Moving and Not Moving:
rhythm, flow and interruption in a sensory ethnography of urban cycling

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Abstract

Recent work in sensory ethnography has drawn attention to the integration of both corporeal and cognitive dimensions in the experience of mobile practices. Drawing on fieldwork conducted in Munich and its immediate surroundings, together with comparative data from Munich and London, this paper follows on from work by Edensor (2010) in linking a Lefebvrian consideration of rhythm with a concern for the sensory dimensions of mobility. In this case, the central concern shifts towards a greater focus on an exploration of the intertwined physical and emotional sensations imposed on the mobile body by its immediate surroundings and the physical environments of movement. In the sensory world of journey-making by bicycle, a process reliant on repetitive, rhythmic physical motion restricted by the mechanics of the machine itself, stopping and starting has a significantly greater impact than it does for walking. The paper therefore considers the import of the not-moving experience for journey-making by the cycle commuter. By focusing on the sensory dimensions of travel, differentiation can be made between stillness, not moving, pausing and waiting. Consideration is given to how these relate to the sensory environments of non-motorised urban mobility.

Reference

Tim Edensor (2010) Walking in rhythms: place, regulation, style and the flow of experience, Visual Studies, 25:1, 69-79

Introduction

"Waiting, waiting, waiting, always bloody well waiting", 1914-18 British soldiers' song

Whatever one's means of mobility, human navigation between points is never a continuous flow. Movement consists of stopping, starting, accelerating and decelerating, slowing and pausing. In the mobile spaces of city life, where Durkheim identified the constant negotiation of social relations, a similar constant negotiation of spatial relations occurs. This study takes a (loosely) Lefebvrian approach to thinking about the sensory world of the urban cyclist, considering the multiple and intersecting (syncopating) rhythms at work in the course of journeying, and focusing its attention to the interruptions of travel and experiences of waiting.

In order to do so, the paper explores variously the mechanics of bicycle riding, (especially of stopping and starting), the mundane journey-spaces of an everyday commute (through attention to the journey as an embodied experience) and the relation of these experiences to the design of urban infrastructural space. These analyses are grounded in a six-month empirical study of bicycle commuting in Munich, conducted as part of a Leverhulme International Academic Fellowship entitled "Developing cross-disciplinary research into bicycling and the environment" [IAF-2014-016], hosted by the Rachel Carson Center for society and the environment.

Focusing on the physical and mental experiences of not-moving and moving presents a communicative dilemma for the researcher. From the outset, we need to recognize that there are different forms of not-moving, most basically the willed and the not-willed, the chosen pause and the imposed halt. The effects of disrupted rhythms, the interruption of movement, and the experience of uncertainty accompanying these processes are hard to convey in the continuous verbal flow of an oral presentation or the reader's perception of a written paper, where breaks can be compensated by revisiting previous paragraphs to ensure the continuity. Yet the time dimensions of moving and not-moving on a journey remain tantalizingly beyond the linguistic. To wait is to do more than simply not move. Waiting implies anticipation, the halt before commencing or continuing action.

As a means to promote different ways of thinking about these experiences, therefore, this paper accompanies a film record of journeying, illustrating the changing flows and rhythms of a city journey, rather than by written notes in the now ubiquitous slide show. The limitations of video as a mobile method have been well explored by Brown and Spinney, but it has proved immensely valuable as a research tool in the preparation of this study.[1] Repetitive filming of the same journey with an unobtrusive GPS equipped sports camera provides a source for thick description of urban journeying. Verbal notes are easily made while riding, and there is potential for multiple data sources to be layered in (including speed, heart rate and energy use). The multiple records reveal not only how various external factors create different experiences of the same journey, but how the anticipation of waiting and not-moving influences route choice.

The mechanics of bicycle travel

To become stable, the bicycle needs to be moving. Changing design parameters can change the stability characteristics of any style of bicycle, but the basic lesson learned through both experiment

[1] Brown, Katrina & Spinney, Justin, (2010) Catching a glimpse: the Value of Video in Evoking, Understanding and Representing the Practice of Cycling, in Fincham, McGuiness and Murray *Mobile Methodologies* pp.130-151

and mathematical modelling is that once moving above a given speed, a bicycle needs no input to remain upright. For a typical urban bicycle the self-stable point (or the weave speed) arises at around 4m/s (14.4km/h, 9mph)[2]. Below that weave speed, constant input has to be given in order to keep a two wheel vehicle upright. It logically follows that, in purely mechanical terms, the ability to maintain constant forward motion makes bicycle riding less work, regardless of the extra energy involved in acceleration and deceleration.[3] Yet stopping and starting, pausing, waiting and setting off are more than mechanical actions of the machine. The energy for movement comes from the actions of the body, a series of muscular contractions and relaxations ranging from the constancy of heartbeat, to the bipedal motion of the legs. Indeed, as Colebrook has described, the bicycle/rider combination becomes, in Deleuzian terms, an assemblage.[4] Indeed, only in combination with the rider can one talk meaningfully of the bicycle as a vehicle. Sat on a bicycle, rather than within an enclosed shell, one is exposed to the sensory world of the city, and the sensate perceptions combine with the inward perceptions of muscular exertion. Considering the physicality of journeying in the city, therefore, we can begin to examine the interplay of these actions and activities from the perspective of the sensory traveler and the stop-go world of everyday travel.

Setting off. To begin to ride, first one has to start out. An unconsidered action for most, but recall teaching a child how to start. First learning to scoot along until that moment when, under the balance provided by forward motion, the feet are connected with the pedals. Originally, of course, velocipede, highwheeler and safety bicycles before the advent of the freewheel, required the constant movement of the pedals (and thus the legs while the wheels were turning).[5] This direct connection between body-motion and machine-motion is celebrated by new generations of urban cyclists who revel not just in the simplicity of a fixed wheel bicycle, but in the sense of the mechanical purity of connection.

Yet the design of the framed bicycle makes it not entirely easy just to sit down and begin pedaling. The high wheeler required a mounting step on the lower frame in order to launch oneself up onto the saddle. The corollary of this is that while riding and balancing is relatively easy (the higher one is, the easier the balance), dismounting a highwheeler takes conscious effort and prior decision-making, requiring space to stop. It was not conceived for stop-start riding but to provide ease of continuous travel. Its reputation for unsafety came not from the problem of balance but from the problem of making an emergency stop, any attempt at which was likely to pitch the rider forward. The safety bicycle was a significant improvement in usability from this perspective, but even then, the relationship between rider, saddle pedals and ground is still full of compromise, born in the same era when frequent stopping was not a requirement. Comfortable bipedal motion (translated by pedal and crank into rotary motion to drive the wheels) requires the leg to be almost fully extended, dictating a distance between saddle and pedal. Yet in order that the pedals not strike the ground, the saddle needs be at a height that prevents the foot from properly touching the ground when at rest. Stopping fully requires either a raised object on which to place one's foot, something to hold on to in order to stay upright, or getting off the saddle to put one's feet on the ground. One frequently seen compromise is to lower the saddle but this makes pedaling a lot less comfortable: imagine walking

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2 See Armin Schwab's pages at http://bicycle.tudelft.nl/schwab/Bicycle/index.htm. In particular see the April 16 2007 videos using the VU Treadmill.

3 For the mechanical power required see Papadopoulos

4 Colebrook, Claire (2002) *Gilles Deleuze* London: Routledge p.56

5 Hadland, Tony & Lessing, Hans Erhard (2014) *Bicycle Design: an Illustrated history* Cambridge, MA: MIT Press

without straightening one's legs. Another is to change the design by pushing the pedals forward in relation to the saddle, a solution that has been tried and tested, and proved, (see e.g. the Sofacykel in 1930s Denmark) but remains the province of a few specialist manufacturers. Tiptoes also allow stationary stability as long as the bottom bracket is relatively low but is necessarily precarious.[6] So, stopping and starting on two wheels requires a relatively complex series of movements – hence one not infrequently sees cyclists use lampposts and guardrails as props, or deliberately slow riding approaching a junction in anticipation of the lights changing.

Conventional bicycles are poorly designed for waiting. These mechanical considerations may seem either trivial or obvious, but the interplay of rider and machine, and the specific transition between moving and not moving distinguish cycling from walking as a mobile mode. While much of Edensor's (2010) rhythmanalysis of walking can be applied to cycling the city, the paths woven, and lines traced by the cyclists are more circumscribed by the architecture of urban space. Similarly, the pause or momentary halt connected with the "particular experiential flow of successive moments of detachment and attachment, physical immersion and mental wandering" provided by walking, is far less applicable to cycling.[7] Indeed, if balance in riding is characterized by its continuity of moment, detachment and mental wandering may have consequences of greater impact.

Not moving on a bicycle is a state of precariousness, rider either disconnected momentarily from machine-rider assemblage, anticipating reconnection, or paused, unbalanced and supported by hand or tiptoe. Rails, poles and other street furniture become means by which to pause. The most creative example observed being a signal pole held with leg only: foot braced foot on right hand side, knee on left, rider remaining in the saddle, hands on the handlebars waiting to be released. The affordances of street furniture and the anticipated length of wait required dictate the choice of balance, will the lights change, will the way become clear? Can a partial balance be held for long enough? All these questions must be anticipated and negotiated. Bicycle-specific infrastructure in Copenhagen provides support-rails for hands or feet at junctions where stopping is essential, and seeks to obviate the need to stop wherever possible. However, such articles are rare and reflect a specific and explicit attention in Copenhagen's bicycle planning to the rhythms of the city.[8]

Copenhagen's cycling plan acknowledges the daily rhythms of the city and of cycling within it. It evokes a daily pulse that swells and contracts with changing volumes of traffic in contrasting modes of travel. These changing volumes can be catered for by, it suggests, the flexibility of the route designations. Infrastructure is itself understood as a mobile phenomenon; routes expand and contract as demands change. Rigid demarcations of territory become deliberately blurred as the needs of the city's transport spaces change through the diurnal cycle. Most cities, by contrast imposer their own specific rhythmicity on the traveler. In Munich, for example, side streets, priority signs and traffic lights cut into the flows of journey. The traveler of all types must wait upon the pulse of the city's own spatial flows. The steady pace of the cycling citizen is constrained by the necessities of the city's own dynamic of active and passive infrastructure, and of the flowing movements of other travelers, pedestrian and vehicular: cars, bikes, buses, trucks and trams. Delivery and passenger service vehicles pursue their won stop-start processes on the shared space of travelling, to

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6 Cycles designed for off-road use have the bottom bracket set higher from the ground in order to give better obstacle clearance.

7 Tim Edensor (2010) Walking in rhythms: place, regulation, style and the flow of experience, *Visual Studies*, 25:1, 69-79 p.69

8 Copenhagen city cycling plan 2014

make the journey a negotiated process. Waiting, anticipating the movement or non-movement of another becomes a vital part of the urban experience.

Mundane journey spaces

Given these observations on the particularities of the linear and relatively continuous movements of ridden bicycles, we can consider some of the contrasting rhythms involved in riding the city. First there are the continuous bodily rhythms of heart and lungs. Extra effort, expenditure of energy, as involved in accelerating and decelerating momentarily raises the heart rate, the slower the rate acceleration, the less energy required, but choice of gearing makes a profound difference to the speed of acceleration and the effort required. All must accelerate from a stop, so those who ride become readily acquainted with the energetic requirements. Route choices can become contingent on the avoidance of stop-start scenarios. Riding at 24km/h, stopping and starting again can use the same energy as 200m of travel: a short space between lights will see city cyclists do no more than turn the pedals two or three times, gliding slowly between pauses. Moving away onto a longer stretch, behaviours change entirely. The affordances of different environments and surfaces shape actions and change rhythms.

Unlike the step or stride of walking, varied in both frequency and length, the mechanics of the bicycle crank impose a stricter regularity on the body. While speed of rotation (cadence) may change, the constant crank length dictates as continuous and circumscribed circling action. Freewheels allow the legs to stop though motion continues. Again, gearing changes the rotation speed in relation to forward movement. Careful observation reveals a variety of actions and accelerations from stasis, seemingly unrelated to the age or gender of riders observed. Constrained within restricted spaces of cycleways, riders watch and anticipate how others will move. Derailleur gearing makes visible the ratio between crank and wheel, and thus the likely rate of departure. A rider in a big gear will almost certainly pull away very slowly, they cannot be changed while stationary: rider behind, beware. Hubgears reveal no clues, betray nothing and can be changes whilst static. Waiting moments are filled with observation and anticipation of the movement of those ahead. How son shall I move off. Am I in a low enough gear so as not to accelerate faster than the person ahead, or will I feel the nudge of another waiting behind?

One watches at the traffic lights to see younger, fitter riders cast surreptitious glances not just at the machine, ridden, but also at the gear chosen of those around, in anticipation of the resumption of movement. Nothing feels more frustrating than pushing off only to have to brake immediately so as to sit behind a very slow rider taking up the whole path ahead. Acceleration rates are far less predictable than speed: a rider with a visibly faster comfortable pace, held at a light in a big gear may accelerate much more slowly than a rider whose final velocity may be much slower, but who sits at wait in a low gear that spins away easily.

Such considerations would be less important if there were not such variety of possibility inherent in any typically diverse groups of riders encountered. Travel speeds vary from roughly 10-30km/h, quite a considerable variation, but velocity is moulded by the externalities of the ride as much as by the rider. Long continuous open spaces cause most to speed up, short stretches broken by multiple potential disruptions result in lower speeds all round. Narrow paths without room for passing result in everyone reduced to the speed of the slowest.

Riding slowly is a strange experience. Each person finds their own comfortable rhythm and energy expenditure level. Pedal speed, leg strength gearing choice and use and emotional mood all feed in to the body machine assemblage to generate movement. Riding just slightly slower than is optimal requires disruption to one's own internal rhythms. The differential may require you to periodically cease pedaling, to gear down, even to brake, all interrupting the flow of body machine movement.

Melding the body and the machine to create a travelling assemblage imposes particular rhythms on the body, the bicycle itself becomes a means of disciplining the body as Bunte argues.[9] Her riders are concerned with long distance travel: their only reason to stop is to sleep. The urban traveler may stop through their own volition, tempted by sights sounds or smells that permeate the spaces through which they move, but only when the shaping of the travelling infrastructure permits. Such pauses are the converse of the interruptions enforced by junctions and lights. Yet infrastructure may also impose continuity. Distracted by something in the cityscape, the moment is lost as the cycle lane and its confinement ensures continuity of movement. So the city imposes its own rules upon the travelling body either enforcing not moving or ensuring continuity of movement against a desire for not movement. Here, the continuity with driving is more pertinent than comparisons with pedestrianism. Waiting is no longer a product of not-moving, but of the desire to pause.

Observed techniques to wait or avoid waiting

Michael Colville Anderson has blogged extensively to observe the diversity of ways of stopping, of poses and strategies adopted. Cycle specific infrastructure design in Copenhagen prioritizes the continuity of flow of cycle traffic along a main route, side roads meeting main routes hold approaching traffic back behind the cycle lane. No such provision is visible in Munich, and even lights may control the road space as a four-way junction despite the disparities in traffic flows. Watching cyclists approach the lights on red one sees the glance around for traffic and when it is clear non is visible sometimes the light control is ignored entirely. Others wait patiently until the moment of release. Yet others are observed to turn right into the side street, execute a swift u-turn in the road and turn right again in order to continue on their way, continuing to move, having broken no signals, but avoiding the discontinuity of stopping.

Another frequently observed process, particularly approaching a left-turn junction, is the switch away from the cycle path as the junction is approached to join the carriageway, flicking left among the motor traffic and then switching back right to rejoin the cycle way. Vigilance, awareness of the local laws and their enforcement is essential for the traveler to interpret the choice-making and behaviour.

At some point, however, stop one must. and here we see the awkward negotiation of public proximity. Behaviours change radically depending on location. National and local variations in the attitude to public space shape actions toward fellow travelers. A consistent theme, however, is the downward glance. Cycle paths in particular demand close proximity as one waits to cross. Avoiding direct eye contact at an uncomfortably near distance, gazes are cast do and focus on the machinery of ones fellow traveler allows one to move and relax a little. Others stare straight ahead, appearing to deliberately avoid any interaction with the bodies beside them. Riding in company changes they dynamic of waiting completely, but conversation is rare with total strangers. Yet on a regular daily

[9] Bunte 2015 in Cox (ed) Cycling Culture

commuting ride, these strangers may also be familiar faces, recognized from regular encounter en route.

At large intersections the wit at traffic lights places waiting cyclist alongside the pedestrian at the kerbside. Here, unlike normal travel parallel to motor traffic movement, one is perpendicular to vehicle movement, and in close proximity. Perhaps only a metre away from one's, traffic passes, sometimes at what feels like intimidating pace. The noise, smell and taste of exhaust and warm engines are thrust into ones sensory world. Suddenly, the vulnerability of the non-motorized traveller becomes apparent. One is constantly one step away from catastrophe. The desire to continue movement, to recover one's own agency as traffic is strong. These moments of waiting are profoundly shaped by the weather. The impact of rain and snow are exaggerated by the turbulent swirl left by moving vehicles, splashes from puddles need to be avoided. Waiting journeyers huddle against cold and clap their hands to keep warm in the winter. Cold dulls the olfactory senses. Conversely warm weather emphasizes the sense of smell, and the distinctive scents of different exhausts become apparent. This sensory world becomes more apparent when waiting than when in motion. Moving through the streets, bakeries, florists, butchers and breweries provide their own navigable worlds of experience. Rarely do these intriguing scents coincide with the enforced waiting, sited as they mostly are away from the heavier traffic.

Time and imagination shape perceptions of travel, but for the mechanical traveler (in contrast with the walker), the rolling mas of rider-vehicle requires concentration. The mind can only wander so far, and although for cyclists, speeds of travel rarely exceed 30km/h, the consequences of an error of judgment as an exposed body among the complexities of tarmac, stone, steel and wood that comprise the urban landscape are somewhat higher than when protects by a steel and aluminium cage. Consequently, the waiting moments stretch out mentally. These are the times when one does not have to think about the processes of moving. One only waits in anticipation, expectation. These pauses are hard to articulate in writing. In music, composers from Gershwin onwards have successfully expressed the changing clattering, rhythms and counter rhythms of cityscapes. But even in musical form, where changing tempos and syncopation of clashing rhythms have their sonic expression and accessibly communicate the feel of the complexity of motion, it is almost impossible to find a means of expressing the sense of interruption, a pause, a non-moment. And yet for the urban traveler, these pauses are full and not just of the externalities described above. One is aware of the heartbeat continuing, perhaps slowing at rest. The change in muscle fibres from twitch to stasis and the need to tense before restarting.

Katrina Jungnickel and Rachel Aldred (2103) have described how cyclists use mobile audio devices to manage their sensory environments.[10] They expose "complex relationships between listening and not-listening" as situational, (p.239) and to explain them "deploy the term 'sensory strategies' to describe the often measured and thoughtful practices of controlling and managing one's personal exposure to the urban environment" (p. 239). This study of everyday cycling in Munich reinforces their conclusions, demonstrating a number of ways in which cycling publics employ particular strategies to mediate their environmental encounters. More specifically, in the context of moving and not-moving, the desire to not-wait but instead to continue to flow, demonstrates another level

[10] Jungnickel, K and R, Aldred (2013) Cycling's sensory strategies: How cyclists mediate their exposure to the urban environment *Mobilities* 9:2, 238-255,

of sensory strategy, bound up with a broader complex of sensory experiences, both aesthetic and kinaesthetic.

Urban design and infrastructural space

The design of mobility infrastructure constantly sends explicit and covert messages to its users. These discipline and shaper the travelling body (Bonham and Cox 2010). They provide messages about the hierarchical ranking and prioritization of mobility modes. In Britain, the ubiquity of "Cyclists Dismount" signs at any complex junction boldly declares an unwelcome, even outright hostility towards the bicycle rider. Here waiting is implied as a form of subservience to other modes. Jan Gehl makes a similar observation on the light controlled crossings where non motorists must request permission to traverse the spaces of a city which properly is theirs.[11] Equal treatments may be apparently egalitarian, but when volume and power are on the side of a single mode, situations can be unpleasant and intimidating. Separate and segregated facilities are ambiguous. The notorious separated path left turn for cyclists in Germany and the US alike appears to offer a practical and safe way to negotiate a busy crossroads.[12] However, they usually require waiting through two entire sequences of light governed traffic and frequently in the most constrained spaces, closest to passing vehicles. Safe passage requires discomfort and apparent humiliation as motorists simply take a single turn at the lights.[13]

Stationary waiting to negotiate the contested space of urban life is not in itself a problem, but part of the constant process of social life. Thinking in terms of the sensory experiences of waiting alerts us to another dimension, when waiting is the product of diminished status. Waiting becomes waiting on. Waiting on the rhythms of an impersonal city: when traffic lights without sensors turn to red in an otherwise deserted streetscape; when the same lights turn instantly to green when a car triggers a road sensor; waiting on motor vehicles while they clear away for cyclists to trail in their wake.

Moving and not moving are part of the inevitable and ineluctable rhythms processes of a cityscape. They are what distinguishes urban cycling from the leisured continuousness of cycle tourism. Yet they are what also potentially distinguishes cycling as necessitarian transportation from cycling as pleasure. Every traveler subjects themselves to outside forces created by infrastructure and shared space, but the distinguishing line is perhaps when submission becomes subservience. Some routes becomes simply too interrupted, too staccato to be desirable. Alternatively, the experiential spaces of interruption become too unpleasant, anticipation of some waiting spaces makes choosing an alternative route more desirable. Thinking about the sensory dimensions of waiting can alert us to the subjective constructions of experience and the crucial values inherent in being made to wait.

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11 Jan Gehl (2010) *Cities for People* Washington DC: Island press

12 NACTO (National Association of City Transport Officials) (2014) Urban Bikeway design Guide [2nd edition] Washington DC: Island Press

13 For discussion of the impact of this experience in US cycle activism and planning, see Epperson (2014)