. Or tradies that really want to get to work fast and your holding them up for 3 seconds is going to kill them, you know. I've nearly been killed.*

Like Jeff, Michelle conveys how a love of driving configures cyclists as hate objects (Ahmed, 2004). In addition, Michelle alerts us to how driving styles, car models and brands are entangled in the maintenance of classed and gendered identities (Redshaw, 2008). For Michelle, she senses her body is most at risk to the presence of P-platers and particular brands and models of cars. She aligns these models and brands of cars to a specific suburb in Wollongong (Dapto) and a profession (tradespeople). The ute (short for 'utility vehicle', likened to a pickup truck) was a type of vehicle mentioned by numerous participants. In Australia, the ute has cultural and social norms associated with young men, traditional masculinities, perceived physicality and the ability to

undertake physical tasks (Redshaw, 2008). Within these classed and gendered attitudes also lies the subordination of other forms of transport deemed and ‘weak’ and ‘feminine’. Multiple instances were recounted by male participants being called ‘poofsters’ for cycling on the road in their lycra outfits or instances of intimidation. The masculinities and identities attached to the ute and young male tradespeople impact the way they drive and the way they treat other road users. It is ‘manly’ to drive a ute and the exact opposite if you ride a bike in a less ‘powerful’ form of transportation (Redshaw, 2008).

This sets up an interesting class dynamic in terms of the process of territorialisation of the road in and around Dapto (a suburb categorised as lower-socioeconomic).

Technicians and Trades workers make up the highest proportion (19.2%) of workers in the area (compared to 12.7% in the state) (Wollongong City Council, 2016). I would also note that the majority of participants in this research were white, professionals or managers, middle to upper class and privileged. Seeing these groups come together, works in a similar fashion to surfing beaches where ‘locals only’ belong at the beach and outsiders are dismissed and excluded (Waite & Fraser, 2012). Multiple constructs – for example, between local/non-local, cyclist/driver – and affective and emotional registers come triggered by fear – for example, locals fearful of outsiders. These constructs then mediate cycling assemblages through the process of territorialisation to ensure the road remains space for cars (and locals).

Fear then primes cycling bodies for violence along this route, visualised in figure 5.2. It is a route travelled routinely to get to more desirable roads where there is more open space and less cars to contend with. For cyclists, the love of riding in the more open (and traffic free) spaces near Dapto force them to constantly negotiate the space rather than avoid it completely. It is a gauntlet that cyclists go through to find greater pleasures on the road.

One experience of particular emotional significance for Michelle involved a tradie running a red light in the suburb next to Dapto and almost hitting her. She talks through her reaction to the incident:

*All I saw was the car headlights just coming for me and I thought, “Fuck, he’s not going to stop, fucken hell, oh fuck” and I just had to push my pedal. And seriously, I had to swerve out just to give myself a bit of extra time to get across the road, and I just made it.....I stopped and I started to cry on the side of the street because I was like “holy shit”. It was really really really early in the*

*morning. And you just don't think they're going to, you know, he might have been hung over, rushing to work, not looking, not expecting anyone to be at that light, because "Why are the lights going red, there's no car there", you know, not paying attention. So then I think, I just wait now, I don't go.*

When asked what was going through her mind when this occurred, she stated:

*I was waiting for the impact. Yeah. And it was just like headlights, like deer to headlights, "Fuck." I was like, "Shit, shit, shit, shit, shit." I just thought, "Oh I've gotta just hope for the best and pedal out of the way. Oh my God, I don't even want to think about it; it freaks me. Like I was just heaps lucky that I had gone and I was far enough in front that he didn't get me. Yeah, he didn't even slow down.*

*Yeah, it was heaps nasty, hey. That would have been the closest call I've had with a car. I reckon if you get hit by a car, you're less likely to get back on your bike. Because it's not your own dumb arse fault; it's someone else's, and then that becomes scary.*

Despite Michelle's experience cycling on the road, nothing prepares for when this ute driver breaks the law and runs a red light. Often claims of breaking road laws and running red lights are directed vitriolically at people who cycle (Fuller, 2017; Aldred, 2016). Even as Michelle shares this event, it is clear she is still frightened by it 'I don't even want to think about it; it freaks me [out]'. Her body recoils as we speak and she tries to literally shake off the bad incident. This is another example of what emotions do – they *stick* (Ahmed, 2004). Incidents such as this stay with people who cycle as and she now embodies a different approach to traffic lights and turns 'I just wait now, I don't go' meaning she waits until she knows for sure what drivers are doing before progressing through an intersection. The lack of control (physical and emotional) in these situations is what stays with Michelle and as she questions if she herself would get back on the bike if she had been hit.

Following this intense moment (and other near misses she was able to describe), affective forces become embodied. Michelle adopts a range of strategies to keep her safer on the road and give her a sense of control over her actions. When she is teaching other women how to ride in a bunch, her message is clear:

*... once it's very structured, they feel safe. If it's not structured, it's not going to be safe. You've got to be super predictable when you ride, that's what I teach*

*them.*

*The first thing I do teach them, I say to them, “You’ve got to act like a car. If you don’t act like a car, you’re going to be dead. You’ve got to follow the road rules like a car if you’re on the road, or you’re going to be dead.” You know, “Use your hands. Get it out of your head that you need to wait for them, because that’s not going to happen.” Yeah, that is the hardest thing they’ve got to get in their head. Because they’ll want to pull over and wait for a car to go past. If you’re turning right, you merge right, you’ve got your hands out, we all go together. Like, “No, no, no”, I’m yelling at them, I’m going, “Go across the road.”*

For Michelle, to gain a sense of belonging on the road structure is the key to her cycling and teaching. Being predictable on the road and generating routine and rhythms aid in territorialising the road. Through this process, feelings of safety come to the fore. Fear (of accidents and death) then encourages Michelle to teach cycling in a way that territorialises the road as if the bike (or group of bikes) moves like a car. For Michelle, to feel safe on the road, she must ‘become car’. This acknowledgement of the affective and socio-material forces that come together reinforce the automobilised road. Fear and the feeling of being safe on the road is then juxtaposed with dedicated cycling infrastructures where cyclists do not need to ‘become car’ to gain a sense of safety (Simpson, 2017).

Michelle describes the fast and harsh learning environment that the road provides for people who cycle. As we learned previously with Jeff, roundabouts are a particular infrastructure where cyclists need to pay additional attention to ensure they are seen. Here Michelle reflects on her experience at roundabouts:

*...I think people are more likely to have accidents with cars and stuff when they first start, there’s no question, because they don’t understand. They haven’t got the concept. And if you do ride this way, you are definitely going to get knocked off your bike by a car, if you think you’re invincible and they’re (drivers) going to stop for you because they have to, you’ve got another thing coming; you’re an idiot and you’re going to get killed.*

*I always wave at people when I come into a roundabout and I can see them see me.*

*If I don't see them see me, I will just like slow down and wait to see what's happening. Whereas when I first started, I had so many near misses that I nearly got killed on side streets and roundabouts because I thought I had every right to be there and "Frig them, they need to wait for me," but they don't wait for you. You soon figure it out.*

Near misses are an everyday occurrence for cyclists with inexperienced riders more likely to experience a near miss than experienced riders. Near misses with cars are reported by cyclists as the most frightening given their vulnerable status on the road (Aldred and Crossweller, 2015; Paulos et al, 2017). Michelle's experience about being involved in an accident when people first start cycling is evidence of this and helps to form her teaching philosophy of 'becoming car'. Her own experience of 'nearly getting killed' highlights that roundabouts are highly affective places, where there is an affective economy of fear (Ahmed, 2004). Bodies are primed for danger due to the skills needed to manoeuvre and the unpredictability of drivers (Simpson, 2017). To avoid danger she waits and waves and no longer assumes she has the right to the road. The wave almost acts as the final permission from drivers around her that she now has the right to enter the roundabout, albeit on the driver's terms. This is made clear by Michelle in her quote: 'but they don't wait for you. You soon figure it out.'

Fear restricts movement and mobility (Ahmed, 2004) – one example of how fear operates to constrain the movement of participants is the timing of rides. All participants spoke about avoiding main roads during peak traffic hours, and avoiding the mobility rhythms of day-trippers from Sydney. Thus, road cycling is often restricted to early morning. For example, Michelle explain how training rides at weekend are shaped by visitor traffic flows:

*6:30 a Sunday, Sunday morning. So we normally go south on Sundays and north on Saturdays. I'll tell you why. Sunday, south is quieter on the roads. If you go Sunday north, you're contending with all the motorbikes at the National Park and all the tourists, and it's usually quite busy unless the weather's crap. On Saturday, it's not as busy north because people are working and there's not so many motorbikes out and there's not so many people wandering around up there. They will normally leave it for Sunday driving. They'll want to go to Sea Cliff Bridge; you don't want to be riding over there with all those psychos on*



*Sunday, and so you go Saturday early.*

Michelle conveys how fears provoked by dense and unpredictable traffic flows are reduced by cycling early in the morning. Weekends in Wollongong attract a range of road users, particularly to the north where attractions such as the Royal National Park and Sea Cliff Bridge draw large numbers of tourists, motorbike riders and car enthusiasts (Wollongong City Council, 2020). Michelle positions these visitors as ‘psychos’; that is as a potential threat for cyclists. Fear operates to contain the rides both temporally and spatially, working to maintain the assumption of the road as an automobilised territory.

In spite of fear as a constrictive affective force whilst cycling (O’Connor & Brown, 2007; Dunlap et al, 2020; Ravensburg, et al, 2020), Michelle illustrates a moment where fear is re-purposed (Saville, 2008). The road becomes a contested site of mobility rights through the claims to space made through speed. This occurs in the early hours of the morning where the road becomes a race track and the thrill of sprinting on the streets takes over during a training ride:

*Yeah, you can hear the gears, it’s like being in a race. Quick, quick, get ready, go. Just gets your adrenaline going. Not everyone likes it though. It’s sketchy, right, you’ve got to navigate through those roundabouts and then it’s just drop the gears and floor it as fast as you can go....I don’t care about cars. You sort of like go with it, hope for the best. I don’t know. I don’t really think about when I’m in the sprint. Like if you’re sprinting, if you’re in the moment and a car gets in your way, you want to bash it.*

On some mornings, roads become racetracks and a group of riders will sprint towards a finishing point (usually marked by a speed bump or sign). Fear works to increase the pleasures of cycling via the claims for space required for speed, competition and power. In these moments, the affective forces are immense as total control is taken of the road (O’Connor & Brown, 2007). Despite this not being a formal competition, the adrenalin rush described by Michelle and other participants is palpable and is a moment to exert authority and identity as a cyclist. The risk and pleasures that these informal races become essential to the cycling experience (Albert, 1999) and become embedded in the routines and rhythms of the ride. These pleasures help form and are essential for people’s love of cycling. During the sprint, cars are no longer a worry and become an obstacle to sprinting success – cars are no longer fearsome in these moments. These

races align with traditional notions of hegemonic masculinity. For example, Michelle says she will ‘bash’ cars that get in her way is not based in reality but a part of the thrill of racing:

*Not cool if cars slow you down, as your focus is speeding in the bunch. That's it, the bottom line. So yeah, it's like risk-taking behaviour, yeah definitely, because you're on a road, and you're like going full capacity and you've still got to have eyes in the back of your head because people are coming around you, through you, whatever. And you should really leave that behaviour like for a race but, you know, like it's a bit fun, it's just exciting.*

Michelle highlights the thrill of racing calling it ‘risk taking’ and ‘exciting’ (Albert, 1999). She enjoys pushing her bodily capacities through the informal but serious racing that occurs. In this highly charged affective space, where Michelle’s territorialisation of roads occurs through the peloton moving at speed, potential outside dangers (cars, roundabouts) assist in the fulfilment of her love of cycling rather than fear diminishing what is possible. Despite contradicting her previous advice and teachings about becoming car and taking her time when approaching roundabouts, the emotions and affect flow from fear to excitement and keep her cycling and on edge as a cyclist. Michelle’s account reminds us that the cycling assemblage is always relational and complicated when thinking through the road, the road rules and who belongs on it.

### **5.7.3 Jodie: Cycling legitimacy on the road and for the love of cycling**

Jodie is retired from work with over 15 years of cycling experience. She enjoys competing in masters cycling events. Prior to the interview, she was very generous with her time. Jodie proudly showed me around her house and the large collection of winning medals from Masters Competitions. Both training and competitions play an important role in her life, offering strength and wellbeing. Jodie’s cycling life narrative was framed through two separate cycling accidents with cars (neither were her fault). She suffered both physical and psychological trauma following her two accidents. Jodie illustrates how the politics fear of cars and roundabouts operate to reduce her capacity to ride certain routines and limit her spatial movement.

Jodie showed incredible empathy towards the drivers at fault when talking about being knocked off her bike twice by cars entering a roundabout:

*I'd been to Shellharbour, but I was on the road. And, really a road cyclist doesn't*

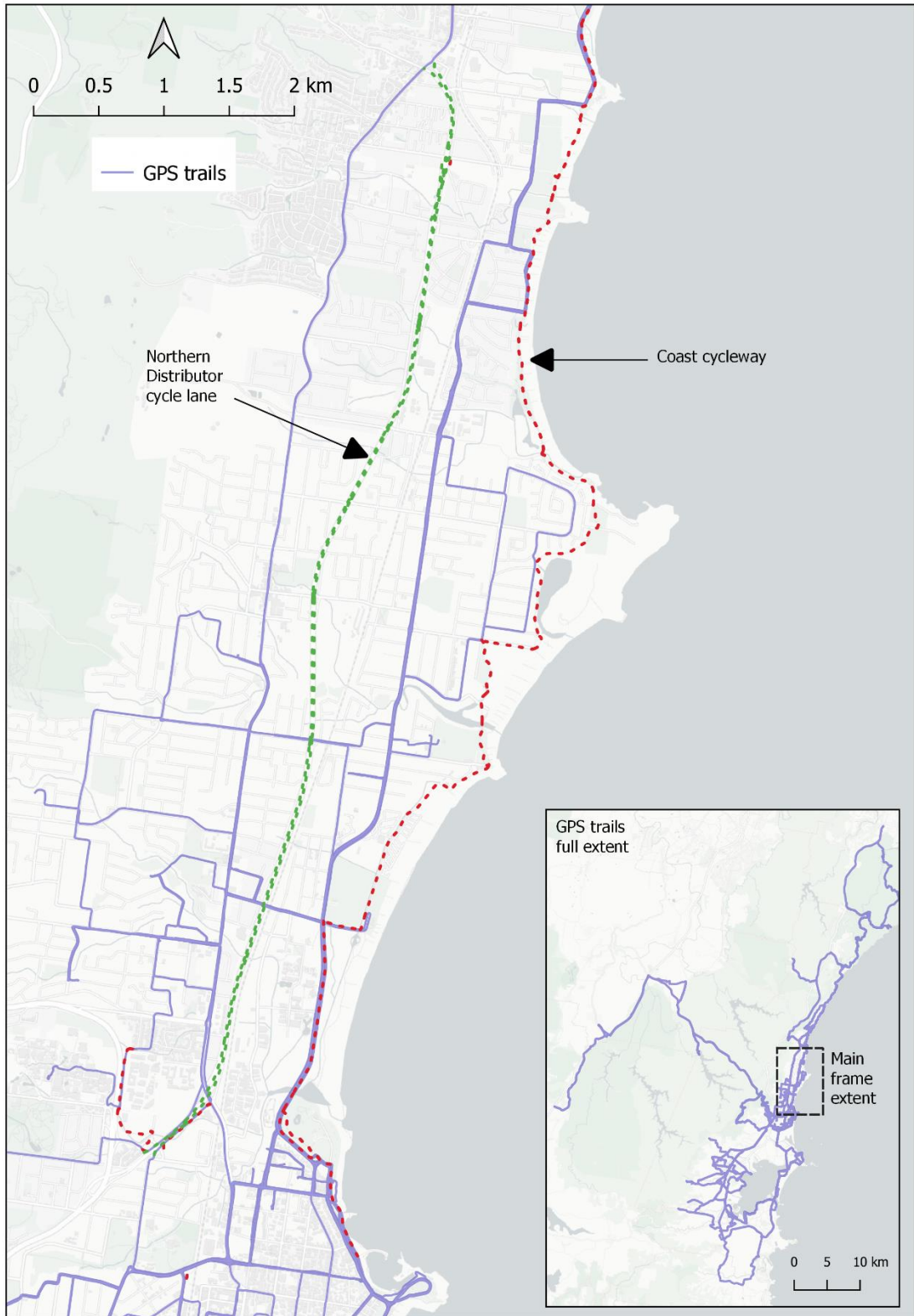
*like cycleways. Coming back, I was coming through a roundabout, and I looked left, and I could see a car, way up there. I had seen him, hopefully he had seen me. I ended up on the middle of the roundabout. Hit his bonnet, smashed my helmet, there was all bark off up here. He was mortified. He said he didn't see me. And I can understand, in a way, why. It was about 11 o'clock in the morning, in the summer, and the sun just hit him. He used to be a cyclist, and he had kids, and he said he'd never ridden since. But, I find with motorists, when they come to a roundabout, they go ... "No cars coming, off I go." And I'm right in front of them.*

*Anyway. Eight weeks. I was off the bike five weeks; three weeks later I was in Oak Flats. The road I go on all the time, and the same thing happened (Jodie was hit again at a different roundabout).*

*This woman was going shopping. She lived four doors from this roundabout. I must say, I'm still waiting for her to apologise. She got in her car, going to Shellharbour Square. She looked down the road, I was in front of her. But, it's when you're going around the roundabout, it's as I'm exiting. And they're looking past me as if I'm not there.*

Jodie indicates that the road is the preferred location to ride by road cyclists over shared cycleways because of the desire to avoid slower moving path users (i.e. pedestrians, people with dogs, parents with prams, children) (refer to figure 5.4). The slower pace and unpredictable movement of pedestrians works against establishing a cycling rhythm to territorialise shared cycleways for road bikes. Wollongong City Council reports that shared paths (pedestrians and cyclists) have the most reported number of accidents of all cycling infrastructures in the local government area (Wollongong City Council, 2020).

Jodie recalls for both roundabout incidents that the driver remains oblivious to her entering the roundabout is in line with crash data for cyclists at roundabouts (Cumming, 2011). Jodie had entered the roundabout before the car, legally making the space hers. Yet, cultural norms around automobility dictate that in a space designed for cars and territorialised by drivers (Sheller, 2004; Kent 2015), cyclists have less claims to the road despite her legal status. How roads are territorialised by the social-material arrangements that enable cars to move together in proximity, including road positioning, speed and watching traffic may work against mobility justice for cyclists.



**Figure 5.4: Research participant cycling GPS trails compared against cycling infrastructure.**

Riders tend to avoid shared paths where possible and all avoided using Wollongong’s only dedicated cycle-only path on the fast-moving Northern Distributor out of fear of cars veering into their space.

Jodie has healed physically from the broken bones, bruises and grazes. That said, the sensations of approaching a roundabout or riding in close proximity to cars triggers affective forces that she names as fear. Psychologically she remains anxious around cars and roundabouts:

*The thing that it's left me with, and I should have done something earlier about it, is, when I come to a roundabout, I freeze. The girls I ride with in Wollongong- I've got goose pimples thinking about it, because I just see cars, and ... It's just horrible. I could have sued them for all that sort of thing but apparently it's a long drawn out thing and I just didn't want to go down that road. They know I'm like that, and they sort of look after me because of that. But, when I go to Berry, no roundabouts, hardly any traffic, what there is, they know we're there, because there's cyclists backwards and forwards on that back road. So, it's left me frightened of roundabouts.*

*Physically I was fine, the second time just broke my wrist and I was out of action for about five weeks, I think. But it was just nervousness, getting out on the road. I used to come out of my house, go down Terry Street, up Elanora Highway, go out the back of Dapto wherever I want. I don't do that any more. I try and stay away from busy roads and cars .... If I ride on my own, it's with a cycleway*

For Jodie, fear restricts her mobility through how the affective force collects upon her body. Jodie illustrates how she senses proximity to roundabouts and cars as fearful when riding. Her cycling routes and routines have changed to avoid 'busy' roads and roundabouts. In the interview, Jodie paused momentarily as she re-lived the fear of cycling in traffic. This is in line with Ahmed's (2004) theorising of fear as working to contain bodies when negotiating fearful situations. The ongoing coming together of road traffic, roundabouts and embodied histories allowed chaotic forces to enter the territory of the road. To continue cycling, Jodie's relies upon the positive affective forces of cycling with friends and selecting 'safer' less congested roads. Jodie cycling experience illustrates how the politics of fear operate to restrict movement and demand careful planning to select routes that will generate comfort and safety.

Another lived reality of being a road cyclist is that individual fear circulates between partners, family and friends about cycling on the road. For example, the thought of

Jodie getting in another accident, getting injured again or worse, not surviving another accident, prompts the following discussion by Jodie's husband.

*He said, "You're not riding any more." He knows I like to ride. I said, "I'll do a deal with you." He likes to go down the pub. "You don't go down the pub any more, I won't ride." "Oh. Well ... If you can find someone to ride with ..."*  
*[laughing] So that was the end of the negotiations.*

As Ahmed (2004) argues, the politics of fear operate to inform acts of exclusion and fear on the road. In this case, Jodie's husband asked her to stop riding. Many participants who recalled road accidents retold similar narratives. These participants were often under great pressure to stop cycling because of their fear of accidents or fatalities. As this chapter discusses, these concerns are not unwarranted given the participants' experiences that work together with shared stories of near misses and fatalities (AIHW, 2019; Aldred, 2016). Yet, at the same time, the sensations felt as love for cycling often overcame calls to quit from partners and friends. The negotiation between Jodie and her husband illustrates how the sensations of cycling have addictive qualities akin to drinking alcohol that are integral to making sense of life.

Jodie illustrates how, like most participants, a love of cycling may outweigh the love of family and loved ones (see wellbeing chapter to follow). Jodie continued to ride her bike despite the known risks and injustices of the road territorialised by cars. She told of the addictive qualities of the sensation of cycling are integral to making her life liveable:

*Well, I think if I didn't ride I'd go spare. It's part of my life. I've tried to ease up a little bit, we've got the caravan out there and my husband's retired, "How about we go away for a week?" "When are we going? I've got a race on, on Sunday." "Oh ..."* *We might go away for two weeks. We went away for two weeks about a month ago, and I quite enjoyed it because I needed a bit of a rest, I think. But, I suppose, it's about 60% of my life.*

*I make things fit in around it. I'm chuffing off to exercise class, or bike riding. Bruce will put the washing on and empty the dishwasher. If I didn't ride I don't know what I would do.*

For Jodie, life without cycling is unthinkable. Cycling is where she feels most alive. Cycling is how she makes sense of her world. In her words: "I make things fit in around

it'. Her love of cycling is what keeps her getting back on the back and back on the road. That said, her love of cycling is ameliorated by the politics of fear. Following her accidents, Jodie rides more frequently in a group as well as on shared paths rather than roads. The sociality of the group rides offer her both emotional and physical protection compared to her experiences of riding by herself.

## 5.8 Conclusion

The chapter posed two research questions:

1. How is mobility (in)justice embodied?
2. What affective and emotional forces work against and towards mobility (in)justice for road cyclists?

This chapter combined assemblage thinking with Ahmed's (2004) notion of the politics of emotion to offer a conceptual framework to understand how mobility justice is embodied.

Within cycling assemblages, I illustrate how the politics of fear operate as a processes of exclusion that remind participants that the road is territorialised by drivers for cars.

I argue that the emotional and affective forces working against mobility justice for road cyclists is the love of driving that configures road cyclists as objects of hate.

Automobility configures road cyclists as not belonging on roads, or at best positioned at the margins (Urry, 2000). The love of driving, and how it configures 'combustion masculinity' as discussed by Redshaw (2008), positions cyclists most at risk when in close proximity to young heterosexual men, from lower socio-economic contexts who have invested their sense of self in the car. Ahmed (2014) evokes the 'bogey man' (it could be anywhere) figure to think through what happens when groups of people are othered by dominant groups and the threat of taking 'something' away. My analysis of road cyclist's experiences suggest that many drivers, particularly some young men, regard cyclists as intruders into the territory of drivers. Thus cycling can be understood as 'taking the road' back from drivers. Consequently, cyclists may become viewed as the threat, for taking away the road from cars. Hateful forces emerge, circulate and reterritorialise the road as a space for cars through acts of violence and aggression.

Fear then may operate to constrain the mobility of cyclists to maintain and reinforce driving assemblages. This is evidenced by the example given in the opening of this chapter – the deliberate acts of aggression and violence experienced by participants. Alongside the material forces that lead cyclists to constitute cars as fearsome (because of their speed, size and potential to kill people who cycle) are the social forces that position cyclists below cars in a mobility hierarchy. This is evidenced through deliberate acts of aggression as experienced by Jeff or when drivers render cyclists invisible on the road as experienced by Jodie. Participants make clear, that fear of cars in part constitutes the meanings and experiences of a road cyclist in Wollongong.

Contrary to Wollongong being recently named as a ‘cycling city’ by the Union Cycliste Internationale (UCI)- the world professional cycling organisation- the participants in this study clearly show that no working arrangement exists between driving assemblages and cycling assemblages. This non-working arrangement will remain until the love of driving is challenged via enforcement, policy, infrastructure and education.

Paradoxically, while cyclists acknowledge that the road is an unjust place, many road cyclists continue to ride. I argue that a love for cycling makes this possible (Ahmed, 2004). This is what mobilises participants despite the injustice, despite the intimidation and violence, and dispute the subordination. Love of the sensations of cycling mobility is a powerful affective and emotional force that is often placed above love of family and friends. For some cyclists, the love of cycling is underpinned by the social norms around risk taking, riding on the road with cars, and knowingly embodying risk as part of the performance of becoming a road cyclist. It is the love of cycling that will be discussed in the next chapter to help understand why people keep cycling despite the clear mobility injustices that exist on Wollongong roads.



## Chapter 6

### Wellbeing

#### 6.1 Introduction

What keeps people cycling on the roads for training rides in Wollongong despite the road being the taken-for-granted territory for motorised vehicles? Based on the previous chapter, it is certainly not that most cyclists have a strong sense of belonging on the roads in Wollongong. Participants ride on the road with an embodied sense of fear. Alongside fear, what other intensities then operate to keep road cyclists riding regular routes? Most participants rode multiple times per week along familiar routes as their primary way to exercise and stay fit. Some ride in bunches. Great pleasure is derived from pushing their bodies whilst on a training ride. Lungs gasping for air. Muscles burning. Eyes carefully following the wheel in front. Others enjoy riding alone. They spoke of the positive effects from taking time to gather their thoughts, to escape and process the complexity of their everyday lives. Some ride not to think. To move and feel uninhibited. Under the framework of ‘wellbeing’, my analysis focuses on these pleasurable moments in becoming well. In this chapter, I offer a post-humanist approach to wellbeing through the concept of cycling assemblages and the refrain. In doing so, I heed to Massey’s (2005, p. 80) call for “a subjectivity which is spatial too, outward looking in its perspectives and in the awareness of its own relational constitution”. Using assemblage thinking, wellbeing is not conceived in terms of individual psycho-social attributes than can be measured but a relational achievement that is always unfinished.

The chapter proceeds as follows: first is a brief overview of the wellbeing literature. The conceptual origins of wellbeing and key debates within the field between hedonic and eudaimonic approaches are covered. I then review spatial conceptualisations of ‘wellbeing’ in human geography that encourage thinking beyond eudaimonic and hedonic approaches. To do this I discuss the notion of ‘therapeutic landscape’. I then turn to more relational approaches of wellbeing. For example, the work of Duff (2014; 2016) and how this has influenced my understanding of wellbeing and ‘becoming well’. Next, I offer my conceptual framework; I again draw on Deleuze and Guatarri (1987) and the related concepts of assemblage, territory and the refrain. These concepts

resonate with post-humanist thinking (Braidotti, 2002) to think of becoming well as an affective force or intensity that is always unfinished. This intensity comes about through the folding together of both the human and non-human in a working arrangement (assemblage). An important distinction here from the ‘therapeutic landscapes’ literature is that the place that wellness occurs is not static. Instead, place is a productive part of the assemblage that is affected and affects. The assemblage is then conceived as a working order of material things (the road, the bike, clothes) and expressive elements (affect, emotions, ideas) whereby becoming well can be achieved or not in various forms.

I deploy a narrative approach to present the experiences of people who cycle in Wollongong- focusing on moments of becoming well. I follow Bissell and Gorman-Murray (2019) in presenting impressionist ‘portraits’ of select participants to highlight cycling as an affective force and discuss how wellbeing is achieved. Through the selected participants, the intensities of cycling come to the fore. As Jones (2012, p.648) discusses, “an apparently mundane activity such as cycling to and from work can be an intense sensory immersion—so intense, in fact, that it runs up against the affective limits of many individuals' bodies”. To conclude, I discuss the implications of my findings to both academic and wider audiences.

## **6.2 Key debates in wellbeing literatures**

Wellbeing is a contested concept across disciplines, particularly psychology, economics and public health. In part, this is because words such as health, wellbeing, quality of life and happiness are used interchangeably, often leading to confusion. In part, it is because of different ontologies of wellbeing. As Schwanen and Wang (2014, p. 834) point out, there are two central debates regarding wellbeing: “the questions of whether objective or subjective perspectives and whether hedonic or eudaimonic understandings should be employed in empirical research”. Important policy implications arise from how wellbeing is conceived. For example, in neo-liberal societies, wellbeing is positioned as desirable and a pursuit that all individuals should strive for (Ereaut and Whiting 2008). For the neo-liberal subject, wellbeing is conceived as the responsibility of the individual. Wellbeing measures being commonly used by governments that deploy

various indices illustrate this hedonic conceptualisation of wellbeing. For example, a national wellbeing measure is being used by the UK government to arrange and deploy social service provisions (Office for National Statistics, 2020). Moreover, as Ahmed (2010) argues, a whole ‘happiness industry’ emerged from this hedonic conceptualisation, with the implication that wellbeing is, or should be an individual daily achievement.

This section is structured in two parts. First, I offer a brief overview of the objective/subjective wellbeing debates. Second, I cover the hedonic/eudaimonic binary. I then turn to how wellbeing is conceived within geography.

Objective and subjective understandings of wellbeing present radically different perspectives on how wellbeing can be thought of. Subjective approaches emphasise “people’s own evaluations of their lives, especially their life satisfaction (a cognitive evaluation), happiness (a positive emotional state) and unhappiness (a negative emotional state)” (Western & Tomaszewski, 2016 p. 2). In contrast, objective approaches emphasise that wellbeing “is established from the evaluation of the ‘objective’ circumstances in which people live, given (inherently normative) criteria based on values, goals or objectives” (Nordbakke & Schwanen, 2014, p107). Both subjective and objective approaches have their strengths and limitations. For example, a criticism of objective wellbeing is that its constituent parts are defined *a priori* by external ‘experts’ and tend toward a western essentialist gaze on wellbeing. This limits a wider range of cultural perspectives and meanings of wellbeing coming to the fore. Similarly, subjective approaches only delve in to personal circumstance that can be limiting as it ignores broader societal, cultural, and structural determinants. These two approaches were long pitted against one another. However, more recent debates have moved towards reconciling hedonic and eudaimonic approaches recognising that they are complimentary and contribute to broader understandings of wellbeing (Diener, 2009; Kahneman, 1999).

Hedonic approaches to wellbeing focus on individual happiness. Deci and Ryan (2008) describe hedonic approaches to wellbeing as being pure forms of ‘happiness’ where ‘happiness’ or ‘moments of happiness’ equate to wellbeing. Hedonic understandings of wellbeing were originally championed by Aristippus of Cyrene in the fourth century B.C (Deci and Ryan, 2008). When approaching wellbeing in this manner, it is the

presence of positive affect and the absence of negative affect that is important (Ryan & Deci, 2001). A hedonic approach equates wellbeing as a pleasurable outcome that can be attained by doing certain things or living in a particular way. This approach is therefore open to scientific measurement. In outlets such as the *Journal of Happiness Studies* in the psychology discipline, hedonic wellbeing is often used and measured simply as an outcome at a particular point in time.

By far, the most popular way to quantify hedonic wellbeing is through Subjective Wellbeing (SWB) scales and measures (Dolan and Metcalfe, 2012). This approach uses a broad understanding of hedonism and focuses on individual experiences with wellbeing defined in terms of pleasure versus pain (Ryan and Deci, 2001). Deci and Ryan (2008) highlight that SWB can be broken down into three components; how good someone feels, the absence of negative feelings and life satisfaction. This measure is commonly cited and used in economic, psychological and even some transport studies. However, it is criticised for being too individualistic, simple, and for conceiving wellbeing through a narrow western lens (Schwanen & Ziegler, 2011; Nordbakke & Schwanen, 2014). Also overlooked are the ethics and politics of pleasure. Pleasures are aligned with an ethics and politics of what might be ‘good’ and ‘bad’ for a persons’ wellbeing (Nordbakke & Schwanen, 2014). For example, eating a whole block of chocolate in one sitting may be immediately pleasurable and satisfying however not necessarily good in terms of medical health.

Eudaimonic approaches are “concerned with living well or actualizing one’s human potentials” (Deci and Ryan, 2008, p.2). In other words, wellbeing is conceived as a process rather than an outcome. Specifically, eudaimonic approaches examine the extent to which people live in accordance to their daemon or true self. Attention turns to how people gain a sense of purpose and meaning to flourish and meet their potential (Deci and Ryan, 2008). This philosophical approach dates to Aristotle where he believed that true happiness “is found in the expression of virtue—that is, in doing what is worth doing” (Ryan & Deci, 2001, p.145).

Hence, eudaimonia takes a more expansive view towards wellbeing. Where hedonic approaches focus only on happiness; eudaimonic approaches acknowledge that ‘happiness’ is one of the multiple elements that come together and make wellbeing

possible. In psychology, one of the most well-known approaches to measure eudaimonia is the work of Carol Ryff (Ryff, 1989; Ryff and Singer, 2008). Ryff offers a theoretical model of self-realisation made up of six dimensions: personal growth, autonomy, and self-acceptance, purpose in life, environmental mastery and positive relationships with others.

From a geographic perspective, place is often overlooked in the debates between eudaimonic and hedonic approaches to wellbeing. Place becomes either a Cartesian point on a map when reporting wellbeing measures or a backdrop upon which individuals lead the life they choose to live and flourish. The next section discusses the geographical literature on wellbeing that through thinking spatially works across both eudaimonic and hedonic approaches.

### **6.3 Wellbeing in Geography**

Wellbeing research in Geography has undergone significant change over past decades. Two distinct bodies of literature come to the fore. First, a welfare-based understanding of wellbeing that sits in economic, social and development geography (Smith and Reid, 2018). Second, a growing body of literature from health geography discussing how place and space intermingle to sustain health and wellbeing. These approaches both have histories in Sen's capability approach (Sen, 1999). This approach focuses on people's quality of life (what is possible in their lives) through two key concepts: functioning and capabilities (Sen, 1999). Functioning includes the achievements and activities that a person undertakes, for example, being in good health or being educated whereas capabilities reflect the functionings that people can potentially achieve and involve what freedoms people have to choose between different activities. Svensson and Levine (2017, p.909) use a convenient example of riding a bike, " ...if someone has a bicycle, the knowledge of how to ride and the environment allows that person to ride, then he or she gains the functioning of mobility and the ability to ride around town. This would then create the capability of cycling".

In this section, I focus on the second body of literature in health geography that examines place-based health and wellbeing. Three areas of health geography are of

interest. First, I am interested in Gesler's (1992) concept of therapeutic landscapes. This concept changed the way geographers thought about wellbeing and place. I will discuss how this term has evolved over time to include blue/green spaces and therapeutic mobilities. Second, I will discuss several key relational approaches to wellbeing including the spaces of wellbeing framework and therapeutic assemblages. I finish with a short discussion of Cameron Duff's work on health assemblages that inform this chapter. The latter helps to position my conceptual framework within the literature, namely, using notions of assemblage (Deleuze and Guattari, 1987) and the refrain to explore wellbeing as a relational achievement that folds through cycling.

Notable place-based literatures of health and wellbeing emerged from work begun by Gesler (1992) on 'Therapeutic Landscapes'. He was particularly interested in why certain environments had a 'healing sense of place' (Gesler, 2003). Gesler's work was based on humanist understandings of health. One of the underlying assumptions was that certain places held healing or therapeutic qualities. As Gesler himself states "I also believe strongly that people can be healed physically, mentally and spiritually in certain places" (Gesler, 1996 p. 103). Religious pilgrimages thus became a focus of study (Gesler, 1996, Kearns & Gesler, 1998) alongside more everyday spaces such as green/blue space and health care facilities (Pitt, 2014; Curtis, 2010; Finley et al, 2015). This body of work is highly influential in health geographies in advancing notions of wellbeing and thinking through place.

However questions were raised about the notion of therapeutic landscapes as being too static in their understanding of place. Place often served merely as the backdrop for health and wellbeing to occur with little consideration given to other processes or relationships. For example, in Gesler's (1996) exploration of religious pilgrimage traditions in Lourdes, France, the article focuses on the town as a healing place.

Through the empirical focus of the 'healing' town, Gesler points to the importance of social and material relationships that sustain a sense of healing:

"...I found that the natural and built environments, the contrasts between the sacred and the profane, a very strong bond of fellowship, and the working-out of personal problems while interacting with a group of sympathetic believers are all components of symbolic landscapes which contribute to a healing atmosphere" (1996 p. 96).

Following Gesler (1996) there is a sense and sensibility to healing that emerged through

the relationships that comprise place.

Work on therapeutic landscapes has undergone significant change since its origins in medical geography (Gesler, 1992) changing both empirically and theoretically (Kearns and Milligan, 2020). Notably, discussions that investigate ‘blue/green therapeutic spaces’ draw attention to the role of everyday places in health and wellbeing and not just special places of healing (Wheaton et al, 2020; Foley & Kistemann, 2015). ‘Green space’ is an umbrella term that encompasses “natural areas of wilderness and urban settings such as parks, gardens and forests” (Foley, 2015, p.97) and originates in epidemiology (Mitchell et al, 2011; Gascon et al, 2016). In this context researchers examined the potential for parks and other urban ‘green’ areas to be health promoting. Foley and Kistemann (2015, p157) define blue spaces as “health enabling places and spaces where water is at the centre of a range of environments with identifiable potential for the promotion of human wellbeing”. Included here are salt and fresh water activities such as surfing (Olive & Wheaton, 2020), and swimming (Foley, 2017). These activities highlighted that it was not only was it important to look at the spaces where these therapeutic activities took place, but also the movement, connections and flows and what role they played in becoming well.

Therapeutic mobilities was born from the mobilities and put in discussion with more recent therapeutic landscapes literatures (Gatrell, 2013). Gatrell (2013) acknowledges that in health geography, wellbeing is impacted by place. However, static notions of ‘place’ meant movement and the qualities it brings to the fore were overlooked. Gatrell (2013) proposed that mobility studies include “the idea that movement itself can be conducive to wellbeing and health” (p. 100). He uses walking to understand therapeutic mobilities and identifies three ways that walking is potentially therapeutic. First, there are improvements in physical fitness and mental health. Second, when conducted with others, walking promotes social interactions with both the human and non-human. Third, engagements with place whilst on-the-move are important, reflexive and relational. Through these interactions, mobilities literature highlights the importance of movement to health and wellbeing and the potential benefit to both individuals and society through reduced health care costs. Relevant though is the focus on conventional understandings of healthy bodies and health more broadly- wellness being defined as the absence of illness. Here, cycling is another activity where movement is key to the

interactions between cycle, people, roads, bodies that are understood to comprise places.

These debates encouraged engagement with relational philosophies. Relational and more-than-human approaches to wellbeing within health geography have gained momentum in recent years (Smith and Reid, 2018). This broad approach moves away from humanistic understandings of wellbeing and “recognises that all things, human and otherwise (such as health), are produced through relations between a range of biological/natural, and material/technological actors, including through the excess vital forces that both exist within these actors and emerge during relations” (Andrews, 2019, p. 1009). Thinking critically through health, place and space, the likes of Gilles Deleuze, Donna Haraway, Karen Barad, Jane Bennett and Bruno Latour, have inspired different ways to think through wellbeing relationally. I will touch on a few including Fleuret and Atkinson’s (2007) ‘spaces of wellbeing’ framework, therapeutic assemblages (Foley, 2011) and Duff’s (2014) work on health assemblages. The conceptual and result sections that follow will build on the relational ontology that is common amongst these concepts (Conradson, 2005; Duff, 2014).

Fleuret and Atkinson’s (2007) ‘spaces of wellbeing’ framework connects various wellbeing debates (subjective vs objective; hedonic vs eudaimonic). This framework argues that instead of interpreting wellbeing through the lens of the individual or the social, thinks outside of these binaries. To do so, the framework brings together spaces of capability (Sen, 1992), integrative spaces (Fleuret & Séchet 2002), spaces of security (Reynaud 2006) and therapeutic spaces (Gesler, 1993). The implications of this framework are multiple but Fleuret and Atkinson (2007 p. 113) state that health-related wellbeing involves “multiple processes, but with the emphasis firmly placed on relationships between these aspects and processes within different settings”. Recently, this wellbeing model is used to explore mobile work and multilocal dwelling (Gorman-Murray & Bissel, 2018), Work Integration Social Enterprises (WISEs) (Farmer et al, 2020) and energy justice (Waitt & Harada, 2019).

Waitt and Harada (2019) extend the spaces of wellbeing framework to explore energy justice and wellbeing in social housing tenants. The authors extend Fleuret and Atkinson’s (2007) work by “taking seriously the role of emotionally embodied energy practices in sustaining home as a therapeutic place that operates as a pathway to relax



and be oneself” (Waitt & Harada, 2019, p. 798). Through this line of query, they open up possibilities to think about how bodily capacities of pride/shame, anxiety/love, sadness/joy are felt in order to stay warm, keep cool and remain fed. The results highlight how embedded emotions become tied to energy consumption, household decisions and ultimately, wellbeing. Wellbeing is clearly then not a simple end point but a process involving the intermingling of human the non-human things as well as deeply felt personal intensities and forces.

Therapeutic assemblages offers a different conceptual entry point to relational understandings of wellbeing through Deleuze and Guattari (1987). Consequently, assemblage thinking encourages conceptualising how health and healing is always a more than human achievement (Foley, 2011). For example, in Foley’s (2011 p. 471) account of Holy Wells in Ireland, he deploys an assemblage approach. The assemblage is seen as a “set of productive connections” that he extends to “an empirical setting with a specific therapeutic identity”. To understand the holy well as a place of healing, Foley examines connections between material things (bricks and water), the ‘being in’ moments through embodiment, metaphors/narratives of healing and finally the inhabitation of place.

Continuing along these lines, a shift is apparent in geographies of health (Andrews, 2019). Moving away from the medical/psychological conceptualisations of wellbeing which thinks through dualistic constructions of bodies and minds, as well as bodies and places, I join the conversation with other posthuman scholars such as Atkinson (2013), McLeod (2017), and Fullagar (2017) to engage with these problematic humanistic assumptions that inform much of the wellbeing research. I approach this work with a spatial and relational conceptualisation of wellbeing and it is through the health assemblage that I take inspiration for the conceptual framing and interpretation of this chapter.

Of interest is the work by Cameron Duff discussion of health assemblages. Duff (2012; 2014; 2016) departs from the medicalisation of health and what normatively constitutes a healthy body. Notions of a healthy body from a health perspective may focus on observations such as heart rate, lung capacity, the presence or absence of disease and the physical appearance of the body as markers of being health or unhealthy. The

medicalised approach centres the individual and holds them solely responsible for what it means to live a healthy life. Instead, Duff and I turn our attention to a relational approach to ‘becoming well’. Inspired by the work of Deleuze and Guattari (1987), healthy bodies and becoming well can be thought of as a series of productive connections that fold through health assemblages (Duff, 2014). Examples of Deleuzian inspired assemblage approaches to health/wellbeing/therapy in health geography include studies exploring mental health and recovery (Duff, 2012), youth and wellbeing (Coffey, 2020) and disability (Stephens et al, 2015).

By taking this approach, I am therefore not interested in defining or measuring wellbeing (at an individual level) and follow Duff (2014; 2018) and Andrews’ (2019) lead and lean into a posthuman (Duff, 2014; Braidotti, 2002, 2019) account of wellbeing more broadly. The goal of this chapter is to add to the body of literature concerning wellbeing and think about the human and nonhuman forces such as affect, bodies, and objects that go in to the work of wellbeing whilst cycling in Wollongong. Duff (2014), inspired by the work of Donna Haraway, posits that in a world of technological advancement and people’s interactions with affective forces in their day to day lives, it is no longer possible to view health solely through a medical lens and that ‘becoming well’ is a relational achievement. Used in this way, I treat wellbeing as “an emergent capacity to manipulate the affects, signs, spaces and events of a body’s “becoming well” (Duff, 2016 p. 59).

The next section builds on the notion of health assemblages inspired by Duff (2014; 2016). In particular, I draw on the concepts of the cycling assemblage and the refrain to discuss becoming well through cycling in Wollongong. This contributes to post-human accounts of wellbeing that are only now emerging in human geography and leisure studies. As the previous chapter highlights, cycling may not be an obvious place to examine wellbeing, particularly when it occurs in a place territorialised by drivers and cars. However, what became clear through my discussions was that ‘becoming well’ is a powerful affective force that keeps people returning to the roads to cycle in Wollongong.

## 6.4 Conceptual Framework

In this chapter I draw Deleuze and Guattari's (1987) two related concepts of assemblage and the refrain to better understand wellbeing as an embodied capacity. I offer the concept of cycling assemblage to help conceive of wellbeing a socio-material achievement. I use the refrain to help interpret becoming well on-the-move. I understand wellbeing as a particular territorial refrain. I argue that the rhythms that help constitute the cycling assemblage allow wellbeing in its varying forms to emerge through the process of territorialisation.

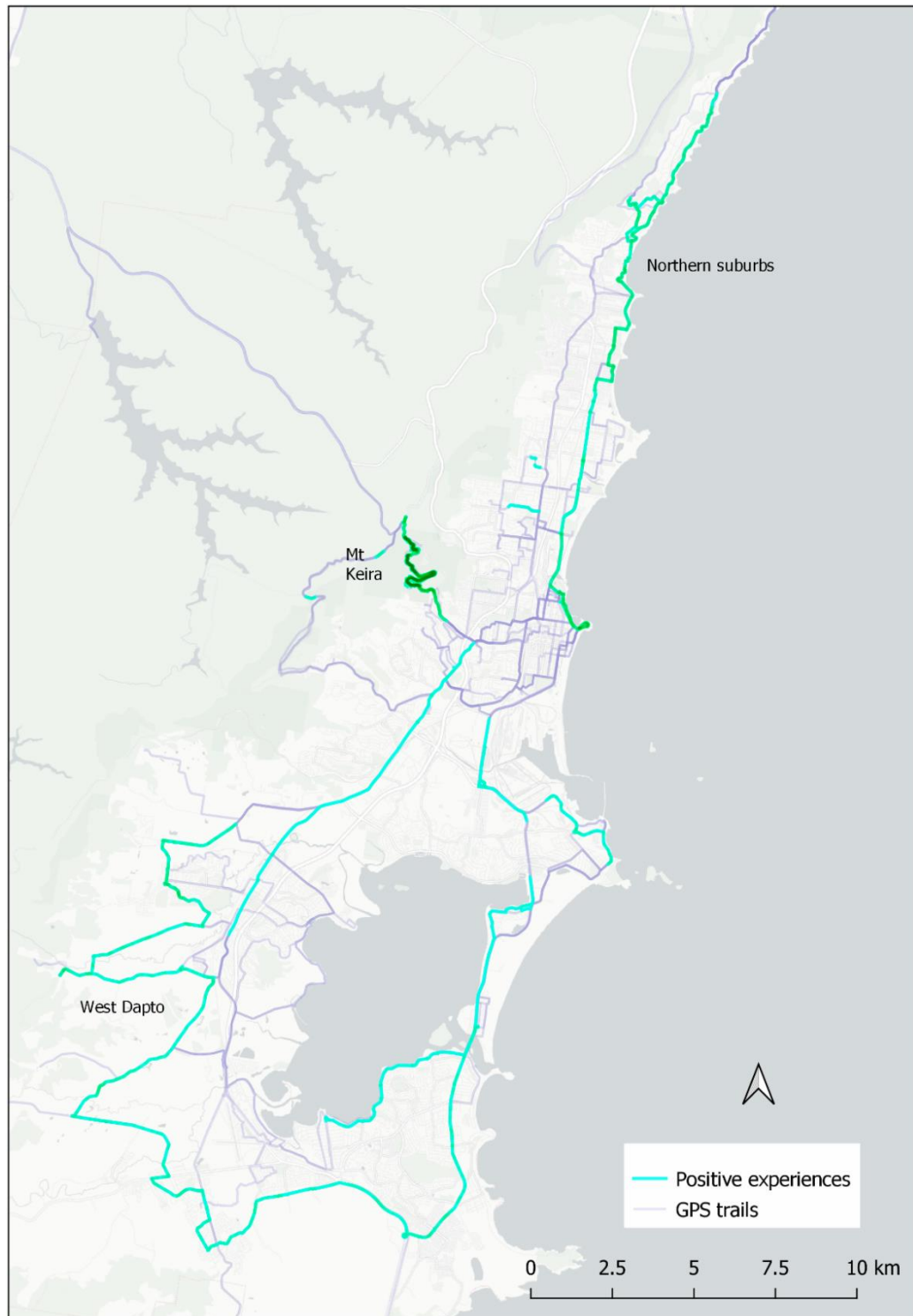
In deploying a post-human account of wellbeing (Andrews, 2019), I offer the concept of the cycling assemblage (Deleuze and Guattari, 1987). The cycling assemblage is always an ongoing process rather than something that can be measured or final. The cycling assemblage is a working arrangement where material objects or things and expressive intensities (affect, emotion) come together in some way to achieve forms of wellness. The increased bodily capacities articulated as 'happiness' or 'wellness' may be felt as restoration, flow, relaxation, connection to 'nature', and belonging. I argue below the achievement of wellness comes about in several different ways, but in particular through a territorialising refrain.

Chapter 5 discussed how cars undergo a process of territorialisation as part of a road assemblage. In this chapter, I introduce the refrain as a territorialising agent. To do so, I lean on Deleuze and Guattari's "Plateau 11. 1837: Of the Refrain". According to Deleuze and Guattari (1987) refrains are everywhere- the fearful child humming a song for comfort, animals marking their territory through bodily processes, salmon returning to their home spawning grounds. Although no refrain is the same, there are qualities to refrains that bring about order from chaos. The refrain does this through repetition, rhythms and territorialisation. For instance, as Grosz (2008 p. 19) states, "the refrain is how rhythm stakes out a territory from chaos that resonates with and intensifies the body". Jackson (2016 p. 183) further explains that "the refrain uses rhythmic processes that draw upon forces from multiple milieus in a temporary congealing that is unstable". Despite the repetition and rhythms that are produced through the refrain, it is worth noting that no two refrains are the same. That is, refrains are conceived as open ended. Thus, wellbeing is understood to emerge in and through rhythmic differences as

territories are made and remade. In this chapter, I explore the rhythms of cycling in Wollongong and examine the emerging (reterritorialisation) and fleeting (deterritorialisation) qualities of wellbeing.

Bringing these two concepts together, rhythms operate as a key part of the cycling assemblage that help to bring wellbeing to the fore. Rhythms are conceived to act as a powerful ordering force that keeps people cycling through generating a sense of comfort and security. Following Deleuze and Guattari (1987) three things are conceived to happen in the refrain concurrently. First, cycling rhythms keep forces of chaos at bay. This helps to sustain a sense of order or stability. This may be felt whilst cycling through feelings of relaxation or calm or the ability to ‘switch off’. Second, the refrain is conceived as a process of territorialisation. For example, the territory that is the liveable order for different styles of pedalling is sustained by cycling refrains, including where they ride, who they ride with, what they wear and where they socialise (the post ride coffee). Third, are the entry of chaotic forces that fractures the territory. According to Grosz (2008 p. 52) these may be thought of as a “line of flight to the outside, a movement of migration, transformation, or deformation”. In the cycling assemblage, this movement away may come in the form of other road users, an accident, a bike malfunction, or a break in rhythm when ascending a hill. What is important is that the assemblage and refrain are always unfinished and at any point can break up to claim a new territory or form a new assemblage.

In rethinking recovery, Duff (2016 p. 59) offers “an account of the “real experience””. To do so, he explains that his aim is “...to prise open the spatial and embodied rhythms of recovery, the real experience that propels a body along a line of becoming well” (2016 p. 59). In the analysis that follows, I pay attention to the “real experience” of wellbeing that emerges in the cycling assemblage. I will show how wellbeing is a relational and rhythmic achievement through returning to the road to cycle. Attention turns to the affective intensities of becoming well that are accomplished by cycling rhythms through process of territorialising and re-territorialising roads, footpaths and cycle ways, sometimes alone and at times with others (see figure 6.1).



**Figure 6.1: Collective map detailing stretches of road indicated by participants as especially meaningful.**

Darkening of the turquoise hue towards green is particularly evident on Mount Keira. A range of qualities that contributed to the cycling assemblage combined here, making this popular mountain a site for exertion, rejuvenation and connection.

## **6.5 Analysis**

Given the relational potential of cycling assemblages, the key question for this chapter is how do cycling bodies become well on a bike? It is worth noting that in the same way that I have not defined wellbeing in conventional medical terms, there is no singular way of becoming well on a bike. Instead, the refrains that my participants articulate are illustrative of the notion of wellbeing through examining the cycling assemblage of bodies, intensities, ideas and things. The analysis maps moments when becoming well comes to the fore and diminishes. Here, I deploy Bissell and Gorman-Murray's (2019, p. 711) portrait approach, mapping cycling experiences through a "...combination of quotes, re-tellings, and in-situ reactions [that] attempts to 'story' the experiential complexity". These portraits foreground sensibilities, focusing on heightened intensities that promote becoming well whilst riding.

The three portraits in my interpretation elucidate moments of wellness and draw attention to bodily capacities that make becoming well possible. These three participants were chosen, in part because of the richness of their interviews. In addition, I was able to ride with both Tim and Emma prior to our discussion. This allowed me to further understand their experience of wellness on-the-move. Thinking through Brown (2019), I listened to my 'gut' and followed my own affective response to each of the participants in my interactions with them. In each, I was drawn to how cycling passion shapes their lives, but also to how chaotic forces were always just below the surface. The resulting tensions highlight the fickleness of the process of becoming well and that it remains an ever unfinished achievement.

## **6.6 Interpretation**

### **6.6.1 Tim: rejuvenation, addiction and socialities**

We first met Tim in the previous chapter. There he was illuminating his experience of being harassed on Wollongong roads while riding. He rides sometimes on the road by himself and at other times with a group of men, some of which he used to play football with. Here, Tim helps interpret what keeps him riding in Wollongong. Tim conveys how cycling enables him to become well through: generating time for himself; by how

pleasure is produced in particular ‘moments’ whilst on-the-move; and through the socialities embedded in cycling rhythms. Furthermore, Tim points to the precarious qualities of wellbeing. Tim expresses how the cycling assemblage produces a desire to become a fitter, better, stronger cyclist in his interview but this is often at odds with competing familial and work forces in his life.

### Moments of rejuvenation

Tim has a wife, three children and runs a small business. Tim notes that he has little time for himself. He rides predominantly on the road, uses a road bike, takes care in coordinating his cycling attire (lycra) and rides several times a week. In his words, Tim has a ‘hectic lifestyle’. Incorporating cycling into his weekly routine enables him to create a space-time for stress relief and escape:

*On a personal level it [cycling] gives me a bit of stress relief, a bit of time out, time away; three kids and a hectic lifestyle doesn't allow for too much down time. So, it's nice to have an hour or two, whether it's daily or every few days to do that. And it just gives me an opportunity to catch up with people pre-work, and we've all got hectic lives and it's just good to do that before work and not disrupting the family.*

Familial and work rhythms mark out significant territories that can be stressful. Tim’s comments hint at cycling as a space-time for rejuvenation (“it gives me a bit of stress relief”) and producing a space-time where he can escape from the day to day activities of family life (“so it’s nice to have an hour or two”). Regular cycling fitness rides enables him to create space-time for himself, without compromising his family commitments. For Tim, family time is important and a priority to balance with his work commitments. The temporal and bodily rhythms of cycling operate to a mechanism to de-stress through pedalling fast and ‘catching up’ with others.

We find out in the comments below how the capacities of cycling-bodies facilitate a sense of becoming well through movement and heightened sensibilities:

*...I think the fact that you can actually go different places while you're riding, so you're not stationary; you can ride in the mountains, you can ride along the*

*beach, and I think the fact that you can actually move and see things while you're riding at the same time, I like that aspect of it.*

The mere achievement of movement/mobility is key for the emergence of wellbeing in the cycling assemblage for Tim. “So you’re not stationary” highlights the importance of his ability to achieve a body capable of going places. Movement was integral to his perception of a healthy life. For Tim, being stationary takes on a negative meaning. Cycling affords him new places, bodies, ideas and affects to be connected to, hence opening up possibilities of becoming well. Tim’s comments are consistent with Jones (2012 p. 649) when discussing cycling where “The affective capacity of a body can be seen as the extent to which it can have an impact on the world around it while absorbing what the world throws at it”. Becoming well is achieved in part through how cycling increases Tim’s affective capacity to make new connections with the non-human world (the beach, mountains).

The familiarity and order generated by the cycling refrain allows Tim to ‘zone out’. This process is highly affectual. The habitual routine enables possibilities. At the same that the road conditions demands his cognitive attention, Tim is aware of how regular rhythms of pedalling creates the possibility to relax. Forces of chaos are kept at bay by the routine and rhythms that comprise the cycling refrains:

*And you just zone out and I think subconsciously you have to concentrate as well because it's quite dangerous, so you've got to be aware of what's around you. There's too many things going on in your head while you're riding, and it's funny, like there's a lot of things going on but you're clearing your mind at the same time. It's a hard one to explain. Your focus is on the outside world, it's not on your world, and that's a big difference.*

For Tim, the cycling refrain creates a space-time in which to zone out. The moments are valued to help make sense of his own world through a clearing and ordering process. Yet, Tim points to the negative felt presence of traffic that in Deleuzian and Guattarian terms generate chaotic forces (“there’s a lot going on”) despite the automation of his cycling generated from his experience. His comments show that the bodily capacity to ‘zone out’ through cycling routines is always a relational achievement.



For Tim, enhanced wellbeing is expressed through fleeting moments that enabled a heightened sense of place-based connectedness. For example, Tim spoke of cycling pleasure not solely from strenuous bodily exertion during uphill rides. Instead, Tim emphasised the positive affective capacities of ‘capturing mental images’ of the sunrise and the early morning sun rays through the trees. This means being up early and riding up one of Wollongong’s best-known climbs, Mt Keira (shown in figure 6.1):

*But personally I find myself tuning in, capturing mental images and saying, “That’s a mad sunrise,” and then within 10 minutes you forget about it but you’ve got it in your brain. I don’t know, it’s a weird one....Little moments, you know? We’ll be riding up Mount Keira and the sun ray’s kicking through the trees, and there’s no one around and you’re just like, “Man, this is cool.” And there’s so many moments where you want to take a picture on a camera, and that’s the mental picture you take. I don’t know, it probably sounds a bit weird, but that’s how I see it..... Yeah.*

For Tim, we sense how becoming well is part of a function of early morning rides up Mount Kiera that enable storing connections with place understood as ‘cool’ or ‘mad’. Becoming well involved the pleasures of witnessing the sunrise or the sun rays breaking through the trees through the creation of multiple territorialised refrains in those moments. Even Tim himself finds it hard to describe how his bodily capacities are enhanced in such moments (“it probably sounds a bit weird”). These moments and the making and remaking of these refrains challenges Tim’s normative ideas concerning cycling masculinity that require fitness, endurance and competition as essential for road cycling pleasure. Tim himself doesn’t fully understand what is happening but acknowledges the forces moving him closer to becoming well.

Tim goes on to position the affective qualities of cycling that help to cope with the demands of familial life. Cycling assisted bodies and its various effects can be drawn upon to help with the demands of becoming father:

*It can quickly go away, that feeling; five minutes of being at home with the kids screaming and you quickly forget about those nice moments. No, it’s all good.*

Cycling assisted bodies comprise different assemblages. Tim indicated that cycling-bodies may be conceived as an assemblage that comprises the road and families. The connections that Tim makes through riding in the early morning bring joy and order; this is the purpose of his cycling assemblage. The transformations that the cycling body undergoes in becoming well can enhance its capacities, including through the demands of becoming father.

#### Becoming well – becoming unwell

Yet, Tim is aware how pleasures of cycling may become addictive and result in a prioritising of riding over family time. On the one hand, Tim experiences wellbeing from his regular early morning rides that increase his capacity to cope with familial and professional life. Yet on the other, the early morning rides contribute to a growing sense of losing touch with routines that comprise a family.

*..cycling's funny, like when you get grasped by it you feel like it sort of takes over. It takes over your mental space and you can quickly lose focus of why you're doing it. And I'll probably admit that I lost that. It sort of became a priority, which it shouldn't have been, and it was either ride in the morning or not ride at all, and that's pretty much how I operate.*

*Yeah, it was just like where I was trying to fit the bike in and family and work, and it wouldn't allow it, but I was still trying to cram it, and it was just like, okay. We went on holidays and while I was on holidays I was just sort of, just thinking (about cycling) and it was like, "Man, what am I doing?" That's really what happened. But I think it's just finding that balance.*

Tim's narrative points towards how the forces of cycling narrated as pleasure helps to create space for himself to become ill within hectic work and family routines. However, Tim illustrates the effects of cycling bodies are related to meanings and experiences of sporting masculinity. Given the pervasiveness of sporting masculinity, Tim expressed the view that endurance, speed and competitiveness were integral to normal sports cycling life for men. Tim found himself 'grasped by' cycling norms, prioritising cycling over family relationships. Tim points to the addictive capacities of the cycling refrain in sustaining notions of masculinity. From a Deleuzian and Guattarian perspective the

pleasures of cycling refrain in stabilising taken-for-granted ideas of masculinity would be viewed as ‘unhealthy’. For Tim, becoming aware of these obsessive cycling rhythms worked against the challenges of meeting parental expectations and becoming a father and husband.

### Cycling’s social rhythms

Drawing on Deleuze and Guattari (1987), sociality may be conceived as produced through the cycling refrain. That is, taken up by others to enable the formation of a territory. In cycling, a certain refrain may be produced whilst riding, others might occur online (e.g. Strava) and yet others occur before and after the bike ride itself. I was able to experience some of these emplaced socialities produced and sustained by the cycling refrain when becoming cycling-researcher and experiencing the post-coffee ride with Tim alongside the group of men he rides with. I add to the quotations from Tim with my own reflections of the post-ride coffee stop.

For Tim, becoming well is achieved through the liveable order generated by the group ride routines and rhythms that enabled conversations on the bike or afterwards over a coffee or breakfast. For Tim and his fellow riders, they always go to the same cafe:

*Yeah, we generally go to Diggies. I know a lot of other cyclists go on the other side to the Kiosk. It’s just the guys, and we all know the owners of Diggies too, so we just generally go there as well*

In Deleuzian and Guattarian terms, Diggies is Tim’s cycling group territory. Diggies transforms and is transformed by Tim’s cycling group. Tim and his group can act differently in this territory. In Tim’s words “it’s just the guys”. Tim and his group attain surplus value from hanging out in this territory. For example, another participant describes Tim’s group as “the pros”. The sociality felt by this group is sustained through feeling of being ‘at home’. This home territory is comprised of the tables and chairs that are routinely organised to enhance the sociality. This is evidenced by a moment of awkwardness as I sat with the group in the café. It quickly became obvious that these were their regular seats in the café and I did not necessarily have a place here. The staff at the café know the riders and there was some banter with them before ordering coffee. The routine and regular arrangement of the lycra bodies, parked bikes, table, chairs and

coffee helps constitute Diggies as a 'home' territory that enables felt bonds conveyed as sociality. In addition, helping to reterritorialise the café temporarily as a home that sustained bonds of friendship was the tone of voice, language and conversation topics.

Diggies territorialised as a cyclists home for family men, offered unique opportunities to talk about life. When explaining the topics of conversations at Diggies, Tim said:

*Yeah, it [conversations] can be from say, a cycle chat, so it can be training or races coming up if we're in a more of a, like the regular racing bunch. It can be cycling equipment, cycling bikes, but then we've all got families, so the kids' conversations, the families will come into play, what's happening at home. It's just general chit-chat....But it does, cycling's just the medium to give them that outlet but ultimately it's the post-coffee or the post-brekky that they're there for.*

Cycling pleasures include the post-coffee chat. While topics of conversations and bodily gesture still continued to reproduce conventional understandings of masculinity against social norms, the conversation itself was regarded as equally satisfying. Alongside cycling, the group discussed their sick children, school successes, their daily home lives. As the conversation rhythmically flowed, there was never a lull as people talked to one another and group conversation often broke up in to smaller conversations depending on where you were sitting. A group member stands up and makes the call because it is now time to leave, I quietly ask Tim as we move back to our bikes if this particular coffee chat was different to others. He says it was 'pretty standard'. I follow up and ask if he has these types of conversations with anyone else during the week (i.e. his wife, other friends, etc.), "nah, not really hey", he replies as we get to our bikes to go our separate ways. Similar to Deleuze and Guattari's (1987) example of the small child humming a tune to feel safe, the ride and conversations that followed take on their own rhythmic qualities whereby a sense of belonging and comfort was achieved by a process of territorialisation for this all male group.

### **6.6.2 Emma: order**

Emma has lived in the Illawarra for approximately 10 years and works as an editor. She has been road cycling for less than 5 years and enjoys riding long distances as part of

the Audax Cycling Club. The club specialises in long distance riding, ranging from 50km to 1200km events. The Audax websites states that “The challenge of Audax is not in racing, but in pushing your own boundaries and experiencing great personal achievements. Audax enables riders of any ability to set and achieve riding goals with a group of like minded cyclists”. In this chapter, Emma illustrate how becoming well is constituted through rhythms and routines of a training refrain. I rode with Emma on a training ride (100km) that tested my own physical fitness. In the next series of quotes, we hear from Emma and how she prepared for a cycling event in Italy, L’Eroica. Some background on the race is required before proceeding. This race was started in 1997 in the Siena Province in Italy. It offers riders challenging routes (gravel, dirt, road) through the province and a range of distances can be selected – 46 to 209 kilometres. For many, the appeal of the race is that it celebrates cycling history and entry is restricted. Conditions include riding a bike that was made prior to 1987 with no modern componentry. In addition, riders must dress in attire that is inspired by cycling in the 1980s or earlier (wool jerseys and bib shorts or acrylic are generally accepted). All cycling accessories (hats, shoes, bottles) must adhere to the spirit of the event. The only exception is that some modern helmets are allowed following mandatory helmet laws.

Emma entered the 140km race. To help her prepare for the race, she bought a steel framed bike from a specialised bike shop in Melbourne. She hired a coach to set a training plan. The training program was extensive and in her words:

*...included a lot of interval training for strength, a lot of hill peaks and gradually longer distances on the bike on the weekend, so a lot of AUDAX rides. AUDAX rides were an ideal preparation because it was the length and it was also on a time limit and the hills and everything. I was doing hill training every week and that also doubled up as like a weight training for building power and muscle in the legs because they were all seated climbs, which makes you really work on the legs. I was essentially doing six days a week on the bike.*

Emma was on the bike 5-6 days a week and dedicated herself to training and the event. She prepared herself through a fitness routine. It is in these training rhythms and routines where the cycling refrain is constantly being formed and reformed. In this context, Emma achieved a sense of wellbeing through cycling.

### Creating order in the mind and day

Cycling plays a significant role in Emma's life. It takes her places, connects her with Wollongong, and keeps her 'happy'. Cycling pleasures for Emma follow ideas and experiences around distance, speed and embodiment:

*I love it because you can go a lot further than you can go walking because you're faster. It's easier but you get a very different perspective than being in a car. You're not inside a car looking out at stuff as you whizz past. You're actually in the environment but you're a bit faster than walking.*

Movement generates embodied sensibilities (see Sheller, 2004 for a discussion of driving emotions and Waitt and Harada, 2016 for discussion of parental care and driving). Like Jones (2012), Emma conveys the heightened felt intensity of cycling mobility in comparison to driving. The heightened affective intensities of becoming cyclist enables connections through the experience of the body folded into place. In Emma's words: 'You're actually in the environment'. Emma illustrates Aldred's (2014) argument that cycling mobility helps establish connections with places.

Emma confirms normative understandings that the pleasures of cycling are derived from understanding the bike as a tool for exploration and fitness:

*I guess that's what I like most about the cycling, is the exploring of your surroundings. I guess also from an exercise point of view, in terms of doing an exercise activity, I really like cycling because I find it very satisfying and meditative and it's easy to do.*

Emma illustrates how cycling enables her to create a fit sense of self and order in the world – which she names as 'satisfying' and 'meditative'. Furthermore, Emma conveys how a cycling routine is integral to her mental wellbeing:

*I find on the days when I exercise, I'm much happier, so my mental wellbeing and level of happiness or depression or whatever is really good, if I've been on the bike. Sometimes I do have a tendency to get a little bit depressed and it's*

*usually if I haven't been on the bike for a while or I haven't been having exercise.*

Following Deleuze and Guattari's notion of the refrain, regular and routine cycling helps establish a liveable order by keeping depression at bay. At the same, Emma illustrates an addiction to her love of cycling that prevents her from becoming unwell.

The training regime and membership to an AUDAX long distance cycling club only amplified the powerful forces that work towards sustaining a territory, and making it liveable. It is through exploring and exercising that the territorialised refrain expresses becoming well ("I'm much happier"). Cycling for Emma may be understood as both a movement towards becoming well and simultaneously as a relational achievement of recovery (Duff, 2014) where cycling orders or bounds wellness. I build on Duff (2014) who argues that becoming well and unwell is an ongoing relational achievement.

Emma, like most participants had a preference to ride in the early hours of the morning. Emma describes the felt intensities when riding in the morning:

*It's like it's a happy place, it's the promise of the new day and the day is just starting and it's the promise of this fabulous day. I mean, it might turn to crap later but it's still fabulous first thing in the morning. It just sets you up in a really happy place for the day and you think, okay, and you get home and you can really enjoy your breakfast because you think, oh, I've earned this. You can have a look and see if you've got any good results from your ride or whatever. Sometimes I take photos, if it's a cruisy ride. We can talk about that later. You've done that for the day and it feels good and you're then happy to go and sit down at a desk all day because you have had some exercise and the mind's happy and it's good.*

Through cycling rhythms, the affective intensities of the morning ride increase her corporeal capacities to 'become well'. For Emma to 'earn' her wellness, she continued to measure cycling performance and pleasure against the norm, speed. Becoming well is conditional for Emma, the threat of failing (or not achieving) is always pushing against becoming well. Taking photographs were viewed as less satisfying, an indication of

‘cruisy’ rides. It is the routine, rhythms and forces of cycling training that allow this particular spatiotemporal configuration to be expressed as happiness. In musical terms, cycling becomes the melody of the morning and keeps forces of chaos at bay.

### Material forces and cycling rhythms

In preparation for her ride in Italy, Emma committed to an intensive training regime that illustrates how the process of becoming well may be thought about as a territorialisation process or working socio-material arrangement. A crucial part of her training assemblage was the bike itself. The race requires a steel framed bike made prior to 1987. Emma wanted:

*...to be on a bike I'm comfortable with. It doesn't hurt anywhere that fits me that I'm familiar with and I know how it works and I know how to change gears. I'm confident. I know it's reliable. So, I found a bike in Melbourne.*

Emma illustrates the significance of the bike in how the routine and rhythms of cycling produce the road as a home territory that is felt as comfortable and safe. As Spinney (2008) notes, the connection between rider and bike is a relational one as well as a being physically in contact with it. The importance of material forces in cycling assemblages are acknowledged by Emma with her Paconi brand bike:

*My bike is from 1980 and it's got all Campagnolo parts on it. It's beautiful. It's just a really good looking bike. It's just nice and I just think it's really cool that it's Australian and it's unusual. They are quite unusual and rare and not many people know them but the people that do know them are quite into them or obsessed with them. They are quite ...I suppose they are collectible in their own way. They are well-regarded.*

The affective intensities associated with her bike are powerful. She notes that the bike is ‘beautiful’ and ‘really good looking’. Emma is clearly proud that this is the bike that she will compete with.

Alongside the bike, Emma spoke of the importance of cycling attire to achieve a sense of confidence as a participant in L’Eroica. As Spinney (2006 p. 715) notes the need for,



“practices of mobility which foregrounds not only the body-subject at the centre of the lifeworld but also the objects which inform and shape its movements”. Cycling attire has a purpose beyond an instrumental dressing of the body. For Emma, cycling clothes help legitimise her participation in the event:

*I've got this beautiful Paconi kit. It's blue and white with some stripes and black writing and it looks old-fashioned. I've got the knicks, the jersey, the hat and the musette. They didn't do socks.....Gosh, yeah, I still wear that but only for that bike. You can't wear that on the other bikes because it's got ... so that's the kit I wear for that bike, so that's very cool.*

After Ahmed (2010), Emma's one off hand-made cycling kit and bike may be conceived as a 'happy object'. Ahmed (2010, p. 22) states that “Happy objects could be described simply as those objects that affect us in the best way”. Emma describes the cycling kit as 'beautiful' and is only for riding on her specialised bicycle. It is a highly affective experience of riding her steel framed bike in her specialised equipment and aligns with Ahmed (2010) when she says “To experience an object as being affective or sensational is to be directed not only toward an object but to what is around that object, which includes what is behind the object, the conditions of its arrival. What is around the object can become happy” (p. 25).

Emma's discussion of riding a steel framed bike, in her specific cycling kit, in preparation for her cycling event, is whole new process of making sense of self and place. Important implications arise for the importance of becoming well. In Emma's words:

*It's so different to ride. I just feel like whatever bike I hop on you're in a different head space. Some of that is okay. I have my special kit for the steel bike but even before then it just feels different to ride. You feel more in touch with the bike. You and the bike are one, somehow, and it's like you're in this ... not so much a holiday mind frame but just a different place in time and a different ... almost like a different dimension. It's just really different and you have more of a connection with the bike. I think some of that is to do with the gears and the clips and everything. It's just different.*

The affective intensities that Emma embodies are immense when these different ideas, materials and affects come together to become well. To achieve the sense of security and wellness, a relational process unfurled. This process unfolded through getting used to the bike, understanding the ‘gears and clips and everything’, wearing the cycling kit and the act of riding itself. Riding this bike in this way is transformational and takes her to a ‘holiday mind frame’, giving the assemblage direction and points towards wellness. In a later part of the interview, she identifies her steel frame bike as her favourite and feels pride when she is riding it. The corporeal pride that Emma expresses is part of the territorialisation process where her and the bike become cyclist-on-the-move, overcoming constraints to become well.

### **6.6.3 David: the healthy cycling body**

For my final portrait of becoming well, I return to David. First introduced in chapter 4, cycling plays an integral part of his life. David is forty-something exercise scientist. He owns several bikes for different purposes. Now that David regularly commutes to work by bike, he and his wife have moved from having two cars to one. David rides his road bike for fitness and transport. He views himself as fit and able on the bike. I begin with a brief discussion about the role of his daily cycle commute, then the gendered dimensions of the cycling refrain finish with an analyses of his return to cycling following recovery from an accident.

#### Commuter cycling as time out

Like Emma and Tim, the pleasures of David’s cycling commute brings a sense of calm and order to his daily routine. For his journey home, David rides in part on the road and on cycle paths or mixed use (cycle/pedestrian) paths. I draw particular attention to the impacts of the return journey in term of how makes sense of himself and the world:

*So, for me, it’s (the commute) a real nice demarcation between home and work, because I start thinking about what I’m doing, but in particular, on the way home, in the early days I used to push hard when I wasn’t riding a road bike, but now it’s a real end of work, it’s a nice switch off, so by the time I come home I’m ready to have a cup of tea, cook, or do whatever. I enjoy particularly the ride*

*home, I quite enjoy it, even though it's only 12 minutes, at a slow pace, it's a really nice demarcation, and I cannot imagine driving to work now.....I'm just switching off, saying right, what I'm gonna do when I get home.*

The bike ride home is part of the intensive fabric of everyday life for David (Duff, 2014). For clinical psychologists, this transition from work to home might be deemed a 'third space' (Fraser, 2012). The return journey through this third space allows David to prepare and transition to his home life. However, I am more interested in the relations that coalesce on his return journey and what possibilities it brings to the fore. David notes that the 'slow' paced riding allows him to switch off and he likes to "look around, notice the school, people walking, whatever. And it's just a mode of transport, and I enjoy the sun in the face or whatever, or even if it's raining, it doesn't matter". In his short ride home, the rhythms he embodies creates a space-time where ideas and affects about home and being a husband come to the fore. These affective intensities felt are enabled and heightened whilst on-the-move in cycling rhythms as discussed by Jones (2012). David's pleasurable experience of becoming 'switched off' is transformative. Departing from conventional modes of cycling fast and hard offers possibilities of deterritorialization from gendered norms. He orientates himself through 'slow' cycling, where his senses come alive (sun/rain on his skin, what he sees) and his work day becomes a memory.

#### Affective capacities of the fit, masculine cycling body

David shares his very different understanding of his own road cycling and what it enables him to do. Here there is tension between understanding his cycling body as healthy through a medical lens (focusing on discrete quantitative outputs such as heart rate, calories burnt, power used) and letting go to find a 'flow' experience. Two very different understandings of wellbeing are present.

*The road bike is pretty much fitness, that sort of satisfies my competitive urges, and I also, some people like riding in groups, I like riding in groups a bit but I really do enjoy riding by myself. I get sometimes that nice flow experience, where I lose it, and I just enjoy that. And so that's why sometimes I do lots of reps, which people can't understand, but I'm happy to do the same climb and just do that on my own. I've found that I see the group riding as a totally*

*separate thing. So that's what works for me.*

Mobilities and gender are co-constituted within assemblage thinking. For David, a fit, masculine body is essential for sports cycling pleasure. Riding his road bike by himself and with other men involves, competitive, strong bodies to reproduce sporting masculinities through cycling relationships. David's quest for a fit, masculine cycling body is maintained through rhythms that are synonymous with hegemonic sporting masculinity (Wellard, 2002; Guilianotti, 2005). The proliferation of desire and experiences of 'becoming well' require finding 'that nice flow experience' related to climbing hills and pedalling through pain. Finding 'flow' is earned through this process where milieus are connected. For David, the cycle climb up Mount Kiera holds particular significance in becoming well after a workday:

*I just get to the top of Kiera, hammer myself, then I get to Clive Bissell, roll down, turn around and really flow right up. And I just look around and quite often I'm on my own, and that to me is the absolute favourite spot. No cars, birds, I just feel like I could be hundreds of kilometres away from home, so that's really nice, particularly if I've had a shit day at work, I'll do that one.*

In Deleuzian and Guattarian terms, David's narrative of fitness training can be understood as the product of a dominant idea that organise masculine subjects as fit, strong and competitive. The norms of sports science dictate David's conceptual and corporeal understanding of a 'healthy' body. Failure to push through pain, is failure to comply with the correct progression of a fitness training regime. The most satisfying parts of rides are thus those moments where David discuss the 'hammering' imperative. For David, cycling up Clive Bissell Drive, Mount Kiera offers a panacea for becoming well through the routines of fitness training.

#### Love, Addiction and becoming 'healthy'

Like many participants, David spoke of his love of fitness training. His love of fitness training is integral to how these participants made sense of themselves, created connections to place, but also maintained their sense of wellbeing. As David explained – "I think it's [road cycling] quite central to who I am as a person now". Yet, paradoxically, this love of cycling may work against itself and result in individuals

becoming unwell, through the addictive qualities of cycling. This section draws on the Deleuzian notion of 'health' to interpret David's return to cycling following the road accident. In opposition to the notion of the 'healthy' body conceived by sports science sustained by a strict training regime, a Deleuzian perspective draws attention to affective capacities that allow new self-invention. Rather than health being configured by medical knowledge such as blood pressure and heart rates, Deleuze encourages us to think about health in terms of bodily capacities, and how they are enhanced and diminish. Buchanan (1997) argues that in contrast to sports science 'healthy body' that requires stability and order, the Deleuzian 'healthy body' must increase its capacity to be affected, not decrease it' (Buchanan, 1997 p. 88). The final section draws on Deleuzian perspective that a 'health capacity' involves challenging a fixed order in favour of something fresh and new (Buchanan, 1997).

David was involved in a serious accident when a driver, blinded by the morning sun, hit him from behind while cycling. David was knocked out, waking up on an ambulance gurney. He suffered multiple fractures, a collapsed lung and extensive bruising. Six weeks after the accident, David was back riding his bike on the road. That said, the accident become embodied and created new social, spatial, and temporal cycling limits for him. His cycling routines and performances changed. In his own words he became "a bit more conservative" and when riding in particular locations would "ride more in the centre line" for safety reasons. David rode more by himself, anxious about riding in a group at high intensity.

Of importance to this chapter, is how David's narrative illustrates how Deleuze and Guattari's notion of a healthy body that focusses on capacities rather than biology offers an interpretation of the implications of the accident. David confided that prior to the accident his love for cycling worked against spending time with his partner. David illustrates the domestic conflict created by the addictive qualities of cycling that involved fitness training regimes underpinned by medical knowledge of the body that require pushing his body to the limits in terms of heart rates and power outputs:

*Prior to the accident there was tension with respect to how much I was spending on the bike, and Leah didn't quite understand, or I didn't quite understand Leah's point. We had different expectations.*

Prior to the accident, for David, becoming healthy through performing a sporting masculinity required cycling alone and pushing bodily limits. At the same time, becoming a healthy competitive road sports cyclist worked against becoming a husband. Following the accident, David while still finding pleasure in cycling, this no longer was fashioned solely through the training regimes of sports science. David's bodily capacities have increased through the affective pleasures of shorter less physically intensive and risky rides. In his words, his becoming well is now configured through becoming a slower cyclist and husband:

*Leah's still concerned for me, but I think what she's come to realise, "Shit, he's been hit by a car, and he still wants to do it." I've said I'm not going to be stupid on the bike, I'm pretty conservative, but I've said, "I'm healthier, it's what I want to do ..."* So she sort of understands and we have to negotiate less now because I'm not coming home and not contributing around the house, so it's not my total life, and that's probably what's changed.

David, goes onto explain the life-threatening accident became a moment to reflect on how his love of cycling had become an addiction that threatened not only his life but his marriage:

*So I think if we don't have a balanced life and it swings too much to being obsessive about cycling then that's an issue, which is probably why I prefer to ride early, because Andrea gets up and I'm home. She's not worrying about me. And if I am riding long I'll quite often text her, "Look, I'm going long, I'm fine, be back a bit later". So that's probably providing information.*

David illustrates the challenges of not yielding the affective intensities of the sensations of road cycling mobility that sustain sports masculinity. David illustrates the addictive pull that may be stronger than love for a partner. While no longer cycling for as long or taking as many risks, David continues to return to the road to cycle for fitness early in the morning. That said, the life-threatening accident became a moment to reflect on his love for road cycling, and its addictive qualities. David advocates for "a balanced life" to assure that road cycling and its ecstasies does not rob him of his love for cycling or

his partner.

## **6.7 Discussion**

Participants repeatedly expressed sensations of cycling in Wollongong in terms of love, happiness, pleasure, escape, relief and pride. Methodological implications arise from a love for cycling. Riding with a participant prior to the interview facilitated interview flow; conversations were not as awkward. Cycling together facilitated shared connections and affects. The shared positive experiences of the pre-interview ride often facilitate conversations around the sensations of cycling that would otherwise be hard to convey.

In this chapter, I argue that the positive sensations that participants named as love and pleasure are important for rethinking wellbeing through an assemblage lens. From an assemblage perspective, cycling can be transformational, for better or worse. When thinking in terms of relations, each participant will garner different transformative changes, affects, and possibilities. Inspired from Deleuze and Guattari's (1987), it is through the cycling assemblage and the refrain that wellbeing folds through to become a force that keeps people cycling. Thinking through the cycling assemblage as a productive set of connections between human, and non-human things, what becomes clear is that wellbeing is achieved in multiple ways for each of the participants. Wellbeing is conceived not as a stable but as the affective force from an ongoing process of arranging human and non-human elements. Thinking through Buchanan's (1997) notion as to what constitutes a 'healthy body' there are forces that work for and against each participant becoming well.

For example, Tim uses cycling to escape from his 'hectic' lifestyle and reconfigures connection to particular places like Mt Keira in 'moments' where he captures photographs in his mind of the surrounds. These productive moments through the cycling assemblage create a liveable working order that point towards wellness. Tim, illustrates how becoming well is achieved through the smell and taste of coffee, sitting on chairs, the table the groups sits around and the setting of the post ride coffee. This may be interpreted as a process of territorialisation. The rhythms and routine of the ride enrol ideas and things create and a sense of being well. Moments are created to share

stories about concerns. However, becoming well is often fleeting as meeting the demands of running a business, being a father and husband are ever present. Cycling is a moment for Tim to not think and just be in his own time-space.

Similarly, for Lynn, cycling helps to maintain good mental health through cycling routines and morning rituals on the bike. For Lynn, becoming well is achieved through the regular training routine that reconnects her to Wollongong. On days where cycling is missed, then other destructive feelings begin to creep in to her daily life and connections and relations are diminished. As Duff (2014 p. 72) states “The capacity to recover, to maintain stable employment for example, is a function of a much more finely grained set of habits, orientations and skills that are each fostered and sustained in everyday encounters”. For Lynn, training for L’Eroica held particular importance in becoming well. To participate in this event there is a love for cycling generated by learning new embodied skills because of the cycling frame. In addition, there is a performative element is dressing the body for the event in a bespoke cycling uniform.

For David, becoming well is achieved through regular slow cycles between work and home. The cycle journey has psychological benefits, allowing him to switch off from work through how his senses come alive whilst on-the-move home. David illustrates the tension in how cycling mobility generates different understandings of becoming well. Some are tied to sports science, and training regimes that produce the ‘fit’ biological body, underpinned by sport masculinity. Others are tied to sensations of cycling from routines and routes that are not dependent on speed that facilitate connection to place, or opportunities to create ‘me time’ or ‘thinking space’.

## **6.8 Conclusion**

This chapter set out to uncover what other intensities – beyond the fear of being in a space territorialised for cars – operate to keep cyclists returning to the road. Wellbeing emerged as a powerful affective forcing, drawing cyclists back. Thinking wellbeing through a post-humanist framework, I used assemblage thinking, in particular ‘the refrain’, to understand how wellbeing emerges relationally. I illustrate that becoming well is an ongoing achievement realised through the cycling assemblage, comprising



bodies, things, rhythms, (re)territorialisations, socialities and sensations.

What each of the participants highlight in some way is that cycling sensations often conveyed as love is a paradox in terms of becoming well. On the one hand, we learn about the addictive qualities of the sensations and ecstasies of returning to the road day after day that help to make sense of self and place may be overwhelming and unhealthy. This is particularly poignant when particular physiological targets are being met on the bike or sporting masculinities are played out on the road. On the other, we learn of how the sensations of cycling is a crucial part of how individuals manage the pressures of everyday life, and sustain joyful connections to people and places.

When thinking through the implications of becoming well through cycling, it provides important insights into the more than a human achievement that is cycling. The practical and physiological benefits of cycling are often touted in cycling campaigns to encourage more people cycling, however this chapter has highlighted that the sensations of cycling are a powerful force to keep (and potentially get) people on their bikes. To connect with others, the environment, the bike and our emotions is to open up possibilities to wellness that cannot be done when thinking solely about the medicalised body.

## Chapter 7

### Conclusion

#### 7.1 Introduction: acting on the call to action

Much to my delight, since I began my thesis, cycling publications continue to flourish in numbers each year. Even as I finalise my work for submission, I am aware of new publications almost weekly. Within these burgeoning literatures, I aim to make a unique contribution through my embodied approach through conveying some implications of the sensations of cycling in Wollongong, NSW, Australia – the newly minted UCI ‘cycling city’. Participants’ sensations suggest that the branding of Wollongong as a ‘cycling city’ is perhaps at best premature.

This concluding chapter is structured as follows. First, I reiterate the research questions to answer the call from feminist scholars for innovative engagement with embodiment. Next, I discuss my theoretical, methodological, and empirical contributions. I argue my theoretical contribution lies in offering the embodied concepts of ‘cycling assemblage’ and ‘cycling refrain’ and bringing these into conversation with feminist scholarship (Chapter 2). Third, I discuss the methodological contribution made through the research design, specifically that of a cycling sensory ethnography (Chapter 3). Fourth, I turn to the empirical chapters which are organised around particular tensions that emerged through conducting the fieldwork. In doing, the empirical chapters make a significant contribution to literature by better understanding how cycling bodies on-the-move become gendered and digitally tracked (Chapter 4), how the politics of love and fear offer insights to mobility justice (Chapter 5) and the relationship between cycling mobility, sensations, and wellbeing (Chapter 6). To conclude I discuss future research directions.

#### 7.2 Revisiting the research questions: mapping contributions

What can we learn from cycling sensations? Instead of asking what cycling is, the questions guiding this thesis centred on what the cycling body achieves. Three questions were posed to help frame this thesis and better understand the embodied experience of road cycling in Wollongong:

1. How is gender lived through the social and material arrangements that co-comprise the subjectivities and places of road cyclists?

2. What does fear and anxiety do to mobile cycling bodies in the often hostile automobilised spaces of the road in Wollongong?
3. How do the affective moments encountered in the creation of cycling assemblages give social and material form to the process of becoming well?

Guiding the answering of these questions was my feminist corporeal approach and theoretical framework. In what follows I outline how the thesis contributes to feminist cycling geographies by addressing these questions through the research design and corporeal feminist interpretation.

### **7.2.1 Theoretical contribution**

In chapter 2, I contribute to feminist theorisation of the body drawing on the work of Deleuze and Guattari (1987) to think through cycling bodies on-the-move. I invoke the notion of the ‘cycling assemblage’. Thinking through assemblage, cycling moves beyond a narrow understanding of cycling as movement from A to B. Instead, assemblages open-up possibilities and think of bodies, emotions, affect and power as a productive working arrangement or order. I ask not what cycling bodies are but what they can do. Understanding the social-material arrangements that constitutes cycling offers insights to how road cycling is sustained, despite cars territorialising roads. The thesis helps to address the gap identified on embodied approaches to cycling by engaging in how road cyclists’ capacity to ride is mediated by the social and material. Deleuze and Guattari’s (1987) concept of the refrain is often overlooked in more-than-human geography. The potential for the refrain is to bring a new yet complementary lens to analyses of embodied cycling rhythms. The refrain brings to the fore everyday cycling choreographies that co-produce both subjectivities and space through the interplay of bodily affects, social norms and materialities. The notion of the refrain advances understanding of the sensations of cycling in relation to wellbeing. The rhythmic qualities of road cycling training help stabilising subjectivities and territories, triggering positive affective forces named as love. The complementary understanding to embodied approaches within cycling geographies is underscored in the second section of chapter 2 that brings the concepts of cycling assemblage and cycling refrain into conversation with the literatures.

Focusing on affective relations through the cycling assemblage and cycling refrain is also useful for city planners and policy makers. By connecting the social, spatial,

material, and affective forces, city planners and policy makers gain insightful knowledge into the lived experience of cycling. As I show in my empirical contribution (7.2.2), the affective forces that cyclists experience (love, pain, pleasure, hate) help to sustain a sense of self and these are often silent in policy documents or in the design of new infrastructures. Affect is key to the cycling experience and needs to be considered in the ‘cycling cities’ agenda if it is to move forward.

### **7.2.2 Methodological contribution**

Chapter 3 addresses my methodological contribution that engages with calls for more-than-human methods. I present my cycling sensory ethnography that combines semi-structured interviews, ride-alongs and qualitative GIS. Alert to the digital feminist geographers Elwood & Leszczynski (2018), this triangulation of methodologies quite deliberately attends to how people make sense of their worlds and themselves through the actual mobile experience. Mobile methodologies then help to map affective forces that co-constitute places and selves. Using qualitative GIS to map cycling experiences goes beyond Cartesian route mapping to reveal moments of heightened emotional and bodily intensities along journeys. Qualitative GIS helped to address the difficulties in collecting and writing up emotional, fleeting, mundane, sensory, and intense moments when cycling. This then grapples with the issue of technology and self-tracking technologies becoming increasingly visual, as evidenced by participants use of Strava and other digital technologies. The methodological contribution brings embodied encounters into conversation with spatialising narratives and qualitative GIS.

### **7.2.3 Empirical Contribution**

Chapter 4 is my first empirical chapter and answers the following question:

- How is gender lived through the social and material arrangements that co-comprise the subjectivities and places of road cyclists?

Through a focus on self-tracking/digital devices, this chapter contributes to physical cultural studies (PCS) and social and cultural geographies. I put forward the notion of the cycling assemblage to explore how gendered subjectivities are felt and gain legitimacy on-the-move through the ongoing negotiated relationship between cycling bodies and technology, specifically Strava. I analyse the connections among digital technologies, cycling mobility, and gendered subjectivities. I illustrate the nexus

between the digital and embodied dimensions of being and becoming a road cyclist. I show how gender is constituted on-the-move somewhere through engagements with digital technologies, self-tracking, and the data itself. Common amongst participants were surveillance fears (and what constitute a cycling body) alongside the pleasures and pressures of ‘winning’ on Strava.

Chapter 5 offers insights to the research question:

- What does fear and anxiety do to mobile cycling bodies in the often hostile automobilised spaces of the road in Wollongong?

Chapter 5 speaks to current debates on mobility (in)justice (Shellar, 2018). Drawing on the notion of cycling assemblage, mobility justice is conceived as a process of territorialisation. Affective forces are conceived to operate as process of inclusion and exclusion. The concept of cycling assemblage was brought in conversations with Ahmed’s (2004) emotional politics of fear and love. Bringing these ideas together extends notions of an embodied mobility justice. Assemblage thinking draws attention to the emotional dimension to distributive justice, and the politics of emotion. The chapter underscored how a love of the sensations of driving sustained a hate of cyclists. A love of driving resulted in unjust acts of violence, intimidation and aggression towards cycling in efforts to exclude them from the road. Such cycling experience bring into question the promotion of Wollongong as a ‘cycling city’. Instead, many residents of Wollongong have an ongoing love of driving. That said, the chapter illustrated how a love of road cycling kept participants returning to the road despite safety concerns. For some, the love for cycling exceed that of family. Love for cycling is the focus of the final empirical chapter.

The final empirical chapter turned to the question:

- How do the affective moments encountered in the creation of cycling assemblages give social and material form to the process of becoming well?

In the final empirical chapter, I built on the previous chapter to better understand what keeps cyclists riding on roads despite being positioned by drivers as intruders to their territory. In this chapter I deploy the concept of cycling refrain to help understand what keeps some roads cyclists returning to the road. I conceived of the cycling refrain as offering insights to the regular routines of road cycling practices as a process of

becoming well. Within the cycling refrain, rhythms act as a powerful ordering force that work to generate feelings of comfort and security. Hence through regular training routines, road cyclists territorialise the roads, enabling possibilities to zone out or relax. The sensations of cycling were conveyed as love, happiness, pleasure, escape and pride. The sensations gained from road cycling were where some participants felt most alive. Despite this, love is also a paradox in wellbeing. We learn from participants the addictive qualities of the sensations and ecstasies of returning the road day after day to help make sense of self and place. The love for cycling pointed to the additive qualities of road cycling which is underexplored in cycling geographies.

### **7.3 Future Research**

Future research may build and extend upon the concepts of cycling assemblage and cycling refrain. This project has worked solely with road cyclists in Wollongong. Future research may consider working other riders of other styles of bikes including mountain bikes, commuter bikes, electric bikes, and hybrid bikes. Overlooked in this thesis is the diversity of cycling styles found amongst people who ride. Equally important in the field of cycling geographies is to consider the diversity of experience of people who ride for leisure and/or transport.

Second, this thesis has focussed on the experience of competitive road cyclists. Rich insights into leisure cycling may be gained through a focus on families. What is the role of cycling in making families on-the-move? How does cycling become gendered within family routines? Through learning to cycle within a family how are particular modes of mobility adopted, changed and abandoned? Why do many younger Australian abandon cycling when they can learn to drive?

Third, the gendered dimensions of cycling offer possible future potentials. Overlooked in this thesis is the concept of intersectionality, and how gender intersects with class, race/ethnicity, sexuality, ancestry, age and ability. Thinking through the body points to the importance of closer analysis to how experiences of physical fitness and sweat may work for and against some people cycling.

Finally, future research may seek to engage further with digital technology and the self. Specifically, research may focus on a virtual training program – Zwift. Zwift is very popular amongst cyclists, particularly those that are hesitant to ride on the road. To use

Zwift, a cyclist will purchase a smart trainer, log on to the program, create an avatar to ride various virtual routes. Opportunities exist to socialise, albeit virtually. Some people use the program on wet weather days. Others prefer to ride on Zwift virtually rather than riding on the road. The ways in which cycling subjectivities are shaped by digital technologies is an ongoing research imperative.

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