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Reactivating commuter cycling: COVID-19 pandemic disruption to everyday transport choices in Sydney, Australia

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A R T I C L E   I N F O

Keywords:
The refrain
Disruption
Sensation
Rhythm
Sensory ethnography

A B S T R A C T

The COVID-19 pandemic and the subsequent rollout of public health lockdown orders, social distancing measures, and general avoidance of crowded and enclosed places, like mass public transport, have disrupted everyday transport mobilities worldwide. This paper offers insights on the transformative potential of pandemic disruption on transport behaviours through the experiences of commuter cycling reactivation which took place in Sydney, Australia since March 2020. We combine sensory ethnography with Deleuze and Guattari’s concept of the refrain to interpret the pandemic as an experimental reference point in the reactivation of commuter cycling, specifically with regards to timing, flow, and spacings. Experiences of commuter cycling in Sydney reveal how fear is attached to cycling bodies. The sensations of self that arise through such conflict are differentiated within and between gendered bodies and urban topography, elements, and infrastructure. We find that for reactivated cyclists, the ability to fashion commuter cycling territories as safe and efficient is an ongoing experimental process of temporal and spatial segregation and separation. In this regard, the pandemic rendered concrete new possibilities of everyday commuting, but these remained constrained by popular discourses relating to cycling and cyclists.

1. Introduction

Worldwide, the COVID-19 pandemic disrupted everyday mobility patterns in response to lockdown orders, social distancing, and the avoidance of crowded public transport to help prevent and control the spread of the virus (Borkowski et al., 2021). Data from numerous global cities, including Sydney, Australia, point to a dramatic shift away from mass public transport mobilities and to an increase in cycling, walking, and private car use (De Vos, 2020; Nikitas et al., 2021; Committee for Sydney, 2021). In the 18 months since the first COVID-19 outbreak, many cities have introduced infrastructure to support these new cycling mobility patterns, such as pop-up dedicated cycle ways, wider pavements, and vouchers for bicycling repairs.

Until the outbreak of COVID-19, debates about how to increase the uptake of commuter cycling were largely centred on public health concerns (such as tackling immobility or obesity), strategies to beat traffic congestion and plans for transition to lower-carbon transport futures in car-dominant western cities (Handy et al., 2014; Daley and Rissel, 2011; Rose, 2007; Murray and Doughty, 2016). A common thread of these literatures has been that changing everyday transport behaviours towards cycling is notoriously difficult. The underpinning factors explain why people do not commute are now well documented, particularly in car dominated societies like Australia (Bauman et al., 2008).

Australian political and popular discourse straddles the spectrum of cycling behaviour either as being an integral part of childhood or as an acceptable recreational activity for affluent white men (Osborne and Grant-Smith, 2017). ‘Moral panics’ have loomed large in popular discourse, positioning cyclists as a ‘spoiled identity’ for threatening automobility: the ‘hoon cyclist’ slows the flow of traffic (see Fuller, 2017).

Since the election of Clover Moore as Lord Mayor of Sydney in 2004, the City of Sydney has worked to disrupt such discourses with an overarching aim of making the city more liveable and rideable for individuals and families. The most recent City of Sydney (2018) cycling

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https://doi.org/10.1016/j.jtrangeo.2021.103270
Received 10 July 2021; Received in revised form 6 December 2021; Accepted 21 December 2021
Available online 25 December 2021
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vision includes plans for an extension of the dedicated cycleways and designated shared footpaths that first began in 2009. Acknowledging that infrastructure alone is inadequate to increasing commuter cycling, the City of Sydney strategy also involves behavioural change strategies with a combination of cycling events, free bike maintenance courses, cycling skill workshops, buddy systems, promotion of end-of-trip facilities, and a map app to promote safer cycle routes (Robinson and Daly, 2011). Nevertheless, reports for how people travel to work suggest limited progress on commuter cycling rates. In 2016, 0.7% of commuter journeys in Sydney were by bike, lower than all major Australia cities including Melbourne (1.4%), Brisbane (1.1%) and Perth (1.0%) (Australian Bureau of Statistics, 2016).

Sydney is a difficult city to navigate by bicycle. Alongside an urban topography that is characterised by hilly terrain, harbours, bays, and river systems, working against commuter cycling is a combination of intense motorised traffic and incomplete or missing cycling infrastructure. Yet, throughout the COVID-19 pandemic cycling in Sydney, including the City of Sydney, boomed (Fuller et al., 2021). For some cyclists, a return to riding a bike came after a long hiatus. There is little known about the everyday circumstances which constitute the decision to (re)start commuter cycling during the COVID-19 pandemic. Our paper addresses this research gap. With a focus on commuter cycling in the City of Sydney, Australia, our aim is to understand why some people chose to ride to work again during the COVID-19 pandemic to gain insights to how these practices might continue in a ‘living with covid’ world. We frame the return to cycling as a ‘reactivation’ of cycling routine. To better understand the reactivation of commuter cycling, we build on arguments from Sheller and Urry (2006) and Kent et al. (2017) that transport choices are embedded in experiences of everyday life. Thus, the reactivation of commuter cycling is understood here as a process of experimentation with the choreographies of everyday pedalling routines to generate journeys felt as safe and efficient.

The paper is structured as follows. In the first section, we bring together relevant literature from transport geographies that are attentive to disruption and embodiment. We then offer a framework that foregrounds the constitutions of territories through sensations of experimental cycling choreographies to interpret how commuter cycling is enabled and transformed. In doing so, we build on a longstanding interest in transport geography that illuminates the role of time and place for how regular and routinised journeys of individuals intersect with powerful institutional structures. Section three outlines the methodology, where we engaged a cycling sensory ethnography to unpack the rhythms of reactivation. The fourth section draws on the experiences of reactivated cyclists to offer an interpretation of commuter cycling during the pandemic through three different frames: timing, flow and spacing. The final section returns to themes of disruption, embodiment and experimentation and reflects on the contribution of this work to policy and research agendas.

2. Disruptions, territories, and subjectivities of pedalling to work

Mobility disruption is a longstanding feature in transport geographies. Previous accounts of disruption include the modelling of transport infrastructure for planned maintenance (Younes et al., 2019), on-street parking congestion (Wadud and Chen, 2018), or transport link failures (Cats, 2016). Equally, modelling has been used to analyse the impacts on travel behaviour of events (Rose, 2007), natural disasters (Yonson et al., 2020), labour conflict/strikes (Gonzalez-Aregall and Bergqvist, 2019), new technologies (Meyer and Shaheen, 2017) and, most recently, the COVID-19 pandemic (Beck et al., 2020; Borkowski et al., 2021). The impact of disruption on everyday mobility choice is central to qualitative research in transport geographies. Previous research has considered how everyday travel behaviours have shifted with share car-ride schemes (Kent et al., 2017), and e-scooters (Tuncer et al., 2020), but also via wider environmental and political concerns including Critical Mass rides against car culture (Furness, 2007; Castaneda, 2020) or strategies for carbon reduction (Murray and Doughty, 2016). Our focus in this paper is on the disruption to commuter mobility under pandemic conditions. We ask how differential experiences that shape, or are shaped by, the social and material relationships that comprise journeys impact decisions for bike reactivation.

Here we draw on Deleuze and Guattari’s (1987) notion of the refrain to provide a framework to understand the reactivation of commuter cycling in the context of disruptions to day-to-day transport routines brought on by the COVID-19 pandemic. As Buchanan (2020) outlines, Deleuze and Guattari theorise the refrain as operating in a context of chaos. The refrain is comprised of different sensory rhythmic movements and perceptual routines that rely on the coming-together of socialities and materialities that keep chaotic forces at bay. Through repetition and experimentation, the refrain generates a sense of self through a spatial order or territory that is sensed as both calm and safe. For commuter cyclists, the refrain accommodates how subjectivities and territores are made and remade through the success of cycling reactivation after a hiatus. Everyday commuter cycling routines must generate an order that is both sensed and made sense of as liveable by the repetition and experiential knowledge of routes. However, the paradox of segregation and separation emerges. In the context of multiple cycling performativities, experiences and skills; repetitive cycling choreographies may privilege specific gendered cycling practices and displace others.

Deleuze and Guattari’s (1987) writing is also concerned with how the affective forces of rhythms and routines that comprise a refrain help stabilise and transform bodies on-the-move. Using the case study of reactivated commuter cycling, disruptions to mobility rhythms may transform bodily affective capacities that hold together a commuter territory and stabilise a sense of self. Commuter cycling territories are fragile, ongoing achievements. The refrain offers an appreciation of how the accumulation of intensities may transform the propensities of bodies to restore a sense of self and create a territory. We argue that it is the bodily accumulation of affective forces from past and current commuting experiences that transform capacities for pedalling, perceiving, and sensing.

The refrain involves thinking about the uptake of cycling as involving reciprocal relationships between bodies and routes. On one level, pedalling bodies on-the-move are attuned to, adapt to and transform where people cycle. On another level, how and where people cycle shapes those bodies, bringing them into existence. Thus, the reactivation of commuter cycling must be attuned to the role of the COVID-19 pandemic in disrupting the sense and sensibilities of safety and efficiency of public transport that most commuters desire in their journey to and from work. Some people who previously rode a bike to work may look to reproduce routines felt as safe and efficient. For others, painful or risky sensations of commuter cycling may become a desire in and of themselves. The refrain illuminates reactivated cycling beyond a just human-centred understanding, and frames connections with the impersonal, transversal affective forces of the world that stitch together, or unravel, pedalling, subjectivities, and places.

Deleuze and Guattari’s (1987) concept of the refrain both builds on and departs from existing research within transport geography literature in three central ways. First, like Hagerstrand (1975) experiments with time and space, the refrain draws attention to how individual lives are drawn together, the social and biological constraints to individual movement in daily routines and the importance of infrastructure. Where this differs, however, is Deleuze and Guattari’s (1987) interest in thinking in terms of interdependent rather than dualistic time and space in relation to embodiment.

Second, like Lefebvre’s (2004) rhythmanalysis, the refrain is interested in how the rhythms and routines of mobility practices that organise day-to-day life require both timings and spacings. Murray and Doughty’s (2016) work on disruption offers an important embodied...
interpretation of mobility, one conceived as the outcome of intersecting bodily, social, and seasonal rhythms. They underscore that sharing public space with different types of transport users requires order, predictability, and collaboration. However, this is always emergent, always changing. The refrain draws attention to bodily capacities to act and affect as pivotal in understanding the ongoing reciprocal relationship that co-constitute movement, time, space, and self. Here, bodily capacities are concerned with the non-personal, nonhuman affect force or energies, and notion to how fleshy bodies increase and decrease dispositions and propensities to attend, move, perceive, and sense flow and physical proximity.

Finally, following existing feminist cycling scholarship, the refrain underscores the importance of ongoing gendered, classed and racialised experience of bike riding. Highlighted in feminist literature is the reciprocal relationship between gender, mobility, and space (Hanson, 2010). Writing with Butler’s (1990) concept of performativity, cycling is understood as producing and reproducing the unequal political subjects of ‘men’ and ‘women’ (Ravensbergen, 2020), including feminine ideals of motherhood, submissiveness, and modesty; alongside heightened perceived safety risks of traffic injury, and street harassment (Russell et al., 2021). By thinking with the refrain, rather than working with pre-configured social categories of gender that are expressed through cycling, pedalling is envisaged as a way of experiencing and understanding emplaced gendered relationships.

3. Methods

This paper draws on research from a broader project titled ‘The Reactivated Bike’. Between July and December 2020, online research was conducted with Sydney-based bike riders who had increased their cycling (by time or distance) since the COVID-19 outbreak. Our methodology adapted Pink’s (2009) sensory ethnography, also following protocol for distanced research via the use of an online platform.

Sensory ethnography understands knowledge as co-constituted with participants through both embodied and discursive practices. To better understand experiences around the cycling reactivation, the project design brought together semi-structured interviews, sketches, and follow-up conversations around self-generated video-recordings of cycle rides. Semi-structured interviews offered insights to embodied cycling histories through an invitation to talk about five themes: cycling life narrative, bike(s), reasons for reactivation, experiences of riding during the first Sydney lockdown between March and May 2020, and experiences of riding following restrictions easing. To open-up conversations around the sensuous dimensions of commuter cycling, semi-structured interviews invited participants to share a sketch of their ideas of cycling and a map of their commuter routes.

Participants were invited to self-record videos of their cycling journeys, enabling access to cyclists’ rhythms, routines, and routes (see also van Duppen and Spierings, 2013; Spinney, 2011). Follow-up conversations allowed sensual explorations of selected video out-takes through the researcher’s body. Participants were replayed video-clips that transformed researchers’ bodies, through register of emotional and affective forces, to uncover insights on how participants’ bodies experienced commuter cycling as intrinsically rewarding, or not (van Duppen and Spierings, 2013; Spinney, 2011).

Rather than the problem-solving process following a step-by-step guide, as in deductive and inductive logic, our account is performed through a process of abductive reasoning, grounded in Deleuze and Guattari’s (1987) rhizoanalysis. Rhizoanalysis is subject centred. Our analysis turns to the appreciate the role of emotions and affective intensities triggered by not only ideas, but materials, in an ongoing creative process of making connections, and disconnections. Rhizoanalysis pays attention to how emotion and affective forces, triggered by the coming together of social and material relations, offers possibilities to reproduce, rupture or reconfigure working orders, in our case commuter journeys.

Participant recruitment occurred via the ‘Sydney Bike Commuters’ Facebook group. In total, thirty-eight reactivated cyclists participated. For fifteen participants the COVID-19 pandemic and restrictions catalysed a return to commuter cycling. For twelve participants, a return to commuter cycling was after a length hiatus of over five years. Ten reactivated commuter cyclists identified as male and five as female. Participants varied by age (between 20 and 65 years old), ancestry, relationships status, employment, and migration histories. Likewise, they were differentiated by commuting distance, cycling equipment, riding styles, past pedalling experiences, and bike skills.

In this paper, we draw on a smaller subset of three participants: Patricia, Rafael, and Andrew. Patricia is a tertiary educator in her fifties. Her classes call for face-to-face tuition and are scheduled between 9 am and 6 pm. Her cycling histories involved a decade of commuter cycling in the South of England in the late 1990s and early 2000s. In July 2020, Patricia reactivated her dormant touring bike from a decade of storage to commute roughly 7 km journey from the Inner West of Sydney to the Sydney CBD. Patricia described her slow-paced and measured cycling style as ‘defensive’. She does not ride in the rain due to safety concerns.

Rafael is an engineer in his thirties and works flexible hours. Rafael is a recent migrant, moving from Spain in 2015. His cycling narrative involved a history as a competitive Alpine Road cyclist, and as a commuter cyclist in London, Madrid, and Dublin. Soon after migrating to Sydney, Rafael sold his bike. For Rafael, Sydney was not ‘bike-friendly’ for commuter cycling. In December 2019, he purchased a second-hand road bike, but it languished in his apartment until the first COVID-19 lockdown in March 2020, when he began incorporating cycling to work into his exercise routine. During that lockdown, Rafael upgraded to a customised Obrea road bike that enabled a return to the more familiar fast-riding style.

Andrew, aged in his forties, and works flexible hours as a facilities manager. Cycling was central to Andrew’s childhood, the activity ceased at 18 when he learnt to drive. In 2008, while living in Melbourne, Victoria, Andrew began commuting on a road bike. Like Rafael, a move to Sydney stalled commuter cycling. In June 2020, Andrew, moved from Sydney’s Northern Suburbs, approximately 17 km to the Sydney CBD, to Bondi, roughly 7 km east of the Sydney CBD. Andrew restarted commuter cycling on a retrofitted mountain bike during the lockdown.

We do not claim that the experiences reported here are representative of a broader population. Rather, what impressed us about these three sensory ethnographies was an embodied understanding of the reactivation of commuter cycling. There was an expectation from each participant that the journey to work should be felt as safe, comfortable, and efficient. Each point to the importance of the affective press of the human and non-human world, felt on-the-move, as co-constituting a sense of mobility, self, and space. Experimentation was key in the reactivation of commuter cycling, as an ongoing process of territorialisation, specifically with timing, flow and space. Experimentation allowed reactivated cycling bodies to be affected in ways which increased their capacity to territorialise commuter journeys to align with anticipations.

4. Experimentations with timing, flowing, and spacing of the cycling refrain

Using the refrain, we read the COVID-19 pandemic as disrupting public transport commuter routines and rhythms that comprise journeys to work that were previously seen as safe and efficient. While each commute is a form of experimentation, the rupture in ‘normal’, taken-for-granted everyday life provided a reference point in which commuters were forced to reflect on transport modes. Participants spoke of investigating other possible ways of becoming a commuter, that always exceeded their capacities to predict. For example, Patricia explains how the sensed loss of safety travelling on public transport rendered concrete riding a bike to work into the realm of the possible:
Since my workplace decided to reopen, I’ve been very keen not to be on public transport. Frankly, if you’d said I was going to do that under ordinary circumstances, and to cycle then to teach on my feet all day and then cycle home, I would have said there’s no way. But, actually it’s been real good…

The general uptake in cycling meant I felt more able to take up space, and I really preferred the risks associated with cycling than catching COVID on public transport.

For Patricia, the increased numbers of bike riders during the lockdown facilitated the creation of entitlements for her to use public space on her bike. In this sense respect for individuals’ right to cycle on the road fostered moments of ‘togetherness’, despite the perceived risks. Rafael explains the impossibility before the pandemic for even the most skilled bike riders to claim spatial entitlements and share public space with automobile drivers in Sydney:

I think I’m confident cyclist. I’ve been cycling all my life, cycling in London. But before the pandemic I wouldn’t cross the city and I’m an experienced cyclist. But the fact that I could go to the office a few times, with no traffic at all, it gave me a lot of confidence back. It was an experience crossing the city and the bridge without traffic. That was, amazing.

Affective capacity features here. Rafael’s relationship with traffic decreases his body’s power to affect. The stay-at-home orders disrupted the pre-pandemic affective intensities of vulnerability associated with exposure to a motorised traffic refrain. The absence of the sensations of motorised traffic increased the bike rider’s body to affect, allowing commuter cycling to be realised in Sydney.

4.1. Timing

In thinking about the reactivation of commuter cycling as deeply intermeshed in positive affectual time-spaces, participants shared experiences in timing journeys to produce personal time/spaces predicated on the interweaving of personal biographies, spatial knowledge, and fitness with the affective press of traffic, topography, air quality, and elements.

By coming home at lunchtime, I actually avoid the evening peak hour. Which makes the commute a bit faster, a bit safer and a bit more enjoyable as well. If I come home at lunchtime it’s daylight, whereas if I’m heading home at 5.00 pm, 5.30 pm we’re starting to get in the time where I need lights on the bike, and it’s maybe not as safe.

Here, Andrew underscores how experimenting with departure times to modify sensations of traffic volume and darkness transforms his affective capacity to commuter cycle.

Alongside sensations of safety in commuter cycling reactivation, what is evident amongst all participants is experimenting with spatial knowledge which assists temporal efficiency. However, as Andrew tells, the choice of route is always not simply the shortest distance between home and work, but an ongoing experimentation characterised by how riders sense their fitness, topography, transport infrastructure and traffic:

In terms of riding into the CBD in Sydney to and from Bondi for work, commuting to work, that was really confusing to me. There’s a myriad of different options and everything seems to be a trade-off… It took me quite a few weeks to settle on a route that I was comfortable with in terms of how long it was, how long it took, how hard it was in terms of hills and things. And then of course, you know, how dangerous it was or how comfortable I felt riding some of the sections. My route would probably be quite different to someone else’s route because their comfort levels around those things might be different to mine.

Here, Andrew underscores the significance of being able to manage the intensity of sensory situations while riding, and importantly, how this may differ between riders (Jones, 2012). Like, Andrew, Patricia explains how experiments to produce ‘home’ commuter territories through a cycling refrain were predicated on the interweaving of personal biographies, spatial knowledge, and fitness with the affective press of traffic, topography, air quality, and elements.

When I put in Google a path from here to Oxford Street, it tells me to go on Parramatta Road, that’s the shortest route. I’m never going to do that: Parramatta Road, crossover all of that big major traffic at central, up Elizabeth Street, up Oxford Street. I’m never going to do that route, for the air I’m breathing as much as anything.

The shortest route suggested by Google Maps is beyond Patricia’s affective capacity to ride to work during peak hour, diminished by traffic and ambient pollution (Simpson, 2019). Commuting to work to arrive on time for morning classes required ongoing experimentation with routes:

… I just needed to work out how to get from Petersham to Newtown on the road, and Redfern Station to Bourke Street on the road… I experimented with those … And just getting a bit of confidence on my route, and on my use of the bike paths. And I rode friends’ houses to visit, when we were allowed to do one-to-one visits. I did that, as a way of going, “Okay, how’s my balance? How’s my road confidence?” They would be short, 15 min rides, 10 min rides … I mean, I’m quite strong in the physical person, because of my work, but I wouldn’t say I was fit particularly. I needed to test out doing it [commuter cycling]. And to my pleasant surprise, it was easier and quicker than I expected. I expected it would take over an hour to make that ride, because I’m not fit. But actually, it’s about 40 min, 45 min, depending on getting stuck at traffic lights and stuff like that.

Patricia reveals the expected bodily spatial orientation and fitness that commuter cycling bodies ought to inhabit. The novice bike rider is revealed through fitness and equilibration. Thus, Patricia planned for experimentation with riding times. Patricia illustrates how constituting new ‘home’ commuting territories required replacing the appearance of truth of bike riding-times through experimentation. McCormack (2013: 9) referred to this trial-and-error process described by Patricia as “experimenting with experience”. Patricia goes on to tell that commuter cycling at peak hour demands an embodied state of ‘sharpness’:

I don’t ride if I don’t feel really sharp, actually … I can’t navigate the traffic. I just can’t be sharp enough. I’m a very cautious… I’m not timid, but I’m cautious. I’m very aware of not expecting cars to be respectful, basically.

All participants were involved in an ongoing process of experimenting with time-space routines to enhance positive sensory stimulations and avoid unpleasant ones (including hills and traffic). Their recounts illustrate how reactivating commuter cycling required creating a ‘home’ territory forged through experimentation with the timing of how multiple rhythms came together, including traffic, night and day,
rush hours, muscular and circadian. Experimentation with the timing of routes offers insights to how different states of commuter cycling proficiency are revealed and privileged. The peak hour commuter cycling refrain, secures a fragile yet privileged territory that demands both alert and fit bodies.

4.2. Flowing

The reactivation of commuter cycling relied upon securing a cycling territory with a shared tempo that facilitates comfort and security by enabling bodies to move together in proximity. The routes and rhythms through which participants configured commuter cycling territories was specific to an anticipated tempo, differentiated by cycling styles and experiences.

Read through the refrain, some inexperienced slower riders, like Patricia, are not open to the affective intensities of speed. Instead, emotional, and affective responses producing tones of relaxations, safety, wonder, and joy were generated by a sequence of events within a space that sustained temporal flow. Conditioned by previous experience, Patricia outlines in detail how repetitive trips generate a sensual and practical familiarity with routes that provoke immersion and a sense of claim over the Bourke Street cycleway for slower moving cyclists:

Bourke Street [cycleway] is a little bit steep when you first get on it. It’s very quiet actually, there’s a couple of parents taking their kids to school on the path, it’s sunny, it’s quite leafy. There’s only a small bit that’s a hill and requires a lot of physical effort, but it feels very safe. There’s bike lights at every intersection so there’s no second guessing the traffic or anything like that. It’s just follow this straight line all the way. It’s very relaxed because you’re not navigating traffic. I feel like there’s an etiquette to overtaking on the bike path, that people almost always ring the bell well behind you to say that’s what they’re doing. And I think there’s been real moments where I’m riding along on that cycle way, I’m going, this is just fantastic. I think they’re probably the real highlight and the joy of it.

Increasing the affective capacity for inexperienced riders to continue commuter cycling are possibilities to go within the temporal flow the comprise the cycleway, offering possibilities to relax and consciously contemplate the surroundings, rather than anticipating and responding to traffic disruptions (Jones, 2012). Patricia illustrates how the predictable shared flow that comprise the temporal, rhythmic process of the cycleway enables cyclist, regardless of skill, to move together safely (Latham and Wood, 2015).

In contrast, more experienced riders, like Rafael and Andrew, anticipated the flow of commutes as both ‘fast’ and ‘smooth’. Andrew identified ‘barriers to commuter cycling’ as ‘stop-start’ journeys filled with interruptions from traffic lights, crossing main roads, sharp corners, or pedestrians. Disruptions to consistent momentum and speed jeopardised cycling rhythms required for Andrew to organise and secure a ‘home’ territory.

Rafael illustrates how some cyclists who anticipate and embody corporeal mastery of the road through reproducing the tempo of fast-moving vehicles may avoid certain cycleways:

There is a, an amazing cycling path in Kent Street, but you need to stop in every corner. But if you want to enjoy a ride at your own pace, there are other alternatives always. If you go down to Barangaroo, and you go around the road, there’s no cycling path there, but it’s faster. But if you want to enjoy a ride at your own pace, there are other alternatives always ... I divert to Barangaroo. Even though there is construction work, I think it is much safer, and you do enjoy the fact there is a path very close to the water. If you go on Kent, it is very narrow. There are many lights. There are more bikes, there is going to be nuisance of many bikes going in the same or opposite direction. And, if you keep going, you have Wynyard and pedestrians going to take the train.

Rafael’s ability to commute by bike was facilitated by riding at a continuous fast pace. Rafael avoided the sequences of events and embodied experiences of traffic lights, slower-paced cyclists, hidden driveways, and erratic movement of pedestrians (see also Nixon, 2012, Forsyth and Krizek, 2011). For more experienced bike riders, the stop-start sensations of the Kent Street cycleway worked against the possibilities to become commuter cyclists. Adding weight to the notion of the refrain, Rafael suggests that in the cultural context of Sydney, continuous fast paced flow offer affective and emotional affordances of safety through territorialising roads for fast-moving vehicles.

Furthermore, Rafael and Patricia spoke of the possibilities provided by speed to carve out gendered spatial entitlements to cycle to work. For example, Rafael highlights performativities of cycling as important in urban public space:

Cycling is a competition in Sydney. You need to go very fast here always. You see everybody in London, Madrid and Dublin riding bikes, and going to work with a suit, you know. You see ladies wearing heels and cycling, and guys wearing suits and ties I don’t think that culture is encouraged at the moment in Sydney. If you look at the bridge, everybody who is crossing the bridge, like, 80% of the cyclists have, wearing Lycra ...

Rafael underscored the significance of gendered collective expression performed in the culture context of Sydney between cyclists and between cyclists and places. Echoing the work of Heim Lafortbois (2019), Lycra clad bodies and speed create a masculinist territory by taking up as much space as possible by becoming a fast-moving vehicle. Gender is brought into sharp relief in Patricia’s reflections of the emergent experiences of her homeward bound commute (Fig. 1). Gendered spatial entitlement to transport infrastructure manifested itself in terms of speed which translate into a frustration for anyone that slows the traffic flow (Domosh and Seager, 2001). Conditioned by previous experience, Patricia outlines how violence can be related to gendered mobility performativities and feelings of not-at-home in public space.

I don’t fight on the road. If some 4 × 4 is revving their engine behind me and I can get off the road and let them pass me. I try and strike the balance of: “I have the right to be here,” and: “I’m just going to play it safe.” I’m a fan of never escalate. I don’t want to end up in a row and spoil my ride because someone feels entitled to that space. I just want to give them a wide berth, literally and figuratively. Because it’s not worth it. This a classic situation where, as a woman, I know that I’m not going to come out best in an escalated kind of aggressive situation.

Patricia highlights performativities of ‘combustion’ masculinities as a collective expression to sustain the relations between drivers and cyclists (Fuller, 2017). Attuned to the pace and flow of the traffic, Patricia anticipates unfolding abuse from disrupting expected sensations of fast-paced flows that comprise on-road bicycle facilities as a masculine domain. Patricia opts to illegally pedal on the footpath instead. Theoretical engagement with the refrain highlights the gendered performativities in repetitive experiences of mobility practices as important in territorialising transport infrastructure.

4.3. Spacing

Deleuze and Guattari (1987) conceive of the refrain as involving routines that encourage a sense of safety despite bodies being physically proximate. The refrain draws attention to how the reactivation of commuter cycling relies upon sensations of physical proximity-in-motion through positioning riding tactics, or spacing, to organise a comfortable and secure commuter territory. Our participants reveal how sensations of physical proximity-in-motion from other bodies is always contingent upon skills, previous experience, and type of relationship
they wish to enter. Speaking to a video-outtake, where the cycleway ends in Kings Cross (see Fig. 2), Rafael reveals how the physical proximity to cars are emotionally and affectively charged moments, part of the spatialities from which a sense of vulnerability flourishes, albeit with possibilities to navigate understandings of himself as a fit experienced cyclist.

In contrast, in the context of commuter cycling along on-road-cycling-facilities, Patricia explains how sensations of corporeal vulnerability generated from the physically proximity of motor vehicles operated to segregate and separate.

I do occasionally shout. Someone, they were barely 50 cm away when they overtook. I started shouting: “You’re supposed to be a metre away!” And of course, I’m shouting in the wind, but sometimes you got to express it. It’s usually: “That’s a bit scary, you’re too close.” And I think, I’m about to pull up beside or behind that car at the next traffic lights and I don’t particularly want them getting out and having a go at me either. You have to be a bit Zen about it.

On-road cycling facilities are forceful emotional and affective spaces, intensified through the felt press of the physical proximity of cars. The refrain enables a discussion of Patricia’s sense of intrusion on personal space that made her aware of herself as an intruder in the territory of the car. Embracing sensations of hostility is risky for Patricia because it has the potential to put her in harms-way. Consequently, Patricia happily relinquishes control over the road (Fig. 1). Patricia illustrates why passing distances as a policy mechanism is too instrumental in considering why people commuter cycle or not.

The threat of the physically proximate car and its associated vulnerability had an impact on justifying road rule disobedience. For example, where Andrew senses danger from cycling in proximity to motor vehicles, he described ‘rule breaking’, which includes experimentation with ignoring red-lights alongside cycling on pavements, pedestrian crossings and in the wrong direction. In a video-outtake, Andrew reflects of the repetitive sequence of events and sensations triggered as he is brought into proximity with motor vehicles where the Moore Park Road pop-up cycleway ends at the junction with Anzac Parade and Flinders Street (Fig. 3). Through the lens of the refrain, cycling commuter mobility is bound with emotions, embodiments and affects that repeat past associations as well as generating mobility, subjectivity, and space, together. Such theorisation resonated with Andrew’s reason for breaking formal road rules as a project of experimentation in performativities of road safety. Such arguments offer tentative interpretations of how individuals with different cycling abilities ‘fit in’ with commuter geographies, underpinned by rules to bring order and fairness to fast-moving vehicles based on measurements of speed and distance. Mirroring Latham and Wood’s (2015) discussion of cycling infrastructure, an appreciation of the sensations of proximity-in-motion that underpin breaking road rules may offer insights to making cycling safer.
5. Discussion and conclusion

This paper has sought to better understand the reported increase in commuter cycling in the wake of COVID-19 pandemic disruption through the experiences of reactivated commuter cyclists. Deleuze and Guattari’s notion of the refrain offered numerous possibilities for conceptualising behaviour change through the intensities of disruption. We conceive the revival of commuter cycling through the sensations generated by experimenting with the repetitive routines and rhythms that co-constitute mobility, subjectivities, and territories. Through this approach, this paper contributes to growing research that considers the ongoing impacts of the COVID-19 pandemic on transport geographies. Moreover, by understanding the reactivation of commuter cycling through the disruption of the routinised and motorised commuter journeys, the research captures some of the experimentation necessary to generate a spatial and temporal order experienced as safe and efficient. Experimentation produces new sensations generated by the affective press of the social and the material. In highlighting these sensations against the unfolding sequence of events that comprise repetitive commuter journeys, we foreground the importance of three interpretive frames: timing, flowing, and spacing.

A focus on timing highlights the fragility of commuter cycling reactivation, one that is contingent on connections formed through embodied histories, social norms, energy levels, physical fitness, and mood, alongside the intensity of traffic, transport infrastructure, weather, and air quality. The reactivation of commuter cycling through the lens of flow considers the place of gendered difference. Here we reflect on how gendered territories are constituted by commuter cyclists who open themselves up to affective intensities of speed. The experience of spacing suggest that a heightened sense of vulnerability emerges through sensations of proximity-in-motion while riding a bike with fast moving traffic may result in experimentations that produce feelings of safety but infringe road rules. In such ways, this paper demonstrates how disruption of commuter routines by the pandemic provided a reference point for experiments with what stimulates bodies and the how and why some bodies enact cycling as an alternative transport mode and not others.

In challenging ontologies and epistemologies of transport behaviour change we have uncovered problematic assumptions of who can and cannot safely cycle on road and cycling infrastructure in the City of Sydney. Our findings convey the precarious and marginal position of slower paced commuter cyclists. For the reactivation of commuter cycling to be felt as safe and efficient requires becoming a fast-paced vehicle that performs velomobile masculinity that demands speed, competition, and aggression (Fuller, 2017). Future policy must address gendered mobility hierarchies of an automobilised society that restricts access to public space through aggressive territorialising tactics underpinned by the uncritical understanding of the road as the domain of motorised vehicles. In Sydney, Australia, current strategies for safe riding on shared roads focus on maintaining 1.5 m of distance between

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**Fig. 2.** Rafael’s cycling practices from the felt proximities to cars are part of the spatialities from which to organise a secure commuting territory by becoming a fast-vehicle entering William Street, City Sydney.
cars and bikes when the speed limit is greater than 60 km/h and 1.0 m when the speed limit is 60 km/h or less. Hogg and Quilter (2020) illustrate that how this regulation is policed through infringement notices, and to what success, is not a key priority of law enforcement. Future nuanced public campaigns, with appropriate police support and criminal justice sentencing, must stigmatise violence between cyclists and drivers, challenging criminal behaviour being allowed by positioning drivers as the authoritative voice of the road and cyclists as the danger. Furthermore, policy must take seriously the spatialities of aggression bound up in mobility related physical proximity between cyclists and drivers, and between cyclists of differing speed. Alongside policing passing distance laws in New South Wales, this involves busting the myth often found in policy that portrays cyclists as being the same (Osborne and Grant-Smith, 2017). A future policy approach might involve working closely with slower-paced cyclists to incorporate their sensation of pedalling motion to make existing cycling infrastructure safer and more efficient. Our geographical perspective of the refrain underscores the importance of future research to better understand transport disruption relating to experimentations with timings, flows and spacings between and within different modes of transport.

Credit author statement

Gordon Waitt: Conceptualization, Methodology, Original draft preparation, Revised draft preparation, Elyse Stanes Data collection, Data curation, Reviewing and Editing.

Acknowledgement

The funding of the project was through an Australian Research Council Discovery Project entitled “Pedalling for change” (DP190100185). The research received ethical approval from the Human Research Ethics Committee (HREC no 2017/318). University of Wollongong. We thank all participants who shared their stories of starting cycling to the City of Sydney during the lockdown in March 2020. We thank our anonymous reviewers for their constructive critique of earlier drafts of our manuscript.

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