Bicycling as a Way of Life: A Comparative Case Study of Bicycle Culture in Portland, OR and Amsterdam

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Abstract

Over the last decade, bicycling has found itself a place on both the policy and academic agenda. The bike is becoming an important part of urban transportation and life. Most academic research focuses either on determinants of bicycle use or emphasises bicycling as a cultural phenomenon. This paper attempts to bridge these two strands by arguing that 'bicycle culture' consists of both a material and a socially constructed dimension. This notion is explored empirically in a comparative case study of Amsterdam and Portland, OR. It concludes with some of the underlying mechanisms in which material and discursive factors interact and states that both policy makers and academics should be sensitive to their respective geohistorical context.

1.Introduction

In his famous essay 'Urbanism as a way of life' Louis Wirth (1938) pointed at the various aspects in which the shift to an increasingly urban society changes social behaviour. Seventy years later, we again see an interesting, albeit less fundamental change of urban lifestyles: the growing use of bicycles. All over the world, from Paris to Chicago, from Bucharest to London, bicycling is starting to play a more important role in the transportation system and urban life. Over the last decade, bicycling has found itself a place on both the policy and academic agenda. Policy makers search for ways to increase the use of bicycles as they see the bicycle as a healthy, sustainable solution to urban transportation issues. Transport geographers and urban planners contributed to the bicycle use knowledge, and the way the use could be increased, by establishing sophisticated scientific models that explain the relation between bicycle use and explanatory variables such as infrastructure, regulatory policies and individual characteristics (e.g. Dill & Carr 2003; Rietveld & Daniel 2004; Handy et al., 2005). These approaches aim to distill the key determinants causing a trip from A to B to better understand transportation decisions. Both scientists and practitioners tend to look at the 'best practices' of countries with a high bicycle mode split such as Germany, Denmark and the Netherlands. The physical infrastructure and policies of these countries are seen as a ingredients for higher bike use in car dominated countries like the US (Pucher and Buehler, 2008). However, as shown in earlier studies, bicycle use and its variation across cities cannot only be explained by physical determinants; cultural factors should also be taken into account (Rietveld and Daniel, 2004).

From a different angle, adherents to the 'mobilities paradigm' argue that more focus should be on what happens *during* the movement, rather than what precedes it (Spinney, 2009; Urry 2007). From this perspective, bicycling is conceptualised for example as a sensory experience (Spinney, 2006), symbolic interaction (Jensen, 2006) or a power struggle with automobility (Sheller and Urry 2000). This mobilities paradigm refers to bicycling as more than a means of transportation, which meaning can differ from place to place. For instance, in the Netherlands the bicycle was a tool of nation building in the century before the Second World War (Ebert, 2004), whereas it has become a symbolic transportation mode for the environmental movement in the UK (Horton, 2006) and a sign of resistance against capitalism and conservatism in the US (Furness, 2005). These types of studies which perceive bicycling as a social construct tend to be less sensitive to the importance of space in relation to bicycling.

Central in this paper is the question which role both culture and space play in understanding urban bicycling. Building on the work of Andrew Sayer (2000, see also Jensen and Richardson, 2003), and based on comparative research in Portland, Oregon and Amsterdam this paper shows that in order to understand bicycling, the phenomenon should be analyzed from both a material and a discursive perspective. Insights from transportation studies and more culturally orientated studies, like the mobilities paradigm, are combined.. The resulting concept of 'bicycle culture', which consists of structural dimensions, mobility culture

and the physical environment, and two micro dimensions, experience and meaning and spatial practices, will be used to understand urban cycling more comprehensively.

After discussing the theoretical and epistemological underpinnings of this study in the next section the material cycling practices in Portland and Amsterdam will be explored; in particular the way in which they are embedded in space and culture. Afterwards the experience and meaning related to bicycling in both cities will be analyzed and situated within its material and discursive constellation. The paper will end with some concluding remarks.

2. Theoretical Underpinnings of Bicycle culture

Bicycle culture has four dimensions which constitute bicycle culture: the micro dimensions of experience & meaning and material practices, plus the macro dimensions of mobility culture and the physical environment. These dimensions interact through a variety of complex causal mechanisms.

An increasing body of literature points at 'soft' determinants of bicycling (see e.g. Heinen et al., 2010; Van Acker, 2010). After an extensive literature review, Heinen et al. (2010, p.83) conclude:

> From current research, it would appear that individuals in identical situations and in the same socio-economic groups choose to commute using different transport modes. This implies that an individual will base his or her choice not on an objective situation, but on their perception of that situation (…).

The notion of the 'definition of a situation' (Thomas, 1928) is a crucial component of a symbolic interactionist perspective (e.g. Jacobs, 1961; Goffman, 1962; Lofland, 1998). Perceptions do not come out of thin air; they are created through practices and interaction. Consequently, symbolic interaction in public spaces is both a means to structure social behaviour and to shape the social fabric and culture of a city. The set of perceptions about bicycling is not static, but constantly modified in a dynamic process (see also Skinner and Rosen, 2007). As Clifford Geertz (1973, p.17) puts it nicely: 'Behavior must be attended to, and with some exactness, because it is through the flow of behavior - or, more precisely, social action- that cultural forms find articulation.' Van Acker et al. (2010) have a more static notion of perception. They introduce the notion of 'lifestyle' to bicycling research. This is can be defined as 'the individual's opinions and orientations toward general themes such as family orientation, work orientation and leisure orientation' (*ibid,* p.227). Such a perspective implies that the frequently used distinction between utilitarian and recreational bicycling becomes fuzzy (Urry, 2003, p.171). It also raises questions about the cultural context which shapes the perceptions of individuals on bicycling.

The cultural context or discourse shapes the way in which bicycling is experienced and practiced. In a study of the UK, Horton (2006) illuminates the complex relationship between bicycling as a material practice and the environmental discourse. Bicycle riding is more than 'a mode of mobility particularly favored by bicyclists' (*ibid,* p.54), there is a 'mutually constitutive' relation between the material practice of bicycling and environmentalism. The argument of bicycling as a symbol for a greater cause or part of identity is also applied by Furness (2005) who sees bicycling as a symbol for resistance against dominant American capitalism and car culture. In the Anglo-Saxon context the symbolic meaning of the bicycle is can only by understand through the dominant role of cars. John Urry (2004, p.27) calls this a 'system of automobility'. This stands for 'a self-organizing autopoietic, nonlinear system that spreads world-wide, and includes cars, car-drivers, roads, petroleum supplies and many novel objects, technologies and signs.' In this regard, bicycling is both an ideological act against the dominant discourse and a material practice in which the material and symbolic properties of automobility are experienced day-by-day (Sheller & Urry, 2000). Most dramatically in the US, but also in other Western countries, the car is central in thinking about transportation and part of the national psyche (Wray, 2008) and the spatial outlook of the country is predominantly tailored to the car (Kay, 1998).

On the contrary, in the Netherlands the bicycle is an integrated part of the transportation system. Suitable preconditions such as flatness and density, an egalitarian class system and a significant bicycle movement in the 1970s are the ingredients to the current Dutch 'bicycle culture' (Ebert, 2004; Pucher and Buehler, 2008) It could be argued that the bicycle –like the car in the US- is part of the Dutch 'national habitus' (Bourdieu, 1977). In this regard this can be defined as an 'Internalized structuring impetus which more or less strongly influences social practices.' (De Cillia et al.,1999, p.156). Bicycling has become natural, because it is part of the upbringing in a lot of Dutch households and embedded in institutions and standards. Ebert (2004, p.349) relates the bicycle to Dutch nation building: 'The popularity of the bicycle in

the Netherlands can thus be explained as a cultural phenomenon that reflects the way in which the bicycle was used in that country to create national identification.'

Both the American 'car culture' and the Dutch 'bicycle culture' can be captured under the heading of mobility culture:

> "Mobility cultures" are linked to official and legal sanctions and mobility regulations. However, they are also embedded in the body as tacit mobility cultures. Some are more global generic mobility codes, whilst others are locally anchored and as such expressions of local mobility norms and customs. (Jensen, 2006 p.160-161)

Although a very relevant and insightful concept, I would argue that to come to a convincing concept of 'bicycle culture' a spatial component has to be added. Culture is, especially with regards to bicycling, not only reflected in norms and values, both also in bricks and mortar.

Research on bicycling rooted in transport geography is very sensitive to the relation between bicycle use and the built environment (e.g. Dill & Carr 2003; Pucher et al. 2010; Rietveld & Daniel 2004). Dill and Carr (2003) show, in a study of American cities, that there is a positive relation between the amount of bicycle paths and bicycle use. However, it is pivotal to have an integrated network, rather than disconnected elements of bike infrastructure (Pucher et al., 2010) In cities which have achieved such a mature bicycle infrastructure, collisions between bicycles and cars occur less frequently (Pucher and Buehler, 2008). The built environment is not a neutral space where different modalities are in a competition and its use is to an important extent shaped by formal regulations. In the Netherlands for instance, the law gives bicyclists a strong position in relation to motorists in case of an accident and parking fees are a deterrent for cars to enter a city.

Meaning and experience are also closely related to the physical environment. Moreover the material practices in a geographic setting lead to specific experiences (Lynch 1984). Consequently, to study the role of the physical environment as part of a bicycle culture it is necessary to inquiry both the actual behavior and the meanings subjects attach to this. In sum, it could be argued that the physical environment has probabilistic effects on social behaviour, but the cultural and discursive traits of its inhabitants also influence the way a city is interpreted. Or as Sayer (2000, p.114) puts it:

'The constitutive property of space can work in two ways, often in conjunction: in terms of material preconditions of actions, and in terms of their constitutive meanings.'

3. Background and Methodology

In the previous section, I have emphasized the particularity of cities and countries with regards to bicycling. Space does not lead to a universal and monocausal effects, but functions more complexly. To understand the spatial practices and experiences within a geographical context, the concept of 'mobility culture' is a useful heuristic device.

I hypothesize that 'bicycle culture' consists of both the socially constructed dimension of mobility culture and the material dimension of the physical circumstances. This study aims to find causal mechanisms about bicycle culture trough a combination of iterative abstraction and an empirical exploration in Portland and Amsterdam. First some background.

Amsterdam is often lauded as the 'bicycle capital of the world' (although policy makers from rivaling Copenhagen would have a different take on this). The city initially took the same car-orientated development path as most Westernized countries after the Second World War. Things begun to change in the mid 1960s and 1970s, a social movement called the *Provos* advocated for a very different, more sustainable city. The bicycle was one of the key symbolic tools to achieve this (Furness, 2010; Mamadouh, 1992). Although this movement only flourished for a couple of years, the discourse around a 'liveable city' was firmly settled. Attempts in the 1970s to modernize the city through highways and apartment blocks largely failed due to civic resistance (Pruijt, 2004). Another crucial movement in the shift to bicycling was the *Fietsersbond,* a bicycle advocacy group which successfully gave the bicycle a position in the transportation network of Amsterdam. Currently, the bicycle is an important component of the transportation infrastructure; the city is dotted with bicycle parking and the network of roads or paths suited for bicycling is pretty much encompassing the whole city. In 2009, according to data from municipality, the city as a whole had a bicycle mode split of 29%, whilst the city

centre has a bicycle modal share of 43%[1]. Although high to international standards, the position of Amsterdam is, except for the historic core, not very unique in the Netherlands. Similar to Amsterdam, the country managed to counter the trend of decline in cycling. The Netherlands has characteristics which make the country particularly suitable for bicycling: flatness and a moderate climate. Furthermore, the country's egalitarian class structure is seen as a reason why the bicycle never became a 'poor men's vehicle' but an acceptable means of transportation for all social strata (Ebert, 2004). American efforts to capture the Dutch bicycle culture in journalistic accounts emphasize how ordinary the bike is in the Netherlands (Wray, 2008; Mapes, 2009). A notable exception to this national habit are non-Western immigrants, who cycle significantly less than native Dutch (Rietveld and Daniel, 2004).

Although bicycles are in Portland not as ubiquitous as in Amsterdam, the city has become one of the trendsetters for bicycling in the US.It is a deviant case in a country where car mobility is a dominant discursive force and the bicycle is a marginal means of transportation. After being an ordinary industrial American city for the two decades after the Second World War, Portland's critical change towards a sustainable and somewhat peculiar city came in the 1970s when (statewide) land-use policies were implemented and a high way was converted into public space, which was the impetus for a revival of downtown and an important symbolic statement (Abbott, 2001). Bicycling really appeared on the radar in the mid 1990s, when the city initiated bicycle policies and the inner city revitalized. In the same time frame, the demographic composition of Portland also changed fundamentally, the city became a magnet for students, highly educated Californians and artists (Abbott, 2001), later coined the 'Creative Class' (Florida, 2002). The bicycle mode split rose from just a few percent in the 1990s to around 8% in 2008, with some neighborhoods being outliers with a mode split of more than 10% (City Auditors Report, 2009)[2]. By means of the ambitious Bicycle Master Plan 2030 (City of Portland, 2010), the city attempts to increase bicycle modal split to 25% in 2030.

The comparative logic in this study is both 'most similar' and 'most different' (Gerring, 2007, p.139). The latter is relevant because Amsterdam and Portland show significant variation on different aspects of bicycle culture outlined above: bicycle modal split, the national political and cultural context and physical circumstances such as number of bike lanes, density and hills. Although other American cities would probably differ even more dramatically from Amsterdam, urban bicycling would then be such a fringe phenomenon that it is hard to compare the cities empirically. These differences are relevant when analysing the causal mechanisms which have lead to a bicycle culture; although the outcomes are different underlying processes could well show similarities. The question then becomes how cities which are different on a range of aspects both became a bicycle capital in their respective context. On the other hand the cities resemble each other in various ways: the cities have a similar population size, have a 'creative' and highly educated population, bicycling plays a important role in –discourse around- the transportation system and critical incidents of resistance and critique on modernisation took place in the 1970s. In this regard the cases are addressed as 'most similar', where the focus is on how cases which covariate on several factors show different outcomes on bicycle culture.

This study could be placed in the tradition of 'comparative urbanism' (Nijman, 2007), by focusing on two cases the geohistorical context and social behavior in both cases becomes more compelling and explicit. Contrasts and resemblances have the potential to generate and refine theory. It is relevant to make a distinction between the comparisons of empirical-level events and generative causal mechanisms, since it can be difficult, or even impossible to fit empirical events in comparable categories (Steinmetz, 2004).. This does not mean social science is convicted to pure ideography, since '(…) events incomparable at the phenomenal level still may be amenable to explanation in terms of a conjuncture of generative causal mechanisms.' (*ibid,* p.373).

Besides an analysis of literature and secondary data on both cities, two main sources informed this study: expert interviews and user interviews. 'Bicycle experts' consisted of people that somehow are professionally related to bicycling. This sample is diverse; it contains (bicycle) advocates, consultants, journalists, policy makers and politicians, most of who were also involved in developments in bicycling over the last 15 years in the cities.

The second source, user interviews were meant to explore the concepts of bicycle behavior and bicycle experience, and situate them in their respective 'mobility culture' and geographical context. Although the number of interviews is relatively small (20 in total), I argue that they can still provide a fairly reliable and

[1] Mode split data are not always reliable; therefore these numbers should be treated as indicative. The data were provided by Department of Infrastructure Traffic and Transport of the Municipality of Amsterdam (DIVV).
[2] This number seems to be on the high side, unfortunately the more reliable Census 2010 data are not available yet at the time of writing this paper

insightful picture of 'bicycle culture' for two reasons. Firstly, the results from the user interviews do not stand on their own but are corroborated by literature and secondary data and expert interviews. Findings which contrasted insights from other sources were subject to rigorous inquiry. Secondly, and building on the aforementioned multiple sources argument, the inference was 'logical' rather than 'statistical' (Small, 2009). In addition to the interviews, the researcher actively rode a bike in both cities during the interview period in attempt to 'understand' (in the Weberian (1956 [1914]) sense of *verstehen)* the interviewees. In the following sections the research findings are presented. The material practices and experience and meaning subsequently dealt with; the concepts of space and mobility culture permeate these two sections.

4.Material Practices

Important aspects of a mobility culture are the formal and informal codes with regard to bicycling. In the Netherlands, bicycles are treated as vehicles, with the same priority rules as cars. In case of a collision motorists are liable unless a bicyclist makes a very unusual move (which the motorist has to prove). This gives cyclist a strong legal position (Pucher and Buehler, 2008).In the US, the situation is different; bicyclists are treated as vehicles and specific regulation is absent. In both contexts a discrepancy exists between formal and informal codes. In Portland, STOP signs do cause a decrease in speed, but do not necessarily lead to a full stop. The following quote reflects a feeling shared by many Portlanders:

> *If it's a busy intersection than I will come to a complete stop, but if I'm one a back street or a residential street I'll usually hit my brakes and slow down when I approach the stop sign and look around.* (Otis, student, Portland)

In Amsterdam a similar mechanism is at work with traffic lights. On quiet spots a lot of bicyclists run red lights. This is, however, more contested than the passing STOP signs in

Portland. The next two quotes give a good insight in the two perspectives:

> *Since I have kids I am very careful. (…) I stop for almost every traffic light. I teach my kids all the time not to pass a red light. And then I get surpassed by a lot of people who are like: 'What kind of an idiot is that?' (…) And my kid on the back rack asks: 'Dad, you can't pass a red light, can you?'.* (Jorge, lawyer, Amsterdam)

> *When there are like a lot traffic lights for small streets I'll just pass them and sometimes I'll ride on the sidewalk… [rhetorically] Are there traffic regulations here!? (…) You know, at the dangerous spots you have to stop, but usually, when they can go, they go.* (Tim, student, Amsterdam)

Bicyclists that are older or have children, tend to obey the traffic laws more seriously and take more care than younger bicyclists. The higher status of traffic lights in Portland can to some extent be explained by the spatial outlook of both cities. The dense and complicated street pattern of Amsterdam has a lot of intersections where it is relatively safe to run a red light, also because car speeds are lower. The grid pattern of Portland is less suitable for passing a red light, because in a lot instances there are four way intersections. Bicyclists which prefer quiet routes (something to which I will turn to shortly) hardly face any traffic lights, but numerous STOP signs, which increase the experienced importance of traffic lights.

The physical environment affects both material practices and experience in both cities, albeit in very different ways. Bike route decision making is a nice illustration of this difference. Bicyclists in Portland are very concerned about the bike routes they take. Low traffic and the availability of a bike path or lane are critical in the route decision process, or as one interviewee puts it: It's really very much about bike paths'. Feelings of safety are an important reason for this behavior. An earlier study in Portland through GPS systems also found that in route decision making the availability of bike paths is more important than directness (Dill & Gliebe, 2008). The following two quotes illustrate both bicycle behavior and the underlying feeling:

> *I would want something with a bike lane or something that is like residential, like doesn't have a bike lane, but doesn't have as much traffic. (…) [in a situation without both] you can't really take the lane, cars trying to force to over or won't give you a lot of room at all.* (Jenny, market researcher, Portland)

> *When you bicycle everyday you know what it's like to be at risk during high traffic times of the day, or being at risk because of a driver who's not paying attention and not looking for a bicyclist.* (Mark, architect, Portland)

In Amsterdam, quiet streets and bike paths are also preferred, but play a less determining role. Directness is a more critical factor. Two valid explanations for the difference between the cities is the fact that Amsterdam not only has a denser street and land use pattern, but also more bike paths and streets that are convenient for bicycling. It is usually not necessary to take a detour for a suitable bike route. Related to this, the city contains many more bicyclists. Regarding risk, the so called 'safety in numbers' argument (Komanoff, 2001) applies. Bicyclists are in almost all streets a substantial modality and motorists are aware of their behavior.

This convenience to ride a bicycle is part of the explanation of high bicycle use in Amsterdam; the spatial form of the city is very suited for bicycles. At the same time other modalities are perceived as less attractive. Public transit is considered slow, especially in the inner city and driving is severely restricted with parking fees being among the highest in the world. Consequently, in this spatial context the choice for the bicycle is rational; it is simply the cheapest and fastest way to get somewhere. Or as the following quotes reveal:

> *Amsterdam is too small for cars, and then parking, I also like driving, that's not the issue, but in the city centre bicycling is simple the most convenient.* (Esther, coordinator, Amsterdam)

This notion of the bicycle as the most obvious means of transportation does not apply in Portland. Although the bicycle infrastructure is innovative and excellent from an American viewpoint, it could only be activated under the influence of cultural factors. Portland's relatively dense spatial outlook (from an American perspective) and bicycle infrastructure can rather be seen as an INUS-condition, the physical circumstances are insufficient and non-redundant parts of unnecessary but sufficient causes (Næss and Jensen, 2003). The causal power of the physical environment only functions in conjunction with other, in this regard discursive, factors. As also shown in other studies (e.g. Dugundji and Gulyas, 2008; Xing et al., 2008), the mode choice partly shaped by the social network:

> *I didn't have a bike for the first year or two that I lived in Portland. I realized that a lot of my friends had bikes and that's how they got around and I knew it was really part of the Portland mentality to promote bike riding. (…) I just got to the point where I decided I might just as well get a bike.(…) There's kind of a social expectation here, that people expect you to ride a bike at least part of the time (Otis, 26 ,student, Portland)*

This mechanism of peer pressure is an outcome of how bicycling has become an important part of the student and (sub-) cultural life in Portland. For instance, the bicycle mode split at the Portland State University is, despite its supralocal function, around 11 %[3].

Bicycling is part of both their 'lifestyle' (Van Acker et al. 2010) and identity (Skinner and Rosen, 2007). The latter is related to the minor position of the bicycle vis-à-vis the omnipotent automobile. Bicycling is more than a means of transportation but also a way to demonstrate the 'Portland attitude' of sustainability and self-empowerment (see also Abbott, 2001). Within this cultural context, it becomes 'hip' to bicycle:

> *It [bicycling] is just cool, especially when people are on their way to work.* (Jenny, market researcher, Portland)

The numerous events and bike rides in the city (e.g. 'Pedalpalooza' and the 'Naked Bike Ride') exemplify the cultural value attached to bicycling. Moreover, although hard to prove, it also seems that besides 'soft factors' such as the 'feel' and music and art scene, Portland attracts people because of its bicycle friendly mentality.

A resemblance between Amsterdam and Portland is the importance of bicycling as a habit. Upbringing with bicycling leads, geography permitting, to a greater likelihood that bicycling becomes engrained in the lifestyle of people. Quotes from both cities illustrate this:

[3] Data provided by Transportation Options, Portland State University.

> *I think it's for some people too, like myself, I've been cycling all my life. I mean, even when I was a little kid one of my things I liked to do was just biking around the neighborhood and so it's always been something I enjoyed so it just seems like it's just a part of my lifestyle. But I think not everybody has that. (Kendra, architect, Portland)*
>
> *Bicycling is something really normal; you see that with kids biking. Small children are raised with the bike, and that's not everywhere the case.* (Sylvana, bike mechanic, Amsterdam)

The normalization of bicycling is a property of the concept of 'habitus'; it becomes both for institutions and agents a common thing to bicycle. In Portland, however, an upbringing with bicycling is far from a guarantee for a future bicyclist. It only functions in conjunction with the social and physical and environment. In a similar vein, the high bike use in Amsterdam is not solely explained by its physical properties. A national and urban context where bicycling is perceived normal leads to both an upbringing and current cultural setting in which the bicycle is a logical choice.

5. Experience and Meaning

Since the experience and meaning attached to bicycling in both cities are very different, I will first elaborate on both cities and then analyze how they are related. Besides the actual bike behavior, there is an important –but different- symbolic dimension to bicycling in each place. In Portland, the relation between bicycles and cars comes to the fore in two different ways. Firstly, the experience of being on a bicycle is often compared to sitting in a car. The freedom of being on a bike is juxtaposed against being captured in the 'box' of a car:

> *It feels really good to be outside, in the air, as opposed to some, you know, constraint inside a vehicle.* (Ken, biologist, Portland)

Although 'freedom' is also in Amsterdam considered a positive aspect of bicycling, the constant comparison with driving is absent. This could be related to the 'automotive emotion' (Sheller, 2004) which permeates American Car culture. As with politically loaded acts of bicycling, this specific feeling can only exist because of the opposite car culture. Interestingly, although the freedom of not being in a car is an important aspect of bicycling, many bicyclists do own a car. This reflects both ambivalent feelings towards car use and the necessity of having a car in an American context.

The car is also intensively experienced in the daily practices of bicyclists. Although probably not as dramatic as in less bike friendly American cities, anxiety or ignorance of motorists is experienced on a day-to-day basis. This creates social bonding:

> *When you bicycle everyday and you know what it's like to be at risk during high traffic times of the day, or being at risk because of a driver who's not paying attention and not looking for a bicyclist does create a sense of solidarity with other bicyclists.* (Mark, Architect, Portland)

'Fear' is an important emotion related to bicycling (Horton, 2007). It is not only a barrier to start riding, in car dominated contexts it can lead to social bonding or a shared identity; 'The spatialities of a practice always have implications for people's identities' (Horton, 2007, p.145). However, these ties are not only created in the process of bicycling, but also part of Portland's 'bicycle identity' related to a wider set of beliefs about sustainability, outdoor living and civic involvement (Abbott, 2001). Revealing in this regard is the notion of 'comradery', which is exposed through small, symbolic, communications but also through more significant interactions:

> *There's just a glance or a wave. Hey, we're on the same team.* (Ben, manager, Portland)
>
> *It's kind of that comradery too, like I've had flat tires and not had a tube and like other bikers would pull over and help me because they had the equipment to and I didn't*. (Emily, waitress, Portland)

Portland's bike community is heterogeneous, however. Although there is a general sense of affinity with fellow bicyclists, the strong sense of identity and subculture only applies to a sub segment of the Portlanders, as illuminated by the following quote:

> *I mean there are people who commute to work, there are people who take it as a sign of , I dunno, uniqueness or something .* (Mark, architect, Portland)

In Amsterdam, hardly anyone perceives the bicycle as an identity marker nor is there the antagonism with cars. The situation could rather be described as chaotic or a 'complicated dance of which everyone knows the steps' (Mapes, 2009, p. 61). Or as one interviewee puts it:

> *The bicycle atmosphere in Amsterdam is kind of stand up for your own rights and be very careful because everyone is just going its way. (…) It's chaotic and people are not very willing to obey the rules, I think that's typically Amsterdam*. (…)*I think motorists are having a hard time in Amsterdam to react to all the 'irregularities'* (Elly, retired, Amsterdam)

Speeds are relatively low, which makes situations often more manageable. Cars are not perceived as a threat, but are just another part of the transportation system. The position of the car in traffic is similar to that of the bike in Portland; marginalized and always trying to evade collisions.

In terms of identity it is necessary to move up a scalar level to get beyond the ordinary and habitual practice of bicycling. A Surinamese bicyclist indicates this by showing both the physical and cultural dimension to bicycling

> *If you look at Suriname all those Dutch interns are bicycling. Whereas it's not even suitable to bicycle. They [Surinamese motorists] drive very aggressively. It's typically Dutch to bike (…) My [Surinamese] friends always say: 'You're super-integrated'* .(Renathe, teacher, Amsterdam)

The intense and sometimes even antagonistic experience of bicycling in Portland, is also related to speed and road types. Since bicyclists generally share the road with cars, they come in the same rhythm, for instance regarding traffic lights. Additionally, distances are longer than in Amsterdam, which necessitates relatively high speeds.

> *I'm like working hard to get it up to 23 miles an hour and some people will still blow by me.* (Kendra, architect, Portland)

The different location on the road and higher speeds makes bicycling a more intense experience in Portland than in Amsterdam. Associated with this, bicycles are faster and more expensive in Portland. Whereas most Amsterdammers ride battered up to modest bikes with thick tires, in Portland the majority is using a road bike, fixed gear bicycle, or another bike with relatively thin tires. Moreover, the car as an antonym or threat on the road does hardly exist in both discourse and bicycle practices in Amsterdam. Identity and world outlook plays a more dominant role in Portland, although the situation is more complex than the binary constellation which is sometimes suggested. Non-Western ethnicities show that there are 'mobility cultures' rather than a homogenous discourse in Amsterdam. Upbringing and social environment are key factors to explain these differences. Finally, it is interesting to note that bicyclists in both Amsterdam and Portland are reasonably positive about the bicycle infrastructure in their city. Amsterdam's bicycle network, although envied by bike planners all over the world, got even a significant portion of critique.

6. Understanding Bicycle Culture

The Amsterdam and Portland experiences show that to come to satisfactory understanding of 'bicycle culture' it is necessary to explore both the material and socially constructed properties of bicycling. The dimensions of physical environment and the socially constructed dimension (mobility culture) are far from mutually exclusive, and interact in a complex way. Moreover, the function of these causal mechanisms is also dependent upon historical contingency and geographical particularity. Consequently, it is hard to relate the empirical findings of this study to other contexts or to retrieve cookbook solutions for other cities that would like to increase bicycle use. There's no 'one-size-fits-all' cycling stimulation policy. It is pivotal to be sensitive to the cultural context of a city. Nonetheless, underlying causal mechanisms could be discerned, which relate the structural and micro scale factors. I will exemplify this stance by means of five examples of causal mechanisms which are at work with regards bicycle culture in both cities.

Firstly, the research shows that the geography of a city and formal regulations are the constituent structures which lead to the 'informal regulations', which can be seen as a part of mobility culture. These are activated through the spatial practices of bicyclists. For instance, STOP signs are designed with a clear causal function. However, in a geographic setting in which it becomes more convenient 'just to brake', 'informal traffic laws' start to develop.

Secondly, with regard to routes bicyclists take, the actual practice (or 'event') is dependent on both the geographical setting (e.g. availability and density of bike paths) and the mobility culture. An example of the latter in the case of Portland is the perceived 'risk' of riding on a busy street on a relatively high speed. This is both a consequence of the dominant American car culture, as the spatial practice in which the experience of 'safety' happens on a day-to-day basis. In sum, route choice is a combination of geography and mobility cultures, which are both a result from and activated by daily practices.

Thirdly, in the process of mode choice, the two contexts revealed an interesting difference. Whereas in Amsterdam the physical and regulatory setting gives the bike a comparative advantage over other modalities, to choice to bicycle is not born out of necessity at all in Portland. In other words, different causal powers are activated in both contexts. Whereas in Amsterdam space and deterring regulation towards cars is a strong determinant of bike use, in Portland the explanation has to be sought in the lifestyle aspect of a mobility culture. Arguments like health and sustainability prove to be more relevant here. However, these factors only lead to the actual event of bicycling in conjunction with physical setting that is (to American standards) suitable to bicycling.

A fourth relevant insight is the way in which the car permeates Portland's bicycle culture, in the experience and spatial practices of bicycling, which leads to a mobility culture in which the car plays a central role, even for bicyclists. The act of bicycling is in a constant interaction with both the material presence of the car and the experience of not being in an 'iron cage'. This shows the omnipotence of American car culture, because in Amsterdam, bicycling is also related to a sense of freedom, but had a position in the continuum of modalities rather than an antagonistic relation with the automobility.

As a fifth and last example, there was a stronger sense of community or 'comradery' among bicyclists in Portland than in Amsterdam. I would argue that this is related to the minority position it has and the more intense experience of bicycling. In the Netherlands it seems, indeed, to belong to the 'national habitus'. Which makes the shared identity only visible when compared to other nationalities, in this regard immigrants. The bicycle as part of the upbringing proves relevant in both contexts. Early experience is a strong predictor of later bicycling. In Amsterdam, almost every bicyclist started at a relatively young age. This is how the experiences and practices are perpetually ingrained in mobility culture and which lead to an extreme high mode split in conjunction with a peculiar cityscape.

7. Concluding remarks

Social science has long been dominated by 'trench wars' (Flyvbjerg, 2001) between, roughly speaking, positivists and social constructivists. Transport related research suffers from this 'trench war'. There is remarkably little any cross-referencing between researchers in transport geography and behavioral transportation studies and academics which focus on the sensory, political and cultural meaning of transportation modes. Bicycling as a research topic has the potential to bridge the two camps and to overcome the ignorance. It is clear that physical determinants have a causal effect on bicycling. How and when this causality functions has largely remained opaque. There are no simple monocausal relationships. This paper shows that insights from the social constructivist side have the potential to fill this gap as studies which point at the wider meaning of the bicycle provide a good counterweight against the classic transportation equivalent of the 'economic man'. Recently, the emotional or affective dimension of bicycling has gained more attention (e.g. Heinen et al., 2010; Van Acker et al. 2010). This is commendable because it fills a long existing omission, but it should not overlook the intrinsic spatial dimension attached to bicycling. The research shows that structures with causal powers, such as Amsterdam's unique bicycle infrastructure and Portland's sustainable and outdoor orientated urban culture can only be activated under the right circumstances This idea of causal mechanisms and causal powers (Sayer, 2000; Steinmetz, 2004) needs to be more rigorously explored in the field of bicycling. There are different paths which could lead to outcomes envisioned by policy makers. Further research could show how and under which circumstances structures with causal powers like culture and geography are activated.

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