Bicycling as a Way of Life.
A comparative case study of Bicycle Culture in Portland and Amsterdam.

Peter Pelzer
Student number: 0587699
E-mail: peter_pelzer@hotmail.com
Supervisor: Dr L.B. Janssen-Jansen
Second reader: Dr A.C. Alves Pereira da Cunha Ferreira
November 18, 2010
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>3-4</td>
</tr>
<tr>
<td>Preface</td>
<td>5-6</td>
</tr>
<tr>
<td><strong>1. Introduction: Two Bike Capitals</strong></td>
<td>7-10</td>
</tr>
<tr>
<td>1.1 The Pedaling Revolution</td>
<td>7</td>
</tr>
<tr>
<td>1.2 Studying Bicycling: two paradigms</td>
<td>8</td>
</tr>
<tr>
<td>1.3 The relevance of studying Bicycle Culture</td>
<td>9</td>
</tr>
<tr>
<td>1.4 Objectives</td>
<td>9-10</td>
</tr>
<tr>
<td>1.5 Outlook</td>
<td>10</td>
</tr>
<tr>
<td><strong>2. Bicycling and Social Science</strong></td>
<td>11-16</td>
</tr>
<tr>
<td><strong>3. Bicycle Theory</strong></td>
<td>17-35</td>
</tr>
<tr>
<td>3.1 Understanding Culture</td>
<td>17-18</td>
</tr>
<tr>
<td>3.2 Bicycle Path Dependence</td>
<td>19</td>
</tr>
<tr>
<td>3.3 Components of Bicycle Culture: towards an analytical framework</td>
<td>19-20</td>
</tr>
<tr>
<td>3.4 Bicycle Use and Bicycle Experience</td>
<td>20-22</td>
</tr>
<tr>
<td>3.5 The Physical Environment</td>
<td>22</td>
</tr>
<tr>
<td>3.5.1 Geography</td>
<td>22</td>
</tr>
<tr>
<td>3.5.2 The Built Environment</td>
<td>23-26</td>
</tr>
<tr>
<td>3.5.3 Bicycle Experience and the Physical Environment</td>
<td>26-27</td>
</tr>
<tr>
<td>3.6 The Institutional Environment</td>
<td>27-32</td>
</tr>
<tr>
<td>3.7 The Socio-cultural environment</td>
<td>28-32</td>
</tr>
<tr>
<td>3.7.1 Socio-cultural variables</td>
<td>28-29</td>
</tr>
<tr>
<td>3.7.2 Explaining the Socio-cultural Environment</td>
<td>29-32</td>
</tr>
<tr>
<td>3.7.3 Empirical Findings and Analytic Dimensions</td>
<td>32</td>
</tr>
<tr>
<td>3.8 Bicycle Culture: Towards a synthesis</td>
<td>33-35</td>
</tr>
<tr>
<td><strong>4. Methodology</strong></td>
<td>36-40</td>
</tr>
<tr>
<td>4.1 Case Selection</td>
<td>36-37</td>
</tr>
<tr>
<td>4.2 Methods and Techniques</td>
<td>37-40</td>
</tr>
<tr>
<td>4.3 The Retructive Process</td>
<td>40</td>
</tr>
<tr>
<td><strong>5. Portland: Alternative or Ahead?</strong></td>
<td>41-56</td>
</tr>
<tr>
<td>5.1 Background of Portland</td>
<td>41-44</td>
</tr>
<tr>
<td>5.2 The Portland Story</td>
<td>44-50</td>
</tr>
<tr>
<td>5.2.1 1844-1990: The Building Blocks</td>
<td>44</td>
</tr>
<tr>
<td>5.2.2 1990-2000: The Crucial Decade</td>
<td>46-48</td>
</tr>
<tr>
<td>5.2.3 2000- now: Portland built it and they came?</td>
<td>48-50</td>
</tr>
<tr>
<td>5.3 Latent structures and the ‘Portland Way’</td>
<td>51-52</td>
</tr>
<tr>
<td>5.4 Bicycle Behavior</td>
<td>52-54</td>
</tr>
<tr>
<td>5.5 Bicycle Experience</td>
<td>54-55</td>
</tr>
<tr>
<td>5.6 Conclusion</td>
<td>55-56</td>
</tr>
<tr>
<td><strong>6. Amsterdam: A Bike Fairy Tale?</strong></td>
<td>57-69</td>
</tr>
<tr>
<td>6.1 Background of Amsterdam</td>
<td>57-59</td>
</tr>
<tr>
<td>6.2 History: Modesty, Mercantilism and Movements</td>
<td>59-64</td>
</tr>
<tr>
<td>6.2.1 Before the car: the Horse of Democracy</td>
<td>59-61</td>
</tr>
<tr>
<td>6.2.2 Post WW2: Modest Modernization</td>
<td>61-62</td>
</tr>
<tr>
<td>6.2.3 1975-now: Towards a bike capital</td>
<td>62-64</td>
</tr>
</tbody>
</table>
Preface

This thesis has come a long way. The idea of doing a study about bicycling came on a cold winter night, when I found out about Portland’s fascinating bicycle culture on the web. What followed were two years of reading, having an intense amount of conversations about bicycling, and writing all the findings down. It has been an engaging and exciting journey through a field that wasn’t mine, but which I have at least partially entered. A great inspiration was the openness and energy of the cycling community. Researching, making policy or advocating for bicycles is not only a day job, but a way of life. To some extent it has also became part of my way of life. From just a regular bicyclist I changed into a bit of a bike geek myself. When I rode home after that night surfing the web I couldn’t predict it had not only set my occupation for the following two years, but also fundamentally changed my daily commute: riding a bike would never be the same.

Particularly because I started this project as a novice to the field, I benefited greatly from help from others. During my stay at Portland State University Carl Abbott, Lynn Weigand and Jennifer Dill helped me to understand the city and bicycling better. I particularly would like to thank Paula Carder for helping to find the interviewees. I was also involved in several student projects from which this thesis has benefited greatly, credits to all my group members. Lindsay Walker, Nikki Wheeler and Josh Steiner showed me the fascinating world of bike and ped design. I worked on the Cycle Zone project, which asked a lot of our energy and weekends. Finally, thanks to Sarah Williams for collaborating with me on a study of Portland’s Bicycle Culture, teaching me to appreciate good coffee and friendship. Moreover, to Portland’s bike experts for taking some of their precious time to talk to me: Jeff Mapes, Mia Birk, Sheila Lyons, John Charles, Jay Graves, Roger Geller and Tom Miller. Particular thanks to Jonathan Maus, whose willingness to share his expertise and informative website BikePortland.org were of great help. I would also like to thank all the bicyclists that were willing to talk to a Dutch guy with an audio recorder. Without them this thesis wouldn’t have been possible. Zack Furness was helpful in showing me world of bicycling as a sub- and counter culture. In Amsterdam and the Netherlands, I would like to thank the following people involved in bicycling: Rob Smiers, Govert de With, Frank Borgman, Sacha Hansen, Marco te Brömmelstroet, Maarten Bakker, Martijn Sargentini and Pascal van Noort. Of course I would also like to thank the bicyclists in Amsterdam that were willing to share their stories about bicycling with me and Bob Orange Bicycles that gave me the opportunity to find my interviewees . Acknowledgements to dIVV for providing me their statistics and Karin Pfeffer and Els Veldhuizen from the GIS centre of the University of Amsterdam for providing the GIS files with which I could visualize the data. During this study, I worked with Marco Bontje and Sako Musterd on the Inventive City-Region project. This cooperation was very helpful in understanding rigorous empirical comparison of cities and gaining a notion of professionalism in academic work. This thesis has also benefited greatly from comments I got on my presentation at the 7th Cycling and Society Symposium at the University of Oxford on September 6th. AGORA has given me the chance to make a theme edition on bicycling, of which I am grateful. Particular thanks to Jesper van Loon for providing some of his beautiful pictures. With my fellow students in Metropolitan Studies we had weekly meetings which inspired me and gave me very useful feedback, in this regard I would like to thank: Justin Kadi, Julia Kufner, Julienne Chen, Joanna Tsoni, Ate Poorthuis and Floris Jan Donders. Besides being part of this team, Michiel van Meeteren gave very useful feedback on a paper based on this thesis. Laura van der Geest found spelling errors and inconsistencies in the draft version, even when I was sure there were no left. Arjen de Wit had very sharp comments on the draft version of this thesis. Thanks also to my parents, who in every step in my academic career have a heavier work to read. Antonio Ferreira receives acknowledgements for reading and judging this dissertation from cover to cover. Leonie Janssen-Jansen was an excellent supervisor who has two faces: supportive and critical. Initially, I mainly got to see the first face which
helped me to stay motivated. Really crucial for this thesis, however, was the second face, which popped up in the last five months and kept looking over my shoulder while writing this piece and ensured every flaw or inconsistency was scrutinized.

Amsterdam, November 2010.
The bike offers a non-polluting, non-congesting, physically active form of transportation in a country, and in a world, that increasingly seems to need such options. (Mapes 2009: 13)

1.1 The Pedaling Revolution

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 behavior. 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. While in traditional bicycle countries like the Netherlands and Denmark people primarily own a bicycle, in cities like Paris (Vélib) and London (‘Boris’ bikes’) bike rental systems are seen as a solution to congestion and pollution. The increasing interest and popularity of cycling is related to a range of trends of the last two decades. The Kyoto agreements reflect an increasing interest in a more sustainable and environmentally friendly future. Since riding a bicycle does not lead to any emissions of Greenhouse gasses, it is perceived as one of the ingredients of a more sustainable type of mobility. Moreover, the revitalization of inner cities and attention to well-functioning public space has created a window of opportunity for cycling. London’s congestion tax has resulted in a boom in bicycling, whereas in New York parts of Broadway have been radically cut off for cars and replaced by space for pedestrians and bicycle paths. Besides environmental and livability arguments, health concerns comprise another explanation of the increasing interest in bicycling. Especially in the United States, active transportation such as walking and cycling is seen as a solution to the extremely high obesity rates. In this country the bicycle has a somewhat peculiar position, being endorsed by both health officials and radical social movements like Critical Mass. For the latter bicycling is not only a means of healthy transportation, but stands for a wider critique of society and in particular the role of the car. Such a movement would be very difficult to find in the Netherlands, which has been the leading Western country in bicycle modal split and the Promised Land for many bicycle researchers and activists for years. Nonetheless, the country seems to miss its poster child status and the momentum bicycling currently has, and continues to address the bike as it has for decades: a normal part of an integrated transportation network.

Two cities get particular attention in the debate about bicycling: Amsterdam and Portland, Oregon. The former has long been considered the bicycle capital of the world, although Copenhagen has recently been trying to take over this position through bold policies and aggressive marketing campaigns. With a mode split of around 30%, the bicycle is an indispensable part of the city’s transportation system. Two characteristics make the city particularly interesting for academics and policy makers. Amsterdam is situated in the Netherlands, a country famous for its bicycle use and bicycle policies. Consequently, the bicycle policies that are successful in Amsterdam are not unique or particular but can be found in the whole country. Amsterdam is exceptional in the sense that it sketches the contours of the city of the future driven by bike mobility. Because the city is relatively dense and streets are narrow it becomes legible what high bicycle use does to a city. Portland does not come close to Amsterdam with a mode split of around 6% (ACS 2009). In the US, however, Portland is the leading major city with regards to bicycling. As Amsterdam, the city attracts numerous visitors to envy the for an American city radical bicycle infrastructure, but also the unique land use and transportation system. The aim of this study is to get a better understanding of bicycling in both cities.
1.2 Studying Bicycling: two paradigms

Accompanying the increasing political interest, research into bicycling also skyrocketed. These studies are rooted in different academic disciplines. Transport Geography and Transport Planning is starting to pay more attention to this new modality that appeared in their field (e.g. Rietveld and Daniel 2004, Dill and Car 2003). Particularly in the United States these studies have a specific health focus or institutional support from this sector. Generally these studies can be subdivided into two methodological approaches based on the units of analysis which are studied to explain bicycle modal shares or bicycle behavior. The first approach is taking the individual as the object of research and conducting a survey or GPS-analysis (e.g. Bamberg et al. 1999, Dill and Gliebe 2008). In the second approach, spatial entities (e.g. cities) are compared on a number of variables (e.g. Dill and Carr 2003, Rietveld and Daniel 2004; Zahran et al. 2008). While focusing on individuals can give insight in personal motivations to bicycle and detail bicycle behavior, comparing spatial entities can give insight into the gross effect of the physical environment on bicycle use. The latter also is important to inform policy makers about the effect physical interventions, such the installment of bike paths. Spatial differentiation does not explain all the variation in bicycle use, however. Socio-cultural factors should also be taken into account. As Rietveld and Daniel (2004: 545) state after a detailed analysis of physical and socio-cultural explanatory variables for bicycle use in Dutch municipalities: ‘cultural tradition (...) appears to play a role.’ A way to assess these factors is by including proxy variables for cultural background such as political preference, educational attainment and the percentage of non-Western immigrants.

This does not reveal why and how culture influences bicycle use. Only a small and heterogeneous body of literature is available on this topic. It emphasizes historical processes leading to bicycling (e.g. Ebert 2004, Kuipers 2010), the relation of bicycling to environmental concerns (e.g. Horton 2006), bicycling as an object of political struggle (e.g. Furness 2010, Blickstein and Hanson 2001, Blickstein 2010) or a lifestyle related to bicycling (e.g. Van Acker et al. 2010, Van Acker forthcoming). In general these studies tend to address bicycling as a social phenomenon rather than a result of the physical environment. Moreover, the focus is less on bicycling as a means of transportation and more on its position in society. Consequently, I would argue that two paradigms exist with the regards bicycling which hardly interact1. On the one hand what could be called ‘Transportation Studies’, which are very sensitive to the role of the physical geography, but do not succeed in unravelling the ‘black box’ of culture. On the other hand, more sociological approaches to bicycling, which could be coined ‘Cultural Studies’ and which are very sensitive to the position of bicycle in society, but tend to neglect the importance of space. The differences between the two paradigms are not only expressed in thematic focus, but also in methodology and epistemology. While the field Transportation Studies tend to use quantitative methods and are rooted in a positivist epistemology, Cultural Studies generally apply qualitative methods and build on non-positivist philosophies of science such as post-structuralism2. I would argue that to come to a proper understanding of cultural aspects of bicycling, a bicycle culture, it is necessary to bridge both paradigms. Transportation Studies emphasize the importance of the built environment (e.g. infrastructure, land use) and indicates socio-cultural variables that matter. Cultural studies provide tools to understand the way in which socio-cultural determinants functions. I would argue that for the fruitful future in the study of bicycling it is necessary to take the best of both worlds and come to a spatially sensitive account of bicycle culture.

---

1 The British Cycling and Society research group is a notable exception, see also Rosen et al. (2007), another example are recent developments in lifestyle approaches (e.g. Van Acker et al. 2010).

2 I am aware that this is a crude generalization; a more balanced vision will be given in Chapter 3.
1.3 The relevance of studying Bicycle Culture

The study that I will conduct has both a theoretical and an empirical dimension. Theoretically there is the question what relevance a better understanding of bicycle culture has for social science and practitioners. From an academic point of view, the interaction between space and culture has long been one of the key themes in the field of human geography and other spatially conscious social sciences. It has hardly been applied to the theme of bicycling, however. Therefore, studying bicycling from this perspective has both the potential to enrich disciplines which are considered with the relation between culture and space with a new, emerging theme and provides bicycling a new theoretical focus. The latter needs to be developed by bridging insights from different fields, this study will provide a first attempt. Moreover, recent studies show that perceptions and attitudes are important in explaining bicycle use (Heinen et al. 2010). These are not unique for an individual, but embedded in a discourse. A better understanding of this cultural constellation will also provide tools to make sense of individual attitudes and perceptions. A more refined theoretical focus could also have implications for society. It is a well known that non-Western immigrants and people from lower classes tend to cycle less (Rietveld and Daniel 2004, Hilhorst 2007), moreover they tend to live in concentrated areas with specific physical characteristics. To provide tools for policy solutions it is necessary to understand both the spatial and cultural context. Moreover, recent arguments to focus more on marketing rather than on physical interventions (e.g. Crouse 2010, Te Brömmelstroet and Crouse forthcoming) need a theoretical understanding of bicycle culture to build on.

Empirically speaking, studying the two cities is relevant for several reasons. Academic studies evaluating bicycle policies (e.g. Pucher et al. 2010, Pucher and R. Buehler 2008) tend to address the Netherlands and Amsterdam as ahead in the development of a bicycle culture. Although there is much to say for this line of reasoning, especially regarding physical interventions, it could also be argued that Amsterdam’s bicycle culture is deviant from Portland’s bicycle culture. Put differently, there is no universal causal process leading to a bicycle culture, but different causal pathways leading to varying outcomes. By studying the two cities I hope to get more insight in this notion. This also has policy implications. If there is no singular direction in the way a bicycle culture evolves, the validity of what could be called the ‘best practice heuristic’ (Macmillen 2010) gets undermined.

1.4 Objectives

The central question in this study is:

*How can bicycle culture in Portland and Amsterdam be understood and explained?*

Since this study is explorative in nature, this question is rather abstract and open. A set of sub-questions give the central question more refinement. As emphasized before, understanding bicycle culture from a spatially conscious perspective necessitates bridging two paradigms. To develop this framework I will first elaborate on a Critical Realist philosophy of social science (Sayer 1992, 2000) which provides the epistemological underpinnings to mitigate Transport and Cultural studies. The first research question is:

*RQ1: How can bicycle culture be conceptualized?*

The resulting answer to this question will then be related to two cases under scrutiny in this study. This is reflected in the second research question:

*RQ2: How can bicycle culture in Portland and Amsterdam be described and understood?*

An important assumption in this study, on which I will elaborate in Chapter 3, is that a bicycle culture cannot be addressed as a static phenomenon, but is historically shaped. This results in the third research question:

*RQ3: How have historical pathways shaped the bicycle culture in Portland and Amsterdam?*
The insights resulting from RQ2 and RQ3 are the input for the fourth research question, which attempts to grasp relatively universal processes with regards to the way in which a bicycle culture emerges and its internal causal relations.

*RQ4: What are the causal mechanisms that constitute a bicycle culture?*

1.5 Outlook

This thesis will start by elaborating the relation between bicycling and more fundamental aspects of Social Science. I will introduce Critical Realism as a fruitful philosophy to study bicycling. Particular attention will be given to the way in which Critical Realism addresses causation. Moreover, I will elaborate on the micro-macro relation with regards to bicycle culture. In chapter 3 a theoretical framework for bicycle culture will be developed. This is both an evaluation of existing literature as an exploratory journey to develop a conceptualization of bicycle culture. This chapter will result in a conceptual model which will be used to guide the two case studies. Before the case studies, the methods, techniques and case selection will be explained in Chapter 4. Portland and Amsterdam will receive specific attention in chapter 5 and 6. A comparison of the findings in both cities will be provided in Chapter 7. In Chapter 8, the theoretical model will be critically assessed and the most important causal mechanisms will be explained. Chapter 9 will give a succinctly answer the central question and will reflect on the pitfalls on limitations of this study. In the epilogue I will very briefly do some policy recommendations.
2. Bicycling and Social Science

There is more to the world, then, than patterns of events. It has ontological depth: events arise from working of mechanisms which derive from the structure of objects, and they take place within geo-historical contexts. (Sayer 2000: 15)

This study aims to bridge insights from two paradigms which are frequently perceived and practiced in an incommensurable way (see Kuhn 1969). Therefore, this study takes a rather different approach. The foundation is a Critical Realist\(^3\) (from now on: CR) philosophy which is located in the middle ground\(^4\) between a naively empiricist stance on the one hand and a relativist position on the other. A crucial notion is that of a ‘transitive’ and ‘intransitive’ dimension of knowledge (Sayer 2000: 10-11). This refers to the idea that what we \textit{know} (the transitive dimension) of the world is independent of what the world \textit{is} (the intransitive dimension). This notion becomes problematic when applied to the social world, since it could be argued that there is no reality outside language (Winch 1958). To interpret social phenomena it is necessary to understand them in their linguistic and socio-cultural context, related to what Max Weber (1922) has termed \textit{Verstehen}. Critical Realism is sensitive of the interpretive aspect of studying social life, but contends that communicative interaction have material commitments and settings and emphasizes the presence of a non-discursive dimension to social life (Sayer 2000: 17-18). This idea serns from a ‘stratified ontology’, consisting of: the ‘real’, the ‘actual’ and the ‘empirical’ (Sayer 2000: 11-12). The \textit{real} exists outside of our conception of the world (i.e. the intransitive dimension) and refers to objects and the way they are constellated in structures. The latter have causal powers, which can be activated under certain circumstances or conditions; this is the realm of the \textit{actual}. Finally, the \textit{empirical} refers to our observation and experience of reality. Following this line of reasoning, the majority of social science research takes place in the domain of the empirical, since the focus is on what can be empirically observed.

Because we cannot know all the mechanisms or structures governing the world, serendipity and coincidence are important aspects of CR. Two types of causal relations exist: ‘external’ (contingent) and ‘internal’ (necessary). For instance, a dense built environment has the causal power (internal relation) to lead to bicycling. However, for this event to happen other conditions have to be fulfilled as well such as a network of bike paths and a bike friendly infrastructure. These structures are externally related to a dense built environment. The conjunction of these three structures leads to bicycle use. The causal power of the built environment is activated by the network of bike paths and the bike friendly culture. Contingent relations can be hard to distinguish, because they are intrinsically difficult to capture in models (i.e. a model assumes predictability). I would argue that a way to conceive them is as ‘sparks’ which activate the causal powers and liabilities of structures.

CR has been applied relatively successful in historical sociology (e.g. Steinmetz 2004), a field in which contingency can be analyzed with the blessing of hindsight. However, social science (including historical sociology) usually has a more ambitious agenda than conducting historical ‘single-outcome studies’ (Gerring 2007). Although in a varied and sometimes contradicting way, the premise of almost all social science is the search for a better understanding of the social world beyond the scope of a particular case study. Epistemological positions and resulting methodologies differ from a search for universally

\(^3\) Because this is an empirical study rather than a philosophical analysis, CR synthesized in a relatively succinct way. For excellent work on the relation between social science and philosophy I refer to Andrew Sayer’s books \textit{Method in Social Science} (1992) and \textit{Realism and Social Science} (2000) and Peter Winch’ (1958) \textit{The Idea of a Social Science and its Relation to Philosophy}.

\(^4\) I use middle ground as a metaphor here, not as a ‘middle’ position in geometric terms.
applicable causal laws (e.g. Popper 1966, Rudner 1968), the extended case method (Burawoy 1998),
process tracing (Hall 2000) and a refinement of the debate (Geertz 1973). Related to a position with regards
to causal explanation is the stance about prediction. An intrinsic property of an epistemology based on
causal laws is the assumption that how things have happened in the past they also will in the future. CR, on
the contrary, takes the stance that the ‘future is open’ (Sayer 2000). A position based on the assumption of
the fallibility of our knowledge and the importance of contingency.

The follow-up question becomes how to apply these insights to social phenomena. The
idea of causal powers attributed to social and material structures which can be activated under the right
conditions is central in studies which are underpinned by a CR framework. Consequently, a different type of
causation is applied. Contrary to common conceptions of causation, where regularity is the defining
feature, CR defines causal explanation in terms of necessity and contingency (Sayer 2000). Social systems
should not be treated as laboratories, but as open systems which can be influenced unexpectedly. Studying
social phenomena through this lens involves careful conceptualization of structures, outcomes and the way
the two are interrelated through causal mechanisms. Methodologically, empirical observation is a tool to
come closer to a more precise definition of reality, rather than the building blocks of theory, such as in a
Grounded Theory approach (cf. Corbin and Strauss 1990). In a comparative case study a distinction
between the comparisons of empirical-level events and generative causal mechanisms is relevant, 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.’ (Steinmetz 2004: 373). The core task, then, becomes to study empirically the relevant social
events, to analyze the relevant structures (including their causal powers), under what circumstances, and
how they lead to a certain outcome. Figure 2.1 and in more detailed way Figure 2.2 depict causal
explanation according to CR.

Figure 2.1: Critical realist view of causation

\[
\begin{align*}
\text{effect/event} & \quad \text{mechanism} \\
\text{structure} & \quad \text{conditions (other mechanisms)}
\end{align*}
\]

Source: Sayer (2000: 15)

---

5 For the sake of the argument this is a crude and generalizing statement. My intention is not to describe complex and
nuanced approaches with regards to prediction, but to position CR in an epistemological and methodological field.
A research strategy applying CR could be described as ‘retroductive’ (Blaikie 2000: 108-114) or ‘iterative abstraction’ (Sayer 2000, Yeung 1997). The researcher is in a constant feedback loop between theory and empirical observations in an attempt to conceptualize the structures in the dimension of ‘the real’. The analysis of the causal mechanism deals with the way in which the causal powers of structures in ‘the real’ dimension are activated, the latter is the ‘actual’ dimension. Since theories and insights do not ‘emerge from the data’ (cf. Corbin and Strauss 1990) conceptualization is a creative and innovative process (Sayer 1992). Social phenomena differ over time and space. The study of differences in social phenomena across spatial entities is a widespread practice in the social sciences. For instance, comparison of OECD-data gives insight in the variation of a range of countries on socio-economic indicators. However, spatial variation is generally a feasible and convenient way to test other types of variation rather than attributing explanation to geographical factors. In some fields, most notably geography, the (assumed) causal power of spatial structures is at the heart of the discipline. CR has become an important (implicit) foundation in several studies in the field of human geography (Yeung 1997). A position which could be explained by the sensitivity for spatial structures central in CR.

Since bicycling is intrinsically intertwined with the physical environment, I argue that also in the study of bicycling important causal powers have to be attributed to spatial structures. An overwhelming body of empirical literature (e.g. Dill and Car 2003, Rietveld and Daniel 2004, Pucher et al. 2010) emphasizes the important role of physical structures in explaining bicycle use. Nonetheless, I am not aware of any study which has linked bicycling explicitly to CR. Næss and Jensen (2002) come close by approaching the relation between urban mobility and density from a CR perspective. They emphasize the importance of:

(...) the acknowledgement of structures (social and natural) as capable initiators of mechanisms that might (or might not) result in empirical events that we as researchers try to comprehend. (Næss and Jensen 2002: 309)

Moreover, Næss and Jensen (2002) also observe a tension between CR’s notion of ‘open systems’ and the regularities they observed in the relation between travel behavior and density patterns (i.e. a high density

Interestingly Andrew Sayer (2000: 105-155) is very critical of leading geographers as David Harvey and Neil Smith by arguing that space cannot be part of a theory a priori.
has a higher likelihood to lead to sustainable travel behavior). Their approach, however, is more empirically grounded than CR’s idea of ‘iterative abstraction’. This is not a critique, but rather an observation with regards to what I see as CR’s main friction: the way in which observations (‘the empirical’) have to be related to conceptual insights (‘the real’). In a positivist epistemology, the liaison of regularity and representation is prediction, which is ultimately where the societal benefit of social science can be found. The last three decades have shown the impossibility of precise and reliable definition in the social sciences (Flyvbjerg 2001). However, this does not imply a completely chaotic and unpredictable world. My stance is rather that of a ‘modest’ approach to generalization (Næss and Jensen 2002: 310) and an emphasis of how social processes work rather than the extent to which they associate (see also Hall 2000). Moreover, it is crucial to be sensitive to the geo-historical context (Sayer 2000: 15.) when conducting research. Bicycling does not occur in a vacuum, but in a geographically and historically shaped environment.

As the study of Næss and Jensen (2002) exemplifies, amidst all the attention for structures and their causal powers, in empirical studies it is common that individuals are the units of analysis. This relates to the classic structure-agency debate in which the question is asked whether structure determines individual behavior or human agency shapes structures. The concept of structure is frequently used, but not always defined in the same way. Sayer (2000: 14) puts it as: ‘(...) a set of internally related elements, whose causal powers, when combined are emergent from those of their constituents’ (emphasis mine). This assumes that individual behavior is determined by structural factors, while proponents of agency assume that individuals have the capacity to act individually and make free choices. Again, I think a middle ground position with regards to bicycling is valid. Bicyclists are neither slaves of the physical and cultural environment nor completely free in their decision to ride a bike. Or to cite Anthony Giddens (1976: 121): ‘Social structures are both constituted by human agency, and yet at the same time are the very medium of this constitution.’ To structure the different aspects of a bicycle culture, I use a stepwise approach with regards to the macro and micro dimension. James Coleman’s (1990) ‘bathtub’ (also ‘boat’) functions as an organizational device, which is depicted in figure 2.3 It is a relatively straightforward model, mainly because the temporal dimension is kept –artificially- constant. The basic idea is that constellations of the macro level do not come out of thin air, but are created through individuals. The macro level effects individuals at time 1, which leads to a certain behavior and the creation of a new macro dimension on time 2. Coleman is a clear proponent of ‘methodological individualism’, the notion that individuals should be at the centre of the analysis. Note that also the Macro-level can change independently, reflected by the arrow from ‘Population: time 1’ to ‘Population: time 2’.

---

**Figure 2.3: Coleman’s bath tub**

---

Note the usual omission of spatial structures.

Structure and agency do not completely overlap with this distinction; agency also refers to free will and not only to micro behavior. There is, however, an analytical alignment between agency and the micro dimension on the one hand and structure and the macro dimension on the other.
Methodological individualism contradicts CR in the sense that the ‘empirical’ is merged with the ‘real’. A CR standpoint does not preclude the creation of structures through individual behavior, but has a wider conception of structures, which can both be material and socially constructed (Naess and Jensen 2002). Individuals are important units of analysis, but whether they should be subject to scrutiny is dependent upon the situation⁹. I will both pay attention to structural or discursive factors and individual behavior and experiences. A modified version of Coleman’s boat, which functions as a guiding principle for the case studies is depicted in Figure 2.4.

Figure 2.4 : Bicycle Culture on the Micro-level and Macro-level

It starts with the question how the relevant structures which together form Bicycle Culture t1 were created (‘historical processes’). The emphasis here is on historical pathways which have lead to the built environment, institutional constellations and cultural habits and traits. This is a crucial component to sketch

⁹ Arguably the most famous and elegant critique on methodological individualism comes from Michel Foucault (1984), who emphasizes both body and discourse, but not the individual as a relevant entity.
the geo-historical context of both cities. The second question here is what structures constitute Bicycle Culture t1. The causal powers of these structures are activated (or: actualized) through the behavior and experiences of agents, which are depicted as ‘Practices and Experiences t1’. The second part of the ‘bathtub’ is closer to Coleman’s original argument. The question here becomes how experiences and practices construct a new structure (Bicycle Culture t2). I am very much aware that the processes leading to Bicycle Culture t2 are not always temporally separated, but also occur simultaneously. Recall the arguments by Geertz (1973) and Giddens (1976) who argue, albeit in a different vein, that structure and agency interact rather than are static entities. From this perspective it could be argued that behavior and experiences are the structure rather than a product or a cause of them. The temporal separation is an analytical tool rather than an ontological statement. However, with regards to change from Bicycle Culture t1 to Bicycle Culture t2 there is a clear temporal dimension. For instance, bicycle polices could change a bicycle culture. Since the model is meaningless without the concepts involved, I will now turn to theoretical insights about bicycling to describe and evaluate the different aspects of a bike culture outlined in the model. I will get back to the CR view of causation in Chapter 8, when the most important causal mechanisms from this study will be emphasized.
3. Bicycle Theory

While transport geography has long been concerned with mobility, it has been concerned only with certain ‘rational’ forms of mobility, apprehended using largely quantitative methodologies. Cultural geography on the other hand has equipped itself with a wide range of methodologies and research objects but has until recently neglected mobility in favour of a place-based sedentarism. The two it would appear have much to learn from each other. (Spinney 2009: 819)

In this chapter I will try to come to a conceptualization of bicycle culture. I will focus both on the relevant concepts leading to an analytical framework and the most important causal relations at work. The question central in this chapter is:

**RQ1: How can bicycle culture be conceptualized?**

Empirical studies specifically related to bicycling will be used to get a better insight in the state of the art about this means of transportation. Unfortunately, bicycling has hardly been approached from a sociological perspective. I would argue that this is crucial to not only indicate the relationship of bicycling with the cultural and physical environment, but also to explain why this is the case. The insights applied to do so are primarily from sociology, anthropology and cultural geography. I will start by defining what culture is. Subsequently, I will make the case for an historical approach to understand culture. Next, what bicycling is will be scrutinized by looking at experience and behavior. After this, the major conceptual body of the chapter will be outlined by describing the relation of bicycling to its socio-cultural, physical and institutional environment. I will end with a definition of bicycle culture and present the insights in a conceptual framework.

3.1. Understanding Culture

Culture is probably one of the most discussed and fuzzy concepts. It can refer to art and creativity, but it can also be an overarching description of society. The anthropologist Clifford Geertz gives guidance to study culture:

> The concept of culture (...) is essentially a semiotic one. Believing, with Max Weber, that man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law, but an interpretative one in search of meaning. (Geertz 1973: 5)

Adhering to this paradigm involves what Max Weber (1922) has coined *Verstehen*; profoundly understanding the meaning agents attach to social facts in different contexts. Bicycle culture does not only consist of what people experience, but also on their material practices. As Geertz (1973: 17) argues ‘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. Combining socio-spatial practices and symbolic meaning is what Richardson and Jensen (2000) call a ‘Cultural Sociology of Space’. Central in this approach are:

> (...) dialectical relations between sociospatial practices and the symbolic and cultural meanings that social agents attach to their environments (these two spheres are separated analytically, not as an ontological statement). That is to say, we need to conceptualize socio-spatial relations in terms of their practical ‘workings’ and their symbolic ‘meaning’. This dialectical perspective means that the spatiality

---

10 Winch (1958), however, argues that *Verstehen* is logically impossible due to the linguistically constructed nature of reality.
of social life is thus simultaneously a field of action and a basis for action. (Jensen and Richardson 2000:10)

For the purpose of this study, this approach is too interpretative since the aim is to compare different bicycle cultures and find generalizable insights. However, due to the overarching and reciprocal nature of culture it is very complex to capture culture in a causal narrative. Geertz even argues that culture should not be used as an explanatory factor:

As interworked systems of construable signs (...), culture is not a power, something to which social events, behaviors, institutions, or processes can be causally attributed; it is a context, something within which they can be intelligibly –that is, thickly- described. (Geertz 1973:14)

I can only partly agree this argument. On the one hand, I will give descriptions of behavior and experience within the context of both Amsterdam and Portland; in this regard the description is a reflection of bicycle culture in both cities. Put differently, the micro-level and micro-level from the model in the previous chapter are intertwined. Experiences and behavior are the bicycle culture.

On the other hand, and more in line with a CR realist stance, it could also be argued that cultural structures have causal powers which impinge on micro scale social settings. Following this line of reasoning, behavior and experiences can only be understood by analyzing the cultural and material context in which they are embedded. Finally, it could be argued that experiences and behavior lead to new cultural constellations which have, subsequently, causal effects. An example hereof are studies of social settings such as Jane Jacobs’ famous book *The Death and Life of Great American Cities* (Jacobs 1961, also Lofland 1998), showing how symbolic interaction between individuals leads to new constellations. Cultures can also be deliberately created, for instance in the argument that the implementation of bike lanes leads to a bike culture.

In sum, I would argue there are four conceptualizations of culture: (1) as a causal power, (2) as a reflection of practices and experiences, (3) as an outcome symbolic interaction, including behaviour and experiences, (4) and as something which is shaped by history and policy making. I will turn to the question how historical processes lead to a culture in the next section, subsequently I will pay attention to the causal power culture can have and the way in which experiences and behavior comprise a culture. Since these two approaches are frequently intermingled in the literature, there will be no strict demarcation. Specific attention to the way in which policies and symbolic interaction can create a bicycle culture will be given in Chapter 7 and 8, since this knowledge is primarily gained inductively. The four different ways of looking at culture are summarized version of Coleman’s boat in Figure 3.1. It is important to note that I perceive the physical environment as a component of a bicycle culture, however, when in the following I use terms like ‘socio-cultural’, ‘cultural’ or discursive this does not include the causal power of the physical environment.

**Figure 3.1: Four ways of perceiving culture in Macro-Micro framework.**

3.2 Bicycle Path Dependence
Cultures do not come falling from the sky. They are an outcome of historical processes and, especially in earlier decades, geographical constraints and resources. Historical narratives of cities are almost by definition particular. Therefore I will give a more detailed account of both cases in the empirical chapter and restrict myself to the concept of path dependence, which I think has value to study bicycle culture.

A well-known platitude among social scientists is the statement that ‘history matters’. The obvious follow-up question becomes how historical processes have shaped current social phenomena. An increasing body of authors, especially in the fields of historical sociology and economic geography points at the importance of ‘path dependence’ (e.g. Mahoney 2000, Martin and Sunley 2006, Martin 2010) in analyzing historic pathways and understanding contemporary social settings. A useful definition is provided by James Mahoney (2000: 507): ‘Path dependence characterizes specifically those historical sequences in which contingent events set into motion institutional patterns or event chains that have deterministic properties.’ Consequently, the focus has to be on two dimensions: the ‘contingent events’ and ‘deterministic properties’. The latter refers to causal processes which are relatively restrained. Earlier events have lead to a situation in which it becomes difficult to deviate from a specific causal pathway. A famous example is the QWERTY-keyboard, which is, arguably, suboptimal, but has become the dominant standard after a contingent event in an early stage (David 1985). In other words, ‘lock-in’ (e.g. Martin 2010) on a development path has occurred. I argue that the concept of path dependence is especially relevant to explain bicycle culture, because bicycling has an intrinsic relation with the physical environment. Norms about transportation are not only discursive but are also reflected in car infrastructure, bicycle lanes and parking spots. Consequently, the lock-in with regards to a certain mode of transportation plays out both culturally and materially. I hypothesize that it is difficult to deviate from a car orientated development path, because it is not only constellated institutionally, but has also materialized in a transport system and land use. In the first part of the empirical chapter the analysis will be framed by the path dependence concept. The concept of path dependence is a useful analytical tool, but only gives insight in the sequence of processes, not what they entail. More about the content of these processes will follow in the following sections. Permeating the historical part of the empirical chapters will be the question what events are contingent and particular and what changes can be explained by universally applicable causal mechanisms. Put differently, what are the structures which have explanatory value beyond a particular instance? This idea is rooted in a path dependence approach in which the continuous search for contingency and relatively predictable outcomes is central.

3.3 Components of Bicycle Culture: Towards an Analytical Framework

Bicycle culture has hardly had serious academic attention until recently. Therefore, the conceptual framework I will outline in the next sections should be seen as a heuristic device, not a mature theoretical model. I will use a stepwise approach in which the constituents of bicycle culture are introduced subsequently. Central in the analysis of bicycle culture are three dimensions: historical pathways, structures with causal power, and experiences and behavior of bicyclists. In the next sections I will focus on relevant structures and their causal powers and insights about bicycle behavior and experience. In these studies, generally the structures are explanatory variables (e.g. density, social environment) which lead to a certain outcome (e.g. bicycle use).

For the purpose of this study, three types of structures are relevant: physical structures, institutional structures and socio-cultural structures. Physical structures refer in this regard to the physical environment, such as the geographical context and the built environment. Cities are not institutional vacuums, but the way they are used and experienced is steered by institutional structures. Examples hereof are traffic regulations and laws. Of course, bicycle infrastructure is also a reflection of the actions
undertaken by formal institutions. It could be argued that institutions are both a political outcome of bicycle norms and a determinant of behavior and experiences. Thirdly, the socio-cultural structure of a city and/or country is an important element of bicycle culture. For instance, the embeddedness in wider cultural context such as nations or the way in which an urban lifestyle is distinct from rural living (Wirth 1938). Before I will elaborate on relevant insights with regards to the three structures and their relation to bicycle behavior and experience, I will dig more deeply into the concepts of behavior and experience. The choice for these two concepts builds upon a CR position, which comprises both a discursive and a material reality. To have a bold heuristic tool, I differentiate between what people do (bicycle use) and how they perceive (bicycle experience) what they do. What people do refers to material practices, what they experience is on the one hand socially constructed and embedded in a discourse, but on the other also material and bodily (Spinney 2006). The different components of Bicycle Culture are depicted in figure 3.2 (note that the emphasis is on the causal power of structures). I will first elaborate on bicycle use and bicycle experience relate to the physical environment, on which a relatively impressive deal of research has been done. Subsequently, I will have a look at the socio-cultural and institutional structures and their relation to bicycle use and experience.

Figure 3.2: Basic Model of the different components of Bicycle Culture

3.4 Bicycle Use and Bicycle Experience
Bicycle use can be subdivided in two concepts: bicycle mode choice and bicycle behavior. The first refers to the choice of a specific mode of transportation out of a set of options. The second describes the behavior of people after choosing a certain mode, which involves route-decisions and types of trips. While it is useful to distinguish the two concepts, they are essentially two sides of the same coin. Bicycle behavior is always a result of a mode choice for the bicycle. But while both concepts refer to behaving in a certain way, behavior refers to the actual sociospatial practices, while mode choice only refers to the decision to behave in a certain way regarding mobility. The crucial question asked in many studies is: What are the determinants of bicycle use? In other words, what independent variables explain bicycle behavior and the choice to bicycle. The relation between the cultural, institutional and geographical environment and material practices is neither direct nor straightforward; bicyclists are not passive receivers of stimuli, but the context is mitigated through particular experiences and interpretations. Consequently, it is not only relevant what

11 Of course the two are in a constant interaction, as exemplified by the Thomas theorem: ‘If people define a situation as real, it is real in its consequences.’ (Thomas 1928.)
bicyclists do, but also what they experience. I would argue that two dimensions are relevant in applying the concept of bicycle experience. Firstly, it is necessary to be sensitive to what bicyclists feel and think. Secondly, the experience has to be positioned within a wider cultural web. There is both a material, bodily experience to bicycling as an interpretation defined by concepts (Davis 2004). The subpart of the conceptual framework consisting of behavior and experiences is depicted in figure. I will get to the experience and the cultural context later in this chapter. First an overview of the dependent variable of a range of studies in transportation studies: bicycle mode choice.

Figure 3.3: Bicycle Use and Bicycle Experience

A fundamental question asked by many transportation researchers is: Why do people bicycle? Decision making processes have been extensively researched, mainly in the field of psychology. Van Twuijver et al. (2006) discern four behavioral models to explain bicycle use: cost-benefit models, attitudes and perceptions, attribution theory, and cognitive dissonance theory. These models are mainly relevant to study individual behavior. The focus of this study, however, is cases on the city and national level. I will elucidate cost-benefit models and attitudes and perceptions more thoroughly, because they touch on a central issue in this thesis: the relation between rationality and social norms. Cost-benefit analysis has its roots in rational choice theory, in which agents weigh the advantages and disadvantages of a certain option, resulting in a -rational- decision (in this regard the choice for a mode of transportation). Jon Elster synthesizes the essence succinctly: 'When faced with several courses of action, people usually do what they believe is likely to have the best overall outcome.' (Elster 1989: 22-emphasis mine). For instance, for a person on a small budget, living in a dense, urban environment it is very rational to choose for the bike as a mode of transportation. The fundamental point is, of course, what people believe is rational, is not necessarily the same as a universal notion of rationality. Moreover, not every agent is perfectly informed. These are the pitfalls of cost-benefits analyses, which assume a generic, well-informed agent deciding on a mode of transportation. This study does not dig into the decision making processes of individuals, I do however explore the cultural context in which decisions, often considered rational, are made.

Mode choice is dependent on the purpose of the trip and the underlying motivation. In the literature (Dill and Gliebe 2008, cf. Urry 2003), a distinction is made between two categories: recreational and utilitarian. For the latter the trip has to have a purpose; buying groceries, getting to work, meeting up somewhere etc. The question is not whether the trip will be made, but what the mode of transportation will be. In a large empirical study in the Netherlands, van Twuijver et al. (2006:75) find that the following motivations are the most important for bicyclists: health, fun, environment, quickness, costs, convenience and the fact that their peers bicycle as well. The last motivation is particularly interesting, because it suggests that a ‘bike culture’ is an important factor in explaining bike use (see also Dugundji and Gulyas 2008, Xing et al. 2008, Goetzke and Rave 2010). This is related to the theoretical focus of this study are not the individual motivations, but the structural (both physical and cultural) factors which constitute this decision making process. In recreational (or leisure) trips the motivation and purpose of the trip are the same thing. The goal of the trip is the ride itself; examples include road biking or mountain biking. The analytical distinction

12 Similar to the ‘economic man’ as known in neo-classical economics.
between utilitarian and recreational trips is mainly rooted in transportation studies. In the approach of, mainly British, Cultural Geographers (e.g. Spinney 2009) this distinction gets blurred, mobility is perceived more holistically. As John Urry notes:

(..) transport researchers tend to examine simple categories of travel, such as commuting, leisure, or business. This though presumes that social activities can be divided up and then explained through such ‘transport’ derived categories. What is rare is to begin from the complex patterning of people’s varied and changing social activities. (Urry 2003:156)

Although I underwrite this statement, the focus of this study is primarily about bicycling as a means of transportation rather than when the ride is a purpose in itself (such as in mountain biking).

Bicycle behavior is about the way in which cyclists behave on their bike. With the physical environment, this forms the material category of this study. To be very succinct, it reflects the sociospatial practices (Richardson and Jensen 2000) of bicyclists. Since my interpretation of what bicycling behavior exactly involves is to an important extent gained inductively, I will lay out a categorization of bicycle behavior in Chapter 7. A significant amount of literature (in figure 3.1 coined ‘Transport Geography’) has related the physical environment to bicycling. I will now try to capture the essence of these studies.

3.5 The Physical Environment
The majority of bicycling research focuses on the relation of the bike to its physical environment. It attempts to assess how changes in the spatial outlook of a city influence bicycle use. Physical circumstances, however, cannot be lumped together in one concept. It is important to make a distinction between natural circumstances, such as hills and weather, and the built environment, such as bicycle paths and density (Ververs and Ziegelaar 2006). The first are a starting a context for policy making and a determinant of bicycle, whereas the second are besides an explanation of bicycle use an integral part of planning efforts.

3.5.1 Geography
The geography of a city or a country is an important determinant of its suitability for bicycling. In a comparative study of Dutch municipalities, Rietveld and Daniel (2004) find that a hilly environment and, to a lesser extent, high wind speeds are negatively correlated with bicycle use. The topography explanation is straightforward; the flatter the surface of a city the better the suitability for bicyclists. The weather argument is more problematic, however. Firstly, it can be hard to find significant differences among units of analysis, especially in small countries. Secondly, the relation between weather and bicycling seems to be non-linear, a mild climate without extremes is the most attractive for bicycling. Finally, the ‘concept’ of weather can be conceptualized in a number of ways, such as: precipitation, temperature and wind. In their study to explain bicycle use among American municipalities, Dill and Carr (2003) do not find a strong effect of rainfall. They note that it is difficult to distil the effect of rain days on bicycle use. Problematic about this variable is that it can be questioned whether it is rightly operationalized, since the frequency and not the intensity of the rainfall is taken into account. Rainy days with low precipitation can be suitable for bicycling, whereas sunny days with a few heavy showers are not. Moreover, ‘days of rain’ only covers a limited part of the weather variable; other components such wind and temperature are not taken into account.

Classic geographic arguments are relevant in explaining bicycle use. They are, however, generally not the focal point of research because of two plausible explanations. Firstly, there is not much relevance for policy makers to know the exact effects of natural circumstances on bicycling since they are almost impossible to
change. Put differently: geography is usually perceived as context rather than a variable. Secondly, natural circumstances are difficult to address in empirical research; the weather variable is complex and studies focusing on relatively small spatial areas (e.g. Dill and Gliebe 2008, Ververs and Ziegelaar 2006, Rietveld and Daniel 2004) lack variance among the units of analysis.

3.5.2 The Built Environment
The relation between the built environment and physical activity has become a focal point of academic research in the last decade. The recent interest (especially in the United States) in denser urban forms like ‘New Urbanism’ and ‘Compact Cities’ (e.g. Gilderbloom et al. 2009) and sustainability and health explains the demand from policy makers for academic insights. I will use definitions by Susan Handy (2004: 5), who distinguishes three components of the built environment which are relevant to active transportation:

1. **Land Use Patterns**: ‘Refers to the spatial distribution of human activities, in other words, what kinds of activities are located where. (...) Land use patterns determine the relative proximity of activities of different types, including specific kinds of public and private facilities.’ (emphasis mine)

2. **Transportation System**: ‘Refers to the physical infrastructure and the services that make up the transportation system and that provide the spatial links—or “connectivity”—between activities. (...) The quality of the links must also be considered—not just what distance, but also what speed, how safe, how comfortable, how pleasant they are.’ (emphasis mine)

3. **Design**: ‘Refers to the aesthetic qualities of the built environment and overlays both land use patterns and the transportation system (...) Design comprises the visual details of the built environment, the styles, textures, color, and ornamentation of physical structures.’ (emphasis mine)

I will now elaborate on land use patterns and transportation system in relation the bicycling, the physical activity under scrutiny in this thesis. Design will not be treated separately; the evaluation of aesthetic properties is time and space dependent and I am not aware of studies which specifically link aesthetic design to bicycling. I will return to this, however, when bicycle experience is treated in the empirical chapters, since the meaning people give to a bike ride is to an important extent shaped by the aesthetic properties of the built environment.

**Land Use Patterns**
The central question in researching the relation between bicycle use (and physical activity in general) and land use patterns is whether a relatively dense urban form leads to higher numbers of active transportation. Density does, in this regard, not simply refer to the number of people living on a square kilometer, but also refers to the distance between localities which have a residential, job, commercial or leisure function. The most well-known example is commuting distance, the number of kilometers between home and work. Whereby it should be noted that travel distance and travel time do not necessarily overlap. Unfortunately there is not much empirical research investigating the relation between land use patterns and bicycling in particular. Therefore, I also look at studies which research the choice for physical activity or non-motorized transportation and density patterns.

European studies (Rietveld and Daniel 2004:536, Parkin et al. 2008:103), which use population density as a proxy for a dense land use pattern find a positive correlation between a dense land use
pattern and bicycling. The relation Rietveld and Daniel (2004: 537) find for the Netherlands is not linear, but quadratic:

The use of the bicycle is low in low density areas, as in such areas there might be fewer opportunities to make short trips. Then it reaches a maximum in medium density areas, and falls again, as might be expected, in high density areas, where public transport is well provided so that it is a competitor to the bicycle.

This is an interesting observation, since it nuances the positive effects of a dense land use pattern. In extremely dense settings, such as New York, there is enough demand for an effective and extensive mass transportation system, a direct competitor to the bicycle. In an American study, Handy et al. (2005: 430) find a positive correlation between dense land use patterns and non-motorized transportation. Schwanen and Mokhtarian (2005) observe a relationship between a dense land use pattern and non-motorized transportation. These studies, however, also point at the correlation between demographic composition and land use patterns of neighborhood. Dense, urban areas tend to have inhabitants with a more positive attitude towards non-motorized transportation. Consequently, it is problematic to distill the direction of the causality. Highly dense neighborhoods (i.e. urban settings) could also attract residents with a positive attitude towards non-motorized transportation, also referred to as self-selection (Van Acker forthcoming).

Handy et al. (2005: 442) find an effect of both attitudes and land use patterns as an explanation for non-motorized transportation. Or in the words of Naess and Jensen (2002: 303):

> Immediately, it seems clear that urban structural conditions cannot be attributed the status as a sufficient condition for a certain travel behavior. Obviously, a host of other circumstances will play a part, among others, the wishes and preferences of the traveler, the state of her/his health, obligations of being present at particular places, and access to means of conveyance. (emphasis mine)

As a rule of thumb, studies use 7.5 kilometers travel distance as a cut-off point for research into bicycle trips (e.g. Rietveld and Daniel 2004, Van Twuijver et al. 2006). Above this distance, the competition with the car becomes unequal. Dill and Gliebe (2008) find that the median trip distance for their sample in Portland is 2.8 miles (4.5 km).

**Transportation System**

Although bicyclists benefit from a dense urban form, this does not necessarily lead to a faster trip or a more convenient and safe experience. I will now elaborate on the most important components of a transportation system which constitute a bike trip. Again it should be kept in mind that self-selection is a methodological issue in evaluating the influence of the transportation systems.

In assessing the impacts of connections for bicyclists the differences between the infrastructure in the Netherlands and the United States (the two countries of interest here) are pivotal. Whereas in the Netherlands striped bike lanes and designated cycle tracks are part and parcel of the transportation system, bike lanes are still an oddity in most American cities. Moreover, a car dominated transportation system has a negative effect of the safety of bicyclists (Pucher and R. Buehler 2008). Specific infrastructure is especially relevant in making bicycling gender and age neutral and not just accessible for fearless riders: ‘Separate facilities are not sufficient but they are certainly necessary to ensure that cycling is possible for a broad spectrum of the population.’ (Pucher and R. Buehler 2008: 513). In an aggregate study of American cities, Dill and Carr (2003) find an association between the amount of bike lanes and bike use. As for land use patterns, the direction of the causality remains opaque:

(...) the strong association between the existence of bike lanes and levels of bicycle commuting does not certify a cause-effect relationship. It does, however, imply that commuters will use bicycle lanes if they are provided. (Dill and Carr 2003: 6)
The Dutch context is rather different; it is very hard to distill an effect of bike lanes empirically, because they are provided extensively in almost every city. Moreover, ‘push factors’ are more relevant in explaining the mode choice of the bike vis-à-vis the car, such as pricing of parking, closing off roads and congested inner cities (Olde Kalter 2007: 18).

Dill and Gliebe (2008) use a GPS system and a survey to trace bike behavior. They find that the route decision of bicyclists is a trade-off between directness and the amount of car traffic on the roads. They do not necessarily take the shortest route, but: ‘Bicyclists are going out of their way to ride on facilities with bicycle infrastructure and on low traffic streets.’ (Dill and Gliebe 2008: 2)

In sum, bicycle trips are evaluated on two dimensions: comfort and speed. The first refers to convenience and safety aspects such as a scenic environment, pavement quality and, most importantly, little car traffic. The second dimension can be synthesized as travel time.

A second important component in explaining bicycle behavior and bicycle use is the starting and ending point of the trip. As I have already emphasized in the section on land use patterns, the function of localities are pivotal in generating bicycle trips. Pragmatic aspects on both ends also play out, of which bike parking is the most notable. Pucher et al. (2010) underline the importance of bicycle parking, but also point at a lacuna in academic research:

> Perhaps due to the obvious importance of bike parking, few studies have even attempted to measure the impact of bike parking on bicycling levels. Moreover, it is not clear to what extent providing parking facilities follows increased bicycling levels instead of preceding and encouraging more bicycling. The causation is almost certainly in both directions. (Pucher et al. 2010: s112)

Because of the relatively low numbers of bicyclists in the US, bike parking is not a relevant issue in the American context. The situation in the Netherlands is rather different; especially major cities face difficulties in providing sufficient parking spots for bicyclists. Improving bike parking is one of the pillars Amsterdam’s bicycle policy (Hilhorst 2007). Especially in dense inner cities it is problematic to provide enough bicycle parking. Consequently, bicycles are scattered across downtown.

This analysis of the literature shows that there are clear associations between the transport system and bicycle use. The different aspects of the physical environment which are relevant to bicycling are depicted in Figure 3.4.

**Figure 3.4: Components of the Physical Environment relevant to Bicycle Use.**

[Diagram of the components of the physical environment relevant to bicycle use]

Important differences between results from studies in the Netherlands and the United States are revealed. In the US separate bicycle facilities and the interaction with car traffic are at the heart of the empirical
focus. In the Netherlands, the bicycle infrastructure is far more developed and factors like bicycle parking and push factors play out. Due to the recent academic interest in bicycling, hardly any studies exists which take a longitudinal approach. Consequently, although correlations are clear, causation remains in many cases opaque (Pucher et al. 2010). One of the aims of this study is to get a better insight in this causal explanation. Besides a longitudinal approach, a focus on the experiences related to bicycling could also unravel some of the complex causalities with regards to the physical environment and bicycling.

3.5.3 Bicycle Experience and the Physical Environment
An omission in mainstream bicycling research is the implicit assumption of a direct cause-effect relationship between the environment and the individual. Approaching this topic from a cultural geographic perspective gives a rather different perspective. From this stance, mobility is a specific form of social behavior (Urry 2003), which results in a particular experience of the environment and (Spinney 2006, 2009). The famous urbanist Kevin Lynch illustrates this nicely:

Spatial forms are only partly sensed from one viewpoint, and require movement and a succession of views to be fully enjoyed. The fluctuations in space as you move about, the sight of the same objects in different relations, the sensations of near and far, closed and open, turning and straight, over and under, are one of the delights. (Lynch 1990: 145, see also Lynch 1984)

Pivotal is this thesis are two dimensions in which this notion of mobility can be researched: variation in spatial form and cultural variation. As has been shown earlier, physical form has a strong influence on bicycle use; since spatial practices and experience are in an interactive relation difference in spatial form has an influence on experience as well. Spinney’s (2006) phenomenological research of the ascent of the Mont Ventoux on a road bike shows the impact of the physical environment (in extreme form) of the experience of a place in motion. Moreover, as he puts it in rather naturalistic terms:

An organism's environment offers a range of possible actions which reflect the skills, capacities, and limits of the animal's body, and, significantly, prostheticisations of the body. I have highlighted the ways in which both bike and rider become inseparable from each other within their contexts of use. (Spinney 2006: 729)

The second dimension relates to the exact opposite direction. Culture also shapes how physical form is experienced. Unfortunately, I have not come across any research that compares the experience of bicycling in different cultural contexts. There are, however, some interesting journalistic accounts which touch on this topic (Mapes 2009, Wray 2008) argue that the bicycle has a more ordinary function in the Netherlands than in the US:

(...) unlike every American bike commuter I've ever met, he [a Dutch bicyclist] didn't was eloquent about the virtues of his bicycle or the joy of his ride. “It's just a tool,” he said with a shrug. (Mapes 2009: 76)

A characteristic of experience which is related to both the physical and cultural environment is safety. In an American study, Dill (2007) asked respondents for their barriers to ride a bicycle. The first three barriers mentioned in the study are all related to car traffic and feelings of safety: ‘too much traffic’, ‘no bike lanes or trails’, and ‘no safe places to bike nearby’. The emotion of ‘fear’ plays a very dominant role in the discourse about bicycling (Horton 2007). In an extensive study of arguments for bicycling in the Netherlands (Van Twuijver et al. 2006) safety related arguments are primarily relevant for parents deciding about the mode choice of their children: ‘Parents clearly take the traffic safety of bicycle routes into account in choosing for the car or the bicycle.’ (Van Twuijver et al. 2006: 60 –translation mine). In general safety is not a very big concern in the Netherlands, because of the status of bicycling as a common and habitual practice and the bicycle friendly physical environment. This is also related to traffic regulation, which is more bike friendly in the Netherlands according to John Pucher and Ralph Buehler (2008).
3.6 The Institutional Environment

Although targeted policies such as training and marketing are important to create a bike culture, I would argue they are not a fundamental part of a bicycle culture. They are tools to change a bike culture, rather than an essential part of them. Traffic laws and regulation do are an important component of bike culture, since they shape bicycle behavior and experiences. However, since I believe laws and regulation are an outcome of cultural structures and habitual behavior, do take a relatively minor position. They are addressed as an –important- context, rather than scrutinized as a causal explanation. Firstly, it is important to remark that reduction of speed limits have a positive safety effects and can potentially increase bicycling (Pucher et al. 2010). Moreover, Western-Europe and the United States also have a completely different institutional setting regarding liability. Pucher and R. Buehler (2008) point at the higher responsibility for car drivers in the US vis-à-vis Western Europe:

(…) [in Western-Europe] motorists are generally assumed to be legally responsible for most collisions with cyclists unless it can be proven that the cyclist deliberately caused the crash. Having the right of way by law does not excuse motorists from hitting cyclists, especially children and elderly cyclists. (ibid: 28)

This is an important remark, since the insights of the previous section revealed the importance of safety concerns for bicyclists.

A second important part of regulation is the costs of the different options. According to Olde Kalter (2007) ‘push factors’ which discourage people to use car are the most effective measures to increase bicycle use. Concrete examples of these kinds of measures are: pricing of parking, gas taxes, and taxation on car ownership. In the Netherlands, not in the last place driven by a lack of space, these solutions are common practices. While these stimuli are important, they are difficult to implement in the United States:

By comparison [with Western Europe], there is almost no political support in the USA for adopting and implementing the sorts of car-restrictive ‘stick’ policies (…) there appears to be only very limited potential for implementation in the USA of these crucial ‘stick’ approaches that would encourage cycling. (Pucher and R. Buehler (2008): 33)

In sum, three important ways can be discerned in which bicycling is governed by regulation: (1) traffic law, (2) traffic regulation such as STOP signs and traffic lights,(3) and measures to pull or push certain modes of transportation such as a congestion tax an pricing of parking. These components are schematically depicted in Figure 3.5 I will detail about the particularities of the institutional environment in the case study chapters.

Figure 3.5: Components of the Institutional Environment relevant to Bicycle Use.

---

3.7 The Socio-cultural environment

Culture is a typical example of a term that is at risk of ‘conceptual stretching’ (Sartori 1973). It can involve anything and thus mean nothing. Because I am not building on a wealth of empirical and theoretical

---

13 The Dutch traffic law (Verkeerswet artikel 185) is somewhat opaque in the case of bike-car collisions. The word ‘deliberately’ from the quote could be interpreted differently. Running a red light as a bicyclist, for instance, does not necessarily imply deliberately causing a crash.
insights, my approach to the socio-cultural environment with regards to bicycling is relatively succinct. I will start this section by reporting the most important findings with regards to socio-cultural and demographic variables related to bicycle use. This part should be perceived as indicative, rather than explanatory. Moreover, the boundaries between the categories are all too often taken for granted, something which has rightfully received critique by mainly anthropologists (see e.g. Wimmer 2007). The question here is: What socio-cultural variables are relevant in explaining bicycle use? Secondly, I will present three types of causal explanation related to bicycling and the socio-cultural environment. The question here is why and how are socio-cultural variables relevant in explaining bicycling?

3.7.1 Socio-cultural variables

Studies of the US and the Netherland show some remarkable differences and similarities in terms of the explanatory variables of bicycle use. Dutch studies (Verbeek 2007, Rietveld and Daniel 2004) find that non Western immigrants tend to have lower rates of bicycling:

(...) cultural tradition—possibly related to ethnicity—appears to play a role. This aspect is certainly an important one for travel behavior research in many countries which are experiencing immigration from countries where travel behavior is different. (Rietveld and Daniel 2004: 545)

In the Netherlands recent non-Western immigrants are too a large extent from Muslim countries, consequently another study finds an association between Islamic residents and low bicycle use (Ververs and Ziegelaar 2006). In the Netherlands, the religion variable is also relevant for Christian faiths; Protestants tend to bicycle more than Catholics. However, it can be questioned whether religion is the cause of this variance or reflects regional cultural norms (Van Boggelen 2001). Studies in the UK and the US (Parkin et al. 2008, Xing et al. 2005) find that race is strongly associated with bike use; White people bicycle more than non-whites.

Another factor, especially in context where bicycling is still a minor mode of transportation is gender. As an Australian study remarks:

Substantial gender differences in cycling participation in Australia and other English speaking countries have led some researchers to suggest that women are not interested in cycling (...)This is not the case in several western European countries, where utilitarian cycling rates are high, and women cycle more frequently than men. (Garrard et al. 2008:55)

Furthermore, the authors note that safety is the most significant barrier to bicycle for females. As shown earlier, in Western-European countries, the Netherlands in particular, bicycling is safer and car traffic hardly seen as a barrier. Consequently, gender differences are hardly relevant in this context.

The most straightforward explanatory factor in almost any country is age. Rietveld and Daniel (2004) find that the age category 15-19 is strongly correlated with bike use, an argument which is primarily related to physical fitness and the absence of a driver’s license. Studies in both the US and the Netherlands find a relation between students and bike use (e.g. Dill and Carr 2003, Rietveld and Daniel 2004, Ververs and Ziegelaar 2006). In the US, college towns like Boulder, CO and Davis, CA (see e.g. T. Buehler 2007) are outliers in terms of high bicycle use. In the student variable two determinants of bicycle use coalesce: age and high education. Independently, the latter does not have a lot of explanatory power. High educational attainment is often correlated with high income. Rietveld and Daniel (2004) show that Dutch municipalities with high percentage of Liberal Party voters (which have above average rates of affluence and education) tend to bicycle less. It seems that high education in itself is not a predictor of bicycle use, but has to coalesce with age or a progressive world outlook. More on this in the next section on lifestyle.

14 ‘Liberal’ refers to right wing parties in the Netherlands and should not be confused with the American conception of liberal.
As for the built environment, it is difficult to discern the precise effects of socio-cultural determinants. In Western-European countries demographic factors are less pronounced than in countries where bicycling is a minor mode of transportation. Age and cultural background are frequently mentioned throughout the literature. In the United States the typical bicyclist is highly educated (or in the learning process), between 20 and 35, male, and white and tends to live in a bike friendly city. In general non-Western immigrants tend to cycle less than autochthones and Western immigrants. Although these determinants are relevant indicators of socio-cultural explanations of bicycling, they do not reveal how and why culture is related to bicycling.

3.7.2 Explaining the Socio-cultural context
Based on the scan of the literature on variables related to bicycling described above and after analyzing bicycle literature which take a more sociological stance, I would argue there are three types of socio-cultural explanations of bicycling: cultural explanations related to nationhood, ethnicity and religion, I call this (1) ‘Bicycling as a Habit’, related to this, (2) cultural explanations related to the bicycle as a counter- or subculture, I call this ‘Bicycling as a Counter culture’, (3) and finally, the embeddedness of bicycling in a wider set of attitudes and perceptions, which I call ‘Bicycling as a Lifestyle’.

Bicycling as a Habit
As already argued before, it is doubtful whether there is a universal notion of rationality. What is considered a logical thing to do is defined by social norms (Elster 1989). A revealing way to look at this kind of norm-following behavior is Pierre Bourdieu’s notion of habitus. He defines it in his notoriously cryptical language as:

The conditionings associated with a particular class of conditions of existence produce the habitus, systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representation.

(Bourdieu 1990:53)

Although Bourdieu rejected the argument that a habitus is an objectified structure with deterministic causal properties (King 2000), habitus at least should be seen as an inclination to certain types of behavior. The habitus is embodied; behavior is not necessarily reasoned or rational but is done intuitively\textsuperscript{15}. However, not in a way which presumes pure agency, but to a certain extent restricted within the domain of the habitus. To understand bicycle behavior, an ‘event’ in CR terminology and ‘practice’ in Bourdieu’s terms, it should be perceived as a conjunction of capital and habitus in a ‘field’. Capital stands for symbolic, cultural and economic resources possessed by an individual (more about this in the section on lifestyle), whereas the field should not be addressed as a physical environment, but rather a ‘social space’, of configuration and zone of contestation of different social positions. Accordingly, bicycling could be perceived as:

The act of doing something or the ongoing mix of human’s everyday activities(...) are an effect of the temporal and spatial operation of habitus and capital within different fields. (Wetten 2009:1)

The concept of habitus is particularly relevant for the study of bicycling because it provides a tool to get beyond reasons and attitudes at the individual level by emphasizing how socialization has led to a set of practices (and related attitudes and perceptions) and looking for the common denominators which characterize behavior.

Bicycling as a Counter Culture

\textsuperscript{15}I leave aside here the fundamental debate about the extent to which intuitive behavior is natural or socially constructed.
Arguably the earliest example of the bike as an expression of counter culture was the Amsterdam based Provo movement in the 1960s (Mamadouh 1992, Furness 2010). One of their aims (among other things, such as the legalization of marihuana) was to replace cars by bicycles. They created the ‘White bicycle plan’ (Witte Fietsenplan), which aimed to make bicycles free for everyone (Furness 2005, 2010). Although the plan failed from a practical perspective because city residents turned out to be more materialistic than the initiators, this example shows nicely how the bicycle can be used as a tool to pursue wider societal aims.

Recently, the bicycle has started to play a significant role in the environmental debate. It is seen as both a discursive tool and part of the solution for a more sustainable society. As Dave Horton (2006: 54) notes:

Bicycle riding and contemporary environmentalism are mutually constitutive: environmentalist discourse prompts activists to ride bicycles, and that bicycle riding contributes to the making of environmentalism in general and the green lifestyles of environmental activists in particular.

In the United States, the bicycle does not only represent an environmentally aware mode of transportation, but it is juxtaposed against the dominant (American) car culture. John Urry (2004: 27) calls the latter 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.’ Seen from this perspective, 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 and Urry 2000, Jensen 2007). Most dramatically in the US, the car is central in thinking about transportation and part of the national psyche (Wray 2008) and the spatial outlook is predominantly tailored to the car (Kay 1998).

Critical Mass (see Blickstein and Hanson 2001) is a case in point of a movement which opposes these values. In a monthly bike ride, the streets are claimed by bicyclists to give a medium to their political concerns and show how the bike could fit in the city grid. They do not only have environmental concerns, but also a socio-political agenda. The bicycle stands for a different way of living and identity. The attachment of political and cultural values to the bicycle, is not necessarily a frame suitable for the whole population. Although it relates to the American values of individualism, it is difficult to convince motorists on the basis of arguments environmentally conscious bicyclists find relevant:

The bike is a sturdy agent of individualism, but it is an individualism built on a deeper sense of community and environmental connection. (...) The bike speaks to different cultural values than does the car, and that has posed a problem for bike advocates. (Wray 2008: 65)

Using the bicycle as a tool to achieve political goals also has pitfalls. By making the bicycle a carrier of ideas and practices such as progressive political values, potential new bicyclists might be deterred by the connotation of deviant behavior and environmental radicalism. People might be interested in the bike as a means of transportation, but not as a political marker.

**Bicycling as a Lifestyle**

A lifestyle approach has similarities with both the counterculture and the habit approach. It is distinct, however, in the sense that it puts the life of individuals at the centre of the analysis. Central is the assumption that perceptions and attitudes about bicycling cannot solely be explained by the physical environment or demographic variables but relates to a wider set of beliefs. Lifestyle is: ‘the individual’s opinions and orientations toward general themes such as family orientation, work orientation and leisure orientation’ (Van Acker et al. 2010: 227). Inspired by the work of Max Weber and Pierre Bourdieu Van Acker et al. (2010) argue that the social position of individuals has an important relation with travel behavior, since it is reflected by practicalities and status consideration. This social position consists of an economic dimension (as in Marx’ notion of class), a cultural dimension and a stage in life dimension. The
latter is important because the bicycle poses restraints on the practicalities of everyday life. Recall the soccer mom who has to bring her kids to school, sports and buy groceries; the bicycle is difficult to fit into a daily time-space configuration (Hägerstrand 1982). As became apparent in the evaluation of empirical studies on socio-cultural variables (3.6.1) economic position in itself does not have a clear relation to bicycling. The cultural dimension of lifestyle has more potential to understand bicycling. Pierre Bourdieu’s (1986) concept of cultural capital is relevant to understand this aspect of lifestyle, which he adds to economic capital (e.g. financial resources) and social capital (e.g. social ties). Bourdieu was notoriously difficult to pin down in definitions, but in general it could be argued that cultural capital refers to set of skills, educational attainment and knowledge leading to a solidified or advantaged position in society. Cultural capital can exist in three principal states: embodied in an individual person (1), objectified through cultural artefacts (2), and institutionalized in academic qualifications (3) (Waters 2009: 1). The embodied dimension of cultural capital refers to intuitive and implicit behavior which reflects a social position. Note that there is an overlap with the concept of habitus here. The two concepts should not be perceived as mutually exclusive, but rather as different frames on social phenomena. The second state, cultural capital as cultural artefact, is particularly relevant when understanding the direct relation between bicycling and a lifestyle. Buying and riding a bike is an act to reflect a wider set of norms and attitudes about life, the environment and can coalesce with other forms of cultural artefacts such as clothing, music, art and food. A more specific example are urban lifestyles. Urban living is accompanied by a distinct set of perceptions and attitudes (e.g. Florida 2002, Wirth 1938). Especially in the Post-Fordist era with its concomitant wave of gentrification city centres are inhabited by relatively wealthy and highly educated people, with distinct sets of cultural capital (Ley 2003, Bridge 2001) Moreover, it has also been argued that cities are magnets for ‘the creative class’ (Florida 2002)17, which actually does not refer to a ‘class’, but rather a ‘creative’ lifestyle. Nonetheless, the bicycle is well-tailored to a creative and urban lifestyle. An example is the recent world wide boom of bicycle use primarily taking in knowledge intensive cities such as London, Paris and Barcelona.

The notion of lifestyle also provides a tool to unravel the complex relationship between land use and bicycle use. As emphasized before, although the correlation between dense spatial form and bicycle infrastructure is clear, the causality remains opaque (Handy et al. 2006). A problem referred to as ‘self-selection’; areas which are suitable for bicyclists do not only lead to bicycle use, but also attract people with a lifestyle suited for bicycling. As Van Acker (forthcoming) points out, to understand urban bicycle use it is important to look at spatial form and lifestyle.

I have argued that to understand the way bicycling is embedded in a socio-cultural context it is important to look at habit, counter culture and lifestyle. Habit is in this regard mainly relevant as a national or ethnic trait or part of people’s upbringing. Counter culture relates to the way bicycling can be opposed to wider societal forces and structures. It should be noted that the fact that this is mainly visible in cities is no coincidence. Urban areas have traditionally been the conundrums of civil unrest. A bicycle friendly lifestyle also finds its most pronounced form in cities, which are settings in which high education and a relatively young population (without children) are common. Note that counter culture and lifestyle are not mutually exclusive, but different analytical frames. For instance, the status of bicycling as an expression of societal concerns can be reflected in a lifestyle in which perceptions of environmental concern and social equity play an important role.

3.7.3 Empirical findings and Analytic Dimensions

16 It could be argued that ‘Human Capital’ is a part of cultural capital, it often has a different function however.
17 I think Richard Florida (2002) does not use the concept completely appropriately, see also Markusen (2006)
The analytic dimension only become relevant when related to empirical findings with regards to bicycling. Based on the literature, some contemplations about the analytic dimensions and the two cases. I will reflect on these ideas later in this study. Based on the previous sections, habitus seems particularly relevant for the Dutch context (and, thus, Amsterdam), because the high rate of mode split and the normalized way in which bicycling is addressed. A reflection of the fact that bicycling is a typically Dutch phenomenon is low bicycle participation of recent immigrants, despite the fact that both groups face the same physical environment (Rietveld and Daniel 2004, Parkin et al. 2008, Xing et al. 2005). An important reason for the low bike use of immigrants is their lack of experience with bicycling. Since it might not be a habit in their home country, a lack of knowledge, skills and the ‘right example’ for their children exists. However, even third generation immigrants in the Netherlands bicycle significantly less than autochthones (Verbeek 2007). The argument of counter culture could be related to the situation in the US, where car culture is dominant. Portland’s unique bicycle culture could be explained be the fact that bicycling is a way to be deviate and antagonistic the America’s popular culture. As already became apparent in the previous section, the lifestyle argument is particularly relevant for the fact that both cases are cities. And the urban lifestyle (or: the fact that cities attract a specific subset of the population) is an important explanation of bicycling, which adheres to a wider world outlook and stage in life. As a way to sum up: the different sub-categories and analytical dimension with regards to the socio-cultural environment are depicted in Figure 3.6.

Figure 3.6: Components and dimensions of the Socio-Cultural Environment relevant to Bicycle Use.

---

18 This is not entirely true: recent immigrants tend to live in high urban areas where public transportation is an important competitor to bicycling.
3.8 Bicycle Culture: Towards a synthesis

The previous sections have brought together a wide body of theoretical literature from transportation studies, cultural studies, sociology, history and human geography. My central argument is that bicycling should be studied from both a geographic and a socio-cultural perspective. As Heinen et al. (2010: 83) underline this argument after an extensive literature review on utilitarian bicycling:

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 (...). (emphasis mine)

Economic class ('socio-economic group') and the physical environment ('objective situation') are not enough to understand bicycling. By emphasizing the socio-cultural environment in this theoretical framework, the ‘perception of the situation’ is embedded in a wider context. I would argue that perception for the purpose of this argument should not be seen as an individual characteristic, but as part of a discourse.

Due to the explorative nature of this study, the theoretical pathways I mapped out possible analytic lenses, rather than a ‘royal road to truth’ (Sayer 2000). My conceptualization of Bicycle Culture consists of both a spatial and a cultural component, the physical environment has probabilistic effects on bicycling behaviour and experience, but the cultural and discursive traits of its inhabitants also influence the way a city is interpreted. Or as Andrew Sayer (2000: 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.

The institutional setting is a third important component of a bicycle culture. Regulations are both an outcome and a cause of bicycle behavior and experiences. A strong overlap exists between the socio-cultural environment and regulation, a twilight zone which is nicely expressed by the notion of a 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: 160-161)

This remark is relevant because a distinction is made between mobility cultures on different spatial levels. A local mobility culture can be a reflection of a national culture or contradict national traffic norms. Moreover, a mobility culture both shapes and is shaped by its users. Note that mobility culture overlaps with the concept of habitus in the sense that tacit norms and customs are shared by people in a social or spatial setting.

Throughout this chapter, four types of explanation have been emphasized. Firstly, a focus on historical pathways to explain the current bicycle culture. Secondly, and comprising the major part of the theoretical framework, the way in which physical, socio-cultural and institutional structures influence bicycle use and experience, a more anthropological look on bicycling which perceives experience and behavior as the structure itself, and, fourthly, related to this but not central in this thesis, the way in which behavior and experiences create new structures. Recall Figure 3.1, in which these types of causal analysis can be situated. The main focus of the study is on the socio-cultural environment related to bicycling, since there is a clear lacuna in theoretical development about this aspect. As I have stressed repeatedly, however, the socio-cultural environment only becomes relevant in conjunction with the physical and institutional environment. A theoretical friction that has to be point out is the fact that experience and
behavior are in the conceptual framework treated as the micro dimension. Although this is a plausible stance, to make claims about a city as a whole rather than individuals, it is necessary to aggregate these data. In this regard the aggregate bicycle use is the sum of a set of micro-decisions based on the macro level. However, it could also be argued that particularly a high aggregate bicycle use constitutes a socio-cultural environment which results in the micro-decision to ride a bicycle (i.e. a macro-micro relationship). Put differently, the event one is measuring (e.g. bicycle use) is simultaneously a structure when aggregated (e.g. the socio-cultural environment). Consequently, claims about the macro-micro relation of a bicycle culture should be treated very carefully.

A conceptual model of bicycle culture which synthesizes this chapter is presented in Figure 3.7. Note that the focus is on the second type of causal explanations (structure influences behavior and experiences). Accordingly, Bicycle Culture can be defined as:

*A historically shaped constellation comprising a physical, institutional and socio-cultural environment which influence bicycle experience and use.*

Figure 3.7: Conceptual model of Bicycle Culture

This model represents a static and one-sided image of bicycle culture. Or to put it in the terminology of the Coleman bucket: it only represents the step from the macro to the micro dimension at t1. Portland and Amsterdam will both show different scores on the different factors in the model. The purpose of the model is to give guidance, rather than to test it in a deductive way. The analytic dimensions related to the socio-cultural environment serve as a way to understand rather than to test why particular socio-cultural variables have explanatory power. A similar function has the attention towards historical processes; mapping out the historical pathways which have lead to the current bicycle culture is a way to understand and explain this constellation. Similarly, the behavior and experiences will be extensively described. A way to both assess the causal influence of structures and to address behavior and experiences as culture in a causal narrative, also called ‘thick description’ (Geertz 1973).

In Chapter 2, I have described the foundations of this study, which are rooted in a CR perspective. As the overview of the literature has shown, a fair amount of studies were conducted researching the relation between the physical environment and bicycle use. Besides some notable exceptions, bicycle
experiences and the socio-cultural environment related to bicycling have hardly been studied. This unbalanced theoretical starting point fits well in CR notion of ‘iterative abstraction’. To study bicycle culture it is neither pure induction, nor hypothesis testing, but rather combining, building and bridging theoretical insights and empirical findings. I would argue that a synthesis of much of the literature on the physical environment and bicycling is that a bike friendly spatial form is a necessary, but not a sufficient condition for high bicycle use (also Naess and Jensen 2002). This is what Mackie (1965) has coined an INUS-condition.

Structures can have causal powers positively associated with bicycling such as a flat surface or a mild climate, but these not be activated by other conditions. Consequently, an analysis of the conjunction of different conditions (physical, institutional, socio-cultural) is needed to understand bicycle use and experiences. Put differently, the causal mechanism which reveals the interaction of structures leading towards events (i.e. bicycle use and experience). A friction regarding CR’s notion of causation in terms of necessity and contingency is the fact that the majority of studies on bicycling conceived causation or correlation in terms of probability and regularity. On the other hand, CR’s thesis that a reason can also be a cause is particularly relevant for two reasons: mode choice is a decision clearly steered by reasons and theoretical arguments attempting to understand the socio-cultural cannot always be made empirically, but include assumptions based on reasons. Finally, CR’s emphasis on the ‘real’ suits the intrinsic relation between bicycling as a material practice and the physical environment well. Notwithstanding any discursive traits, studying bicycle culture is studying a material practices conditioned by a material environment. Based on the previous two chapters I have developed five hypotheses which will be evaluated throughout this study:

H1: The role of bicycling in the Socio-Cultural environment in Portland should be understood as a Counter Culture, whereas in Amsterdam as a Habit.

H2: The development of a Bicycle Culture is a path dependent process.

H3: Lifestyle, Counter Culture and Habit are necessary analytic dimensions to understand the socio-cultural environment related to bicycling.

H4: To understand the micro dimension of a bicycle culture it is crucial to pay attention to both socio-spatial practices and experiences.

H5: Critical Realism is beneficial for the study of bicycling.

H1 will be posed in Chapter 7, when Portland and Amsterdam will be compared. H2-4 will be tested in Chapter 8, when the theoretical insights from this chapter are critically appraised. H5 will be evaluated in Chapter 9, when I will reflect on the research approach of this study. First I will elaborate on how I have translated this body of literature into empirical observations.

---

19 More details in Chapter 4 about Methodology.

20 Clearly this is not the aforementioned analysis of culture as proposed by Clifford Geertz (1973).
4. Methodology

In contrast with positivist comparative strategies, realist inspired explanatory research does not begin with international comparisons between categories of constructed variables because this process cannot explain difference. Such a strategy is merely a fishing expedition, which reduces sound reasoning to the accidental discovery of correlations. (Lawson 2003: 28)

4.1 Case Selection

Since bicycle culture has not been extensively researched before, this study will necessarily be explorative in nature and pose insights for further research rather than test a mature theoretical framework. This does not mean the approach is purely inductive. Two research strategies permeate this study: ‘retroduction’ (Blaikie 2000) or ‘iterative abstraction’ (Sayer 2000)21 and ‘the comparative logic’ (Mill 1872 [1843]). I will start with the latter. The purpose of this study is not just to get better insight in one particular case, but also to find similarities across the two cases. A ‘paired comparison’ (Tarrow 2010) has two functions: it brings a different perspective to the social phenomena under scrutiny and can generate insights beyond the scope of the two cases (Nijman 2007, Steinmetz 2004). The latter is part of a comparative logic as developed by J.S. Mill (1872 [1843]). Although he developed several logics to benefit from comparison, in this study a particular type of comparative logic is applied: most different (Gerring 2007: 139). Central in this logic is the question how cases which are different on a range of factors (i.e. independent variables) could lead to the same outcome (i.e. dependent variables). The empirical search is for common explanatory denominators. A caveat in doing so is the fact that a most different logic assumes that the direction of the causation and a part of the relevant (in)dependent variables is set on forehand. This study involves two types of central causal relationships.

Firstly, the way in which a bicycle culture is historically shaped. Or in positivist terms: the current bicycle culture is the dependent variable, while structural factors and contingencies are the independent variables. Whereby it should be noted that the bicycle cultures in both cities are not addressed as exactly similar, but attention is paid to the particularity and geo-historical context of both cities. Contrary to many American cities, however, I would argue that Portland (as Amsterdam) has a culture about bicycling; it is not a complete fringe phenomenon. Two dimensions are important for the historical development of a bicycle culture in both cities: the historical starting point and the national context. While Amsterdam already was a thriving metropolis in the 17th century, the first settlements in Portland only arrived in the mid-19th century. This has relevance for bicycling, because it the area when a city is built determines the grid pattern (e.g. land use, connectivity) and the availability of a historic built environment (i.e. the mode of transportation to which to city is essentially tailored to). The national context is relevant because the United States could be considered an extreme case in terms of ‘car culture’ (see Jensen 2007, Kay 1998, Wray 2008) while the Netherlands is an extreme case in terms of ‘bicycle culture’ (see Kuipers 2010, Pucher and R. Buehler 2008, Wray 2008). While car culture and bicycle culture are not mutually exclusive, it does reflect the norms and institutional constellations towards modes of transportation in a country. The two cases of this study are extreme in a sense that while Portland is embedded in a car dominated country, Amsterdam is part of a country with an extreme bicycle culture. In sum, the question is how Portland could develop a bicycle culture despite these two negative starting points.

Secondly, the internal relations of the bicycle culture in Portland and Amsterdam will be studied with help of the conceptual framework as elaborated on in the previous chapter. In this regard there is no

21 Retroduction and iterative abstraction are not exactly the same thing, the principal of continuously evaluating theoretical insights is the same, however.
clearly defined dependent variable, but a cluster of causal mechanism is studies. Consequently, the most different logic is less suitable here. Particularly since Portland is not most different in terms of bicycle culture. For instance, the city has one of the most developed bike networks in the US. The reason I still think Portland is valid for a most different comparison with Amsterdam is that it is one of the few cities in the US which actually has a bicycle culture. It is almost impossible to study bicycle culture in other American cities because it is not legible, a fringe phenomenon or bikes are simply absent. Analyzing social structures at the city level, as this study aims to, becomes almost impossible if only a very small minority bicycles. Put differently, in the population of similar sized cities with a bicycle culture, I would argue that Portland is most different from Amsterdam.

Despite the use of the most different logic, this study will not devotedly attempt to lump all the findings in one theoretical straitjacket. In line with a CR stance, I will emphasize the contingency of developments and elaborate extensively on the particular geo-historical context. The detailed description of bicycle behavior and experiences could be considered ‘thick description’ (Geertz 1973). Nonetheless, through the creation of conceptual framework almost universal for bicycle culture and the search for universally applicable causal mechanisms, the balance of this study tips more toward the general than the ideographical.

4.2 Methods and Techniques
As emphasized in chapter 2, this study was undertaken in a constant feedback loop between empirical observations and theoretical insights. This is not to argue that it is an ‘objective’ reflection of bicycle culture in both cities. Since I am born in the Netherlands and have lived in one of the cities under scrutiny (Amsterdam) for years, my experience of this city is necessarily different than in Portland. Two strategies were deployed to be as sensitive as possible understand what is at work in both cities. Firstly, a range of in-depth interviews was conducted with local experts. Although they are embedded in a specific discourse and not representative for the city as a whole, they do give insight into important mechanisms and critical historical processes at work in both cities. Secondly, during the research time in Portland and Amsterdam I actively rode a bike and participated in several bike events. Since this is not an ethnographic study, the ‘participant observation’ (Lofland et al. 2006) functioned primarily to understand my respondents during the interviews. For instance, if a particular traffic situation was mentioned, I knew what was meant and had the opportunity to ask follow-up questions. Above this, ‘methodological triangulation’ (Denzin 2006) was applied to increase the credibility and validity of the results. Five data sources were used to study bicycle culture in both cities: (1) expert interviews, (2) user interviews, (3) secondary data, (4) city specific literature, (5) and participatory observation. The latter was not done in a structured way, but simply involved riding my bike actively in both cities for the two year time span of this study. It functioned to have a first-hand experience vis-à-vis the other sources (e.g. user interviews) and as a way to test whether the comparison of my personal account of bicycle behavior and experiences in Portland and Amsterdam matched the findings from the data. The other sources were analyzed in a more structured way.

Expert Interviews
As a definition for ‘expert’ I had the criterion that people needed to be somehow professionally related to bicycling. Consequently, the sample of respondents is diverse. It contains bicycle advocates, consultants, journalists, policy makers; and politicians. I deliberately choose to have a diverse population as possible to prevent to be captured within a specific discourse or ideological stance. It should be noted, however, that most respondents were very much in favor of bicycling and, consequently, more emphasizing the virtues of bicycling rather than the disadvantages. The respondents were found through contacting the local
governmental bodies, scrutiny of local media such as websites and newspapers, and snowball sampling (Berg 2007: 44) in which interviewees were asked to name other relevant bike experts in their respective city. The interviews were organized in a ‘semistandardized’ way (Berg, 2007: 95). An interview guide consisting of a set of questions related to the core themes was used to steer the interviews, but there was a possibility to deviate from these questions to keep the flow of the conversation and follow up on important themes. Or as Bruce Berg describes a semistandardized interview:

(...:) questions are typically asked of each interviewee in a systematic and consistent order, but the interviewers are allowed freedom to digress; that is, the interviewers are permitted (in fact: expected) to probe far beyond the answers to their prepared standardized questions. (Berg, 2007: 95)

On a more practical note, since interviewees were often very busy and did not have time to answer the complete set of questions, I sometimes needed to select the most important themes. As both cities differ in terms of bicycle culture the themes that were touched upon in the interviews varied as well. Moreover, the Portland interviews were conducted in English, whereas in the Amsterdam the language was Dutch, which made one on one comparison of quotes in some instances problematic. During the interviews notes were taken, they were recorded, and were all listened to in a later stage. Central themes in the interviews were the cultural, historical, institutional and geographical factors which have led to the current bicycle constellation, their definition of ‘bicycle culture’, the behavior and experiences of bicyclists, and the future development of bicycling. The expert interviews were conducted before the user interviews. In line with the retroductive approach (Blaikie 2000: 108-114) taken in this study, the research questions were refined after all the interviews were conducted and influenced the questions that were eventually asked to bicyclists. Moreover, the expert interviews to a certain extent shaped the previous theory chapter. I used insights from the interviews to follow-up on them through theoretical literature. Besides this important contribution, quotes are used throughout the following chapters to exemplify or elaborate topics. A complete list of the interviewees and their function is provided in the appendix.

In Portland, a total of sixteen experts were interviewed, nine of which particularly for this study. The website BikePortland.org (a popular blog about bicycling in Portland) was very useful in tracing the relevant respondents and keeping up with the news about bicycling. Moreover, Jonathan Maus, the Editor-in-Chief, was very helpful in providing background about the respondents, so I could relate their narratives to their function or professional position as part of the analysis. Since I noticed that people directly involved with bicycling in Portland, I decided also to include interviewees with contrasting opinions, such as the Cascade Policy Institute, or at a different levels of Government, such as the state of Oregon.

In Amsterdam, I only conducted five expert interviews. The reason for the difference is that I had a better overview about the history, culture and geography of the city and a better access to relevant literature. I mainly focused on topics related to bicycling which are considered problematic, such as bike parking and low bike use among non-Western immigrants. Moreover, since majority of the interviewees were policy makers, specific attention was paid to the role of their governmental body with regards to bicycling.

User interviews
Just as the expert interviews, the user interviews were semistandardized. They had a more structured format however. Two themes were central in the interview questions: bicycle behavior and bicycle experience. Questions related to other topics were mainly used for background information or to keep the flow of the conversation. In total 10 bicyclists were interviewed in Portland and 9 in Amsterdam. The sample was stratified (although not randomly) on the basis of gender, age and, in Amsterdam, ethnicity.

22 Some of the interviews were part of an earlier project, for extensive quotes see Williams and Pelzer (2009).
The latter was done because Amsterdam has a significant immigrant population, which I could have overlooked easily if I would have used snowballing and reaped my own (white, middle class) network. The interviewees were reached through my social and professional network and during the interview time period interviewees were added through the earlier mentioned ‘snowball method’. A clear criterion was that I did not know the interviewees on beforehand, since this would bias the conversation significantly. All the interviews were recorded, notes were taken and they were re-listened to at least one time. Although the number of interviews is relatively small, I argue that they can still provide a fairly reliable and insightful picture of experiences and behavior for two reasons. Firstly, the results from the interviews do not stand on their own but are corroborated by expert interviews, secondary data and city specific literature, the aforementioned methodological triangulation. Findings which contrasted insights from other sources were subject to rigorous inquiry. Secondly, and building on the multiple sources argument, the inference was ‘logical’ rather than ‘statistical’ (Small 2009). The interview strategy was sequential; the previous interviews had influence on the type of questions asked in the next interview. Even after a relatively small number of interviews I attained ‘saturation’ of knowledge (Small, 2009). When I was unsure about a specific sub-theme, I deviated from the prefixed set of questions and addressed a topic differently. All the interviews were recorded and re-listened to at least one time.

**Secondary data**

To get insights with a higher validity for both cities as a whole and to analyze historical changes, several types of statistical data were used. For Portland I used Census 1990 and 2000 data, data by the city of Portland auditor’s report and data provided by the Portland Bureau of Transportation (PBOT)\(^23\). In Amsterdam the department of Research and Statistics (Onderzoek en Statistiek) and the Department of Traffic, Transport and Infrastructure (dIVV) provided statistical information\(^24\). All data are available online, just the data of the PBOT and dIVV were sent upon request.

The data was used to describe the cities, indicate trends, and search for explanation in the longitudinal patterns of relevant variables. A particular way to analyze this data was by means of creating maps. The aim of the maps was threefold: the visualization of spatial patterns is a useful way to explore explanations, it is a way the reveal internal differentiation in the case under scrutiny, and maps are a powerful tool to make an argument in addition to words. The maps were created through the GIS software ArcGis©, whereas statistical analysis were done by means of the software package SPSS©.

**City specific literature**

Finally, three categories of city and country specific literature were used: policy documents, news sources, and academic and journalistic books. I looked at the main policy documents (Bicycle Master Plan in Portland (PBOT 2010) and Multiple Years Plan for Bicycling (Hilhorst 2007) in Amsterdam) on bicycling created by the transportation departments. Besides an outlook of the policy measures in the forthcoming years, these plans also provided an evaluation of the current situation with regards to bicycling. Local newspapers (Williamette Week in Portland and Het Parool in Amsterdam) were very useful to keep track of bicycle developments in both cities, as was the news blog BikePortland. A range of academic and journalistic accounts has been published on both Amsterdam and Portland. These were particularly useful to map out the historical pathways, describe the geography and get a sense of the local or national culture. References are in the relevant chapters.

\(^{23}\) Details about the data can be found in Chapter 5 about Portland.

\(^{24}\) Details about the data can be found in Chapter 6 about Amsterdam.
4.3 The Retroductive Process

As emphasized before, retroduction was the central strategy in the interaction between empirical observations and theory. In this process seven stages could be distinguished, which I will now briefly explain. The study started with an extensive literature review, which was the basis for a research design written in May 2009. Subsequently, expert interviews were done to refine the focus of the study, followed by user interviews and secondary data analysis in Portland. Back in Amsterdam, the first months focused on refinement of the theoretical framework by adding and modifying theoretical insights, steered by the simultaneously conducted expert interviews. The next step were the user interviews and secondary data analysis. After this I wrote the case chapters of Portland and Amsterdam successively. These formed the basis for the comparison in chapter 7. I listed the most important similarities and differences and changed them into a coherent account. Building on this chapter I readdressed the conceptual framework from chapter 3 and confronted the empirically observed relations with existing theoretical accounts on bicycle culture, which resulted in a set of causal mechanisms. The final chapter wraps the study up and reflects on the process. Will the epilogue is mainly inspired by existing challenges in policy making than neatly resulting from the foregoing.
5. Portland: Alternative or Ahead?

On a remarkably beautiful day in the middle of February, I was waiting with my bike to cross one of Portland’s famous bridges. A bicyclist completely dressed in a black biking outfit joined me in front of the traffic light. Since I was in a good mood—and Dutch people somehow always feel the urge to—I shared my happiness with him about the particularly nice weather for the time of the year. ‘Yeaah.’ he said, ‘Not that the rain would stop us.’ And he rushed away across the bridge, leaving me waiting for the green light in a state of confusion. Although unimportant in the larger scheme of things, both the content of this statement and my surprised reaction reflect the particular role of the bicycle in Portland. The remark of the black rider reveals devotion toward bicycling beyond rational variables such as weather, while the surprised reaction of the Dutchman conducting this study is an indication of the absence of such a strong sense of community and conviction about bicycling in the Netherlands. Central, although not the sole focus, in the following three chapters (5-7) are the research questions:

RQ2: How can bicycle culture in Portland and Amsterdam be described and understood?

RQ3: How have historical pathways shaped the bicycle culture in Portland and Amsterdam?

To understand and explain Portland’s bicycle culture, I will start with relevant background information on Portland, describing the physical characteristics, relevant statistics, and the political and regulatory system. The next section will go more in-depth, by attempting to explain the three aforementioned structures historically and combining these insights to a causal narrative with regards to bicycle culture. Subsequently, I will empirically explore this by showing the behavior and experiences of bicyclists in Portland.

5.1 Background of Portland

Portland is a medium sized city located in northern part of Oregon in the Northwestern United States (see Figure 5.1) According to most recent data, the city has 582,130 inhabitants, whereas the Portland Metropolitan Area (PMSA) has a population of 2.2 million (ACS 2009). The population is 78.6% white, 6.4% Afro-American, 6.5% Asian and 8.8% Hispanic (ACS 2006-2008). The city is situated at the conjunction of two major rivers, the Willamette and Columbia. The climate is moderate; summers tend to be cool and winters mild. Any local will tell you that the main characteristic of Portland’s weather is the ubiquitous rain. Although precipitation is lower than several other areas in the US, the frequency of rainfall leads to a high experienced sense of rain.

---

25 There are good reasons to dispute racial categories (see e.g. Wimmer 2008) I use them because they are based on relatively reliable data and have indicative potential.
Six scalar levels are relevant in the political system: the country represented by the federal government, the state of Oregon, a regional coordinating system called Metro, the city of Portland, the county of Multnomah, and a range of neighborhood councils. The responsibilities and functions with regards to bicycling of the different bodies are depicted in Table 5.1. The state responsibility of law making is very relevant. According to Oregon law, bicyclists are treated like vehicles; the same fines apply as for cars and traffic regulations like STOP signs apply equally for motorists and bicyclists. Portland is a ‘city of neighborhoods’. Downtown is relatively compact and only contains a limited number of functions. Neighborhoods such as Missisipi, Alberta, Northwest and Hawthorne, boast a lively mix of residential and commercial functions.

Table 5.1: Governmental levels and its function

<table>
<thead>
<tr>
<th>Scalar level</th>
<th>Name</th>
<th>Function/Responsibility for Bicycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>United States</td>
<td>(some) funding</td>
</tr>
<tr>
<td>State</td>
<td>Oregon</td>
<td>Traffic laws, funding</td>
</tr>
<tr>
<td>City Region</td>
<td>Metro</td>
<td>Funding, intraregional plans (e.g. trails)</td>
</tr>
<tr>
<td>City</td>
<td>Portland</td>
<td>Policy making: infrastructure, marketing</td>
</tr>
<tr>
<td>County</td>
<td>Multnomah, Washington, Clackamas</td>
<td>Bridges, police</td>
</tr>
<tr>
<td>Neighborhood</td>
<td>Various</td>
<td>Public Participation</td>
</tr>
</tbody>
</table>

Source: own interpretation, interviews

---

26 However, there are some exceptions such as the obligation for people under 16 to wear a helmet and strict regulations while riding on the sidewalk.

27 It is necessary to point at that I am biased towards inner neighborhoods. I am not focusing on areas with a very different character such as Gresham, Clackamas and Beaverton. The neighborhoods on the outskirts of the maps are less relevant for the analysis.
The Portland economy increased rapidly from the 1990s onwards, with a recent decrease because of the economic crisis. Analogously, bicycle use grew rapidly; in the last decade, bicycling increased with around 150%\(^{28}\) to a modal split of 7% in 2008\(^{29}\) (City of Portland Auditors Report 2009). Bicycle use is not spread evenly across the city; neighborhoods close the city centre and east of the river even have bike rates up to 12% (see Figure 5.2)

Figure 5.2: Modal split of bike to work in Portland, 2008  
Figure 5.1: Downtown Portland

This internal differentiation can also be found in the built environment. The quality of bicycle infrastructure shows variation across neighborhoods. To assess this I have gratefully used the Cycle Zone Analysis, developed by the Portland Bureau of Transportation. This is a tool which indexes the quality of the built environment for bicycling on a range of factors\(^{30}\). It assesses both determinants which are (relatively)

---

\(^{28}\) This estimation is based on Census data and the City of Portland auditor’s report. Other measurements, such as bridge counts, are more reliable, but do not necessarily reflect individual bike use. However, caution should be taken while interpreting this data, because mode split data are notoriously unreliable.

\(^{29}\) This estimation is on the high side, the most recent American Community Survey found a number for the bicycle as a primary means of transportation of 5.81% in 2009 (Census 2009). However, I used the data from the Auditors report, because they also show internal differentiation.

\(^{30}\) For a more detailed description of the application and calculation of Cycle Zone Analysis see Pelzer and Oetting (2010) and PBOT (2008).
permanent such as connectivity, density and slope and factors which are easier to adapt such as the number of bike lanes and the pavement quality. The bike quality in Portland’s Cycle Zones is depicted in Figure 5.3, in which it becomes apparent that centrally located neighborhoods score higher on this index (the names of the neighborhoods to not overlap with the depicted cycle zones, but are indicative). Interestingly, it is also possible to trace the change of bikeway quality over the years. I will pay attention to this in the next section.

Figure 5.3: CZA 2009 in Portland

Source: PBOT (2008), neighborhood names added

In sum, Portland is an outlier compared to other cities in the United States; civic involvement is high, it lacks an substantial Afro-American and, last but not least, bicycling is a relatively important mode of transportation (see Table 5.2 for a comparison with the United States). It should be kept in mind, however, that my focus is mainly on the inner areas of Portland, the outer neighborhoods of Portland resemble the United States more closely.

5.2 The Portland Story

5.2.1 1844-1990: The Building Blocks

31 Cycle Zone and neighborhood precisely overlap, but do not necessarily refer to the same spatial entity. Since I am using the statistic mainly as indicative, I use them interchangeably.
Central in this section is the question *why* Portland became the –peculiar- city it is now. Related to this is the question *how* this happened. Material and cultural constellations are historically shaped; therefore I will start with a description of the most important historical events. The analysis will be steered by the insights of CR, the concept of path dependence, and existing statistics and theoretical research on bicycle culture. However, to not to break the flow of the text and make it also interesting for less theoretically inclined readers, I will save explicit confrontations with theory Chapter 7 and 8.

Portland was founded in the mid 1800s when the settlers William Overton and Asa Lovejoy claimed the wilderness which would later become downtown Portland. This was an outcome of transcontinental trails to the unexplored Pacific Northwest. Because of the strategic location it rapidly involved into an important regional trading town (Abbott 2001: 30-36). In the beginning of the 20th century logging took off as an important industry, by building on Oregon’s numerous forests and the port of Portland. This is also the era when many of the streetcar orientated neighborhoods (with 200 x 200ft block size) on the East side of the Willamette River were developed. The outbreak of the Second World War caused a major expansion of the city. Adjacent to the Columbia River the community of Vanport was developed to serve the military industry, to be whipped away by a devastating flood only 6 years later (Abbott 2001: 71). Whilst the war was reaching its crescendo, a team under supervision of New York’s urban planner Robert Moses developed plans for the city’s highway system (Abbott 2001: 110). The subsequent decades the city took a path comparable to other American cities, characterized by suburbanization, deterioration of the city centre and more and more facing the consequences of de-industrialization. Or as Mia Birk puts is compellingly:

> Portland in the 50s and 60s was very degraded. People fled out to the suburbs, we had horrible air pollution, the Willamette river was disgusting and the neighborhoods were crumbling. (Mia Birk, quote from interview)

Partly as a response to the worsening situation, things really began to change in the 1970s. Led by its energetic, young Mayor Neil Goldschmidt and Oregon state Governor Tom McCall the city started to become more aware of the role of urban public space and other modes of transportation than single person motorized traffic. I would argue that three events were critical for Portland’s development path towards its current bicycle culture.

1.) *Highway Resistance*

The rejection of highway was crucial from both a planning as a symbolic perspective. Firstly, community action prevented the building of the Mount Hood freeway, which would have cut through southeast Portland (Abbott 2001: 90). Secondly, and even more strikingly, in the 1973 a highway crossing the city centre called Harbor Drive was torn down and converted into a waterfront park. This was part of a wider attempt to revitalize the city centre and decaying neighborhoods (Mayer and Provo 2004: 18, Abbott 2001: 136-138). Besides the actual implications of a different type of land use these events had important symbolic meaning. A livable downtown was not remembrance from foregone era’s, but a plausible option.

2.) *METRO and the UGB*

Another critical event was the founding of a regional planning authority which started in 1970 getting its current name, Metro, in 1978. In 1973 Oregon state legislature forced cities to restrict its urban sprawl (Abbott 2001: 158-160). In Portland this was materialized by the establishment of an Urban Growth Boundary (UGB). The exact borders have been modified and contested over the years (see Seltzer 2004, for more details), but the consequences are relatively straightforward: contrary to many American cities, Portland did not turn into an endless suburbia, but remained

---

32 For an intriguing account on the effect of highway development on neighborhoods see Berman (1982)
relatively dense. As the rejection of highways, the UGB has become a metaphor for sustainable development in Portland.\footnote{John Charles from the Cascade Policy Institute even called the UGB a ‘church’ for the political elite. Although I do not think this metaphor is completely appropriate, I do see the importance of the UGB as a symbol of Portland’s sustainable development.}

3.) Bicycle Bill

Finally, in 1971 a law was adopted in Oregon which required one percent of the budgets for roads to be spent on cyclists and pedestrians. As I will show in the next section, this ‘Bicycle Bill’ turned out to be a crucial for the development of the bicycle network in the 1990s.

5.2.2 1990-2000: The Crucial Decade

The Bicycle Transportation Alliance (BTA) was formed in the early 1990s to lobby more actively for bicycle facilities and regulation. As one of the founders, Rex Burkholder reveals, the initial aims were relatively straightforward:

> It was like, I’m tired of riding my bike and almost getting killed all the time and there are simple solutions: put a stripe on the roads, so motorists will know that you are there and you know where to go (Rex Burkholder, Interview).

The first time BTA really showed their teeth was when they sued Transportation Commissioner Earl Blumenauer, because he was not spending the required one percent of the Highway Trust Fund (the ‘Bicycle Bill) on non-motorized transportation. After two years of struggle in court BTA withdrew the lawsuit, having forced the city to be more careful in spending on bike facilities (Reed Johnson 2002). Remarkably, Earl Blumenauer\footnote{At the time of writing Blumenauer is a congressman in Washington DC and a national bike advocate (Mapes 2009: 272).} who was the accused in the Bicycle Bill process is seen as the crucial factor for Portland’s bike renaissance in the 1990s. As Portland bike veteran and owner of the Bicycle Gallery Jay Graves states:

> The city of Portland has accomplished more [than other American cities] because of one man’s vision; Earl Blumenauers’ vision. (…) So Earl started with light rail and he started with putting the Bike Master Plan together and Portland had a culture that was open to that.

Although this is somewhat of an exaggeration, the events in the 1990s cannot be underestimated. Blumenauer appointed Mia Birk, who took an almost evangelical approach in convincing the public and city government of the importance of bicycling (Mapes 2009: 152-154). Moreover, she and her staff put together the 1996 Bicycle Master Plan, back then a unique policy approach in the United States. According to Mia Birk, 4 conditions have to be fulfilled to change a bicycle culture: ‘The right politicians have to be in leadership (1) positions, (2) there have to be advocacy groups, (3) the bureaucrat staff has to be well-trained and supportive, (4) and there has to be money available\footnote{Jeff Mapes (2010, interview) made a similar argument by emphasizing the ‘iron triangle’ of bureaucracy, industry and congress.} (Mia Birk, Interview). Clearly these four factors were in place in the mid 1990s. As Figure 5.4 shows both the bicycle infrastructure and bicycle use changed significantly in Portland in the period 1990-2010.

**Figure 5.4 Change in Bike to work (left) and change in Bike Quality (right) 1990-2000**
Jonathan Maus poses a relevant counterfactual:

It’s interesting to think of what if Earl Blumenauer hadn’t been here, if Mia Birk hadn’t done all those things. Would we still have such a bike movement? I don’t know... (Jonathan Maus, Interview)

These events and political action did not occur in a vacuum, however. Portland had to be receptive to these changes in travel behavior and infrastructure. My argument is that this is related to both changes the city underwent in this period and (latent) cultural structures.

In the time span 1990-2000 Portland underwent a significant change. Or as John Charles from the Cascade Policy Institute puts it: ‘I moved here from New Jersey in 1980 and I’ve seen the culture change dramatically over thirty years.’ Bicycle use and the bicycle infrastructure increased significantly between 1990 and 2000 see also table 5.2. Related to this, other aspects of Portland’s population also changed, both through internal change and immigration. In the 1990s Portland’s economy thrived, leading to rising housing prices, and immigration of highly educated graduates and workers. Between 1990 and 1998 the housing price in the Portland metro area rose with 68%. Especially the east side of the river ‘got hip’ (Abbott 2001: 69). As Table 5.2 shows, educational attainment grew rapidly. Moreover, I found a significant correlation of 0.55 between change in educational attainment and change in bicycle use between 1990 and 2000. This is related to macro-processes such as de-industrialization and the shift to a Post-Fordist economy. The most significant increase was in neighborhoods in inner Southeast Portland like the Hawthorne neighborhood. These were also the areas were bicycle use and the bicycle infrastructure showed significant increases. Portland is a magnet for especially young, creative and, arguably, alternatively minded immigrants. As Jonathan Maus describes the attractiveness of the city:

Portland had and still has this amazing culture around making things that aren’t about money. Bike culture has evolved, we have this amazing food culture, solid music culture, beer culture. People take their time and explore and are not just working for some financial company. (...) For longer than other cities it has been an affordable place. (Interview Jonathan Maus).

This idea resembles Richard Florida’s (2002) -much disputed (e.g. Musterd and Murie 2010, Peck 2005)- idea of a ‘creative class’ attracted to the ‘soft’ characteristics and amenities of urban areas, such as a music scene, cafes and restaurants and a tolerant environment. Indeed, it seems that more than in other cities the mechanism of attracting artists and highly educated immigrants by the image and amenities of the city works for Portland. However, as the quote by Jonathan Maus also exemplifies, classic economic arguments also play out. The relatively low rents in Portland (especially compared to other cities on the West Coast

---

36 This analysis was based on variation in cycle zones; more details on the statistical analysis can be found in Appendix 3.
like Seattle and San Francisco) combined with the cultural climate make the city attractive for recent graduates and starting artists.

Interestingly, despite these changes in economic structure and population rates of social capital have remained stable. In his famous book *Bowling Alone*, Robert Putnam (2000) laments about the decline of civic involvement in the United States. Portland, however, is a notable exception, ‘A Positive Epidemic of Civic Engagement’ (Putnam and Feldstein 2003: 241). According to Reed Johnson (2004) the traditional civic involvement groups have morphed into new types of citizen involvement, such as an advocacy group like BTA. According to Mia Birk this is one of the explanations of the success of bicycling in Portland: ‘I think it is a key why Portland has been so successful; because our plans are so deeply engrained in the public.’ (Mia Birk, interview).

It has become clear from the previous sections that both contingent events and structural changes are at the root of Portland’s pedaling revolution. They are summarized in Figure 5.5. Latent structures were activated by the events and changes from the 1970s onwards, but new cultural forms have also evolved out of the aforementioned processes.

**Figure 5.5: Time line with most important events, processes and forces related to bicycling in Portland.**

![Figure 5.5: Time line with most important events, processes and forces related to bicycling in Portland.](image)

5.2.3 2000- now: Portland built it and they came?

In the last 10 years these trends in terms of gentrification, bicycle use and bike quality continued. The spatial foci shifted, however. The up-and-coming neighborhoods of the 00s are named Mississippi and Alberta. If we look at the general pattern of change in bike infrastructure and bike use (see Table 5.3), it is remarkable that the steepest rise of bikeway miles occurs in the 90s, but that the most dramatic shift in
bicycle use was in the second half of the 00s\textsuperscript{37}. It could be argued that there was a time lag between the improvements in infrastructure and the actual use. Moreover educational attainment of Portlanders also increased heavily between 2000 and 2009 with 10.2%. This is not to argue that the ‘Portland Story’ could have occurred in any city where the highly educated population boomed. San Francisco, Seattle and Austin faced similar changes, which was not accompanied by a sharp increase in bicycling, because the bike potential was restrained by both the built environment and geographical context. A famous slogan to describe Portland’s bike success is: ‘We built it [bike infrastructure] and \textit{they} [bicyclists] came’. A relevant follow up question would be to assess who \textit{they} are. I would argue clearly not the cyclists’ equivalent of the economic man, but rather a progressive, highly educated and environmentally conscious individual.

Figure 5.6 reflects that the changes in the built environment between 2000 and 2009 do not neatly overlap with a change in bike use. This is related to the change in population mentioned earlier, an adaptation period in which the causal power of the bikeways could play out and a self-enhancing effect of the rise in the number of bicyclists (i.e. socialization).

\textbf{Figure 5.6 Change in Bike to work (left) and change in Bike Quality (right) 2000-2009}

\textbf{Figure 5.6 Change in Bike to work (left) and change in Bike Quality (right) 2000-2009}

Source: PBOT, Auditors report and Census 2000

In 2010, after years of research and public participation, the Bicycle Master Plan for 2030 was adopted by the city council. Portland in 2030 is envisioned as a sustainable utopia: It is the year 2030, and Portland looks much different than it did a generation ago. By sharply reducing reliance on personal auto use, Portland significantly lowered its carbon footprint, eased traffic congestion, improved air quality and enhanced public health. One of the community’s most valuable assets - the public right-of-way – was reclaimed for all Portland residents. By repurposing much of this space for pedestrians, bicyclists, mass transit, freight use and green infrastructure, Portland streets more efficiently move people and goods, filter and clean stormwater, absorb emissions and improve Portland’s health, safety and livability.(PBOT 2008: ||)

Although this narrative reflects a very environmentally conscious or, arguably, radical stance, regarding urban land use and transportation, the actual measures are far more modest and down to earth. Or as several expert interviewees pointed out (most of whom were involved in the plan), the plan aims at ‘low

\textsuperscript{37} These data should be taken with a lot of care, however. Recent data (e.g. ACS 2009) indicate a stagnation or even decrease in 2009. Moreover, the data are not corrected for the rise of the population of about 7% between 2000 and 2010.
hanging fruit’ such as bicycle boulevards\textsuperscript{38}. More radical plans, such as pricing of parking or road closing lack the ‘political will’ of the city’s leaders. Or as Jonathan Maus notes:

The rhetoric [of the city government]: let’s get the people that aren’t biking, we have to get the mainstream. We gotta get kids and parents and old people. (...) But the reality is: where are the projects that are gonna get these people on their bikes. Where is the money to make a system that has separations, where people feel safe, that has signals for bike traffic? (...) But what are they focusing on!? Bike boulevards. And you know why they’re doing that? They’re relatively cheap and nobody is against them. (Jonathan Maus, Interview)

\textsuperscript{38}These can be defined as quiet residential streets where the bicycle is prioritized over the car and an uninterrupted connection is created. For a detailed overview see Walker et al. (2009).
Two important things can be distilled from this statement. The incremental and careful approach to policy making which is typical for Portland and the hesitance to take crude measures against the car, which can be related to the national culture. Both aspects will be elaborated on in the next section.

Table 5.3 Changes in the demographic composition and travel behavior in Portland between 1990 and 2009.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>437,398</td>
<td>248,709,873</td>
<td>529,025</td>
<td>281,421,906</td>
<td>91627</td>
<td>582,130</td>
<td>310,411,320</td>
<td>53105</td>
</tr>
<tr>
<td>Educational Attainment ≥ Bachelor</td>
<td>25.9%</td>
<td>20.3%</td>
<td>32.6%</td>
<td>24.4%</td>
<td>+6.7%</td>
<td>42.8%</td>
<td>27.9%</td>
<td>+10.2%</td>
</tr>
<tr>
<td>College students</td>
<td>9,0%</td>
<td>7.5%</td>
<td>8.1%</td>
<td>6.5%</td>
<td>-0.9%</td>
<td>9.7%</td>
<td>7.6%</td>
<td>+3.2%</td>
</tr>
<tr>
<td>Bike Use39</td>
<td>1.1%</td>
<td>0.4%</td>
<td>1.8%</td>
<td>0.4%</td>
<td>+0.7%</td>
<td>5.8%</td>
<td>0.6%</td>
<td>+5%</td>
</tr>
<tr>
<td>Bikeway Miles</td>
<td>±83</td>
<td>-</td>
<td>±225</td>
<td>-</td>
<td>+142</td>
<td>277</td>
<td>-</td>
<td>+49</td>
</tr>
</tbody>
</table>


39 Operationalized here as ‘primary means of transportation to work’, whereby it should be noted that the Census generally has lower estimates of bike use than sources related to the City of Portland.
5.3 Latent structures and the ‘Portland Way’

The most important part of the boom of bicycling in the 90s and 00s took part in the centre and the eastern part adjacent to the Willamette river in neighborhoods which were erected in the first part of the twentieth century (Abbott 2001: 86). The grid pattern of these neighborhoods were built are depicted with different rates of connectivity\(^\text{40}\). A statistical analysis revealed a statistically significant correlation of 0.79 between bicycle use in 2009 and connectivity, whereby it should be noted that this number is not controlled for self-selection. It does suggest a causal power related to the grid pattern of the city. Figure 5.7 shows the scores on connectivity for the cycle zones in Portland.

**Figure 5.7 Connectivity of Neighborhoods in Portland**

In both the expert interviews and literature about Portland the connection with the natural environment was emphasized as an important characteristic of Portlanders, but also Oregonians or other inhabitants of the Pacific Northwest. Following this line of reasoning, the pioneer culture of the Oregon Trail is still apparent:

One of the things that make Portland a little different from other American cities is that we have a very outdoorsy culture. People are very draught to the natural environment. (…) Other than these cities in the South that build all these structures and there is nothing to connect to. Even in the early years, we’re talking 200 hundred years ago; the founding of Portland is rugged people that were very connected to the environment (Mia Birk, Interview).

Although I am skeptical about this type of cultural essentialism, Portland unmistakably has a unique and intense relationship with nature. As Carl Abbott puts is evocatively:

To drive from the center of Portland or Salem to the Cascades [an adjacent mountain range] is to start at rivers and marshes, to pass through ripening fields and forested foothills, and to arrive at trailhead parking areas that give access to mountain slopes, high meadows, scree fields, glaciers and finally bare peaks. (…) It is no surprise that Oregonians have scores high on indicators of environmentalism over the last two decades. (…) Surveys of personal values repeatedly confirm that Oregonians place high value on environmental conservation, access to outdoors, and resource-based jobs. (Abbott 2001:55 and 57-emphasis by author)

\(^{40}\) This is based on the Connective Node Ratio, for details see PBOT (2008). Unfortunately it was not possible to carry out a multiple regression analysis due to data constraints. See Appendix 2 for more detailed statistics.
Bicycling fits well in a ‘close-to-nature’ discourse; bicyclists are in an intense relationship with the environment and it is one of the most sustainable ways of transportation. Moreover, the material act of bicycling can be a tool to express environmental concerns (Horton 2006).

The latter particularly gains significance in a context in which bicycling is an act against the dominant culture. Although Portland is a deviant case in many ways, the culture cannot be seen apart from its national context. As shown in Chapter 3 the car has dominated both discourse and the urban infrastructure in the United States for most of the decades since the Second World War (Kay 1998, Wray 2008, Urry 2004). Jonathan Maus puts it very bluntly: ‘We’re an American city. Cars rule in America. We’re a product of our culture.’ Deterministic as this may sound, also in the user interviews (to which I will turn in the next section), the car played a very dominant role, both materially and discursively. Besides environmental arguments, the symbolic act of bicycling can also be a wider act of resistance (e.g. Furness 2010). Put differently:

In America the culture is very strong, that says the only people that bike are the people that can’t afford to drive, or they are hipsters, or messengers, or they are like Lance Armstrong, or they are migrant laborers who can’t afford a car. (...) It’s less severe here because there are a lot of people who are not typical Americans. We’re a bubble city. (Jonathan Maus, Interview)

I would argue that this relates well to blooming ‘alternative’ cultures with regards to beer, music and arts. However, this is not to say that bicycling in Portland is related to an explicit counter culture. Contrary to cities like San Francisco and New York the famous bike event Critical Mass, which does have a strong connation of resistance, never took off. It is rather ‘the Portland Way’ or habitus41 (Abbott 2001: 205), which entails a combination of values about sustainability, politics and habits which are mitigated through civic institutions, rather than fought for on the street. Moreover, Portland has gained much of its recent popularity by a frame which can be characterized as not being a Metropolis (Janssen-Jansen 2009). Carl Abbott uses his interpretation of Bourdieu’s habitus to explicate this notion. So the ‘Portland Way’ consists of: ‘(...) shared predispositions and common ideas about how the world does and should work that arise out of the experience of living in particular places.’ (emphasis added). Bicycling in Portland can probably better be explained in terms of lifestyle than counter culture, related to the aforementioned ‘bubble’ metaphor. In Portland the environmentally concerned, artists, students, highly educated, middle class and progressives coalesce. Obviously not mutually exclusive categories, but roles of individuals who have a mindset in common. The Portland lifestyle is not necessarily artistic and environmentally concerned, but an amalgam of different aspects which lead to different outcomes per individual. By and large, I would argue bicycling relates well to the different components of dominant lifestyles in Portland. Now the structures and characteristics of Portland have been elaborated, it becomes relevant to look at the behavior and experiences of bicyclists.

5.4 Bicycle Behavior

In the following two sections I will situate the behavior and experiences of bicyclists in Portland within the bicycle culture as described above. Behavior and experiences are separated analytically. This is not an ontological statement, nor are the two categories seen as mutually exclusive. What people do is intrinsically intertwined with what they feel, or to put it more strongly: how bicyclists experience their behavior is a subjective. Accounts of behavior will therefore necessarily be framed by experiences. The choice to separate the two analytically is based on the assumption that behavior has a stronger material (or ‘real’) component, whereas experiences are to a larger extent socially constructed and require a stronger need of interpretation.

41 Note that the use of habitus here is different from the way in which it has been defined in Chapter 3. I will come back to this difference in Chapter 7.
Many of the traffic laws in Portland are tailored to automobiles. A notable example is STOP signs, which require any vehicle to come to a full stop. For bicyclists this is an annoying act, because you lose ‘momentum’. Moreover, STOP signs are ubiquitous and often in quiet streets. The combination of annoyance, ubiquity and low traffic leads to a new type of ‘informal’ regulation. 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)

Traffic lights are a different story. Although some respondents indicated that they sometimes run a red light, in general this is considered not appropriate and dangerous (The political correctness of the answers could very well obscure the actual behavior, however). This finding is corroborated by my own experiences and the expert interviews, which also point at the impracticality of STOP signs for bicyclists.

Besides that the relatively dense and well connected grid pattern of Portland is one of the conditions which leads to a mitigation of the formal function of STOP signs, the causal power of the built environment is also activated in other ways. Portlanders 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 and Gliebe 2008). The following quote exemplifies the rationale behind route choices:

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)

The grid pattern based on a street car scale is suitable for these types of deviations from the shortest route. Different from many other American cities, Portland has a lot of well-connected quiet streets. Concepts like safety and fear are pivotal in explaining this type of behavior; I will elaborate on these feelings in the next section.

The ‘Portland Way’ does not lead to a uniform population of bicyclists, I would rather argue that two ideal types can distinguished in describing bicyclists and their behavior. One the one hand there is the regular commuter for whom bicycling is a healthy and environmentally conscious means of transportation. Living in Portland makes bike use possible because of the infrastructure and the culture in which it is not seen as completely deviant by other road users, co-workers and friends. They appreciate the sub cultural aspects related to bicycling, but do not perceive it necessarily as their subculture:

I mean there are people who commute to work, there are people who take it as a sign of, I don’t know, uniqueness or something. (Mark, architect)

The arguments to ride vary from health, economics to the environment and the positive experience of bicycling. Previous experience with riding a bike also has an influence:

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. (Kendra, architect)

These bicyclists generally have high quality bikes and gear, mainly focused functionality rather than aesthetics. The other type of bicyclist fits better in the earlier mentioned ‘Portland Way’. It are either people who migrated to Portland and for whom bicycling already was part of their lifestyle, also referred to as self-selection, or Portlanders who were influenced by their social and cultural environment (for this argument see also: Dugundji and Gulyas 2008, Xing et al. 2008):

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).

Moreover, it is ‘hip’ or ‘cool’ to bicycle, which is reflected in the type of bicycles and clothing, but also in the perception of this particular mode of transportation:

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

A crucial dimension to understand bicycling in Portland is the role of the car, which influences behavior, but also shapes the experience of bicycling in different ways.

5.5 Bicycle Experience

As a result of the dominant car culture in the United States and being confronted with automobiles on a day-to-day basis, I distinguish four types of experiences which relate directly or indirectly to the car: the experience of the environment, adrenaline, fear and social interaction.

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)

The bicycle ride involves intense interaction with the social and physical environment. For instance, rain and the smell of spring are intensely experience. Consequently, bicycling fits well in the frame of Portland’s outdoor culture. The step from taking your car out to the mountains to experience nature to making your daily commute on a bicycle is small.

Bicycling should not be perceived as a type of tourist-like experience, however. What struck me as a livelong (and usually hurrying) Dutch bicyclist were the speeds of bikes in Portland. Since bicyclists generally share the road with cars, they come in the same rhythm, for instance regarding traffic lights. Adrenaline is a result of commuting speeds which are in Europe more common for avid recreational bicyclists:

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

Another dimension related to the intense experience of bicycling are fear and its antonym of safety before. As argued before: critical determinants in route choice. Again the car is central in understanding these feelings. 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 (see Photo 5.1 for a nice example). Several factors coalesce in feelings of fear, high traffic roads which are shared with motorists, concomitant high speeds and drivers who are inexperienced or even hostile towards cyclists.

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)

Hence, the sharing intense and even scary experiences contribute to new social forms. Or as Horton (2007: 145) puts it: ‘The spatialities of a practice always have implications for people’s identities.’

Photo 5.2: The intense experience of riding a bicycle on NE Broadway, Portland.
A clear example hereof is the notion of ‘camaraderie’, 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 camaraderie 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)

As with politically loaded acts of bicycling, this specific experiences can only exist because of the opposite car culture and the dominance of the car in the streetscape. 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. This results in the conclusion, that particular feelings of enjoyment or fear on a bicycle cannot be seen lose from a dominant car culture. Although there is an important bodily experience to bicycling (Spinney 2006, 2009) which is, arguably, more of a universal kind, the overall experience of bicycling is to an important extent socially constructed.

5.6 Conclusion

Two important insights can be distilled from this chapter. Firstly, to understand the development of Portland’s bicycle culture changes, events and latent structures are crucial. The city underwent significant changes from the 1970s onwards. De-industrialization and the resulting Post-Fordist economy made Portland a different city. It became richer, more highly educated and started to attract significant portions of creative or/and skilled immigrants from the 1990s onwards. In several neighborhoods this resulted in gentrification. The bicycling boom in the 1990s was ignited by crucial contingent events in the 1970s, which were especially crucial in the establishment of a bicycle network. Three latent structures were activated, by these events: Portland’s outdoor orientated culture, the culture of civic involvement and the early 20th century streetcar grid pattern. Moreover, the population became more highly educated, progressive and had, to paraphrase Pierre Bourdieu (1986), more ‘subcultural capital’. Bicycling fitted well in the developing Portland lifestyle of secondhand shops, brewpubs and music venues. In sum, the necessary condition which has led to the current bike culture was the conjunction of modification and activation of (latent) causal powers of the physical and the cultural environment.
Despite the rhetoric on Portland much lauded alternative way of doing things socially, culturally and environmentally, the most explanatory power to explain bicycle use and experiences is ‘car culture’. Both as a discursive force and material reality automobiles steer bicyclists’ route choice, create experiences (both positively and negatively) and lead to social bonding. The latter can also be explained be referring to the like-mindedness of many bicyclists. Interestingly, bicycling is not a pure act of counter culture. Portland is rather a city of participation and inclusiveness rather than bold actions. Moreover, bike riding and driving are not exclusive; regularly driving is pretty common as a bicyclist. This leads to an interesting paradox: driving is seen as an antonym and risk to bicycling, but this perception does not result in carless travel behavior. Or to put it even more strongly: it is necessary to drive regularly to have particular bicycle experiences which are compared to being in the driver’s seat. Moreover, in daily practices of bicyclists motorists and a physical environment tailored to cars play an important role.

Portland’s development towards a bicycle culture resonates with the emphasis of CR and Path Dependence on contingency. The events in the 70s and 90s were to an important extent contingent and steered by the agency of convinced individuals. They caused Portland to take a pathway which diverges from most comparable American cities. However, these events could not have occurred nor have the same impact in any other place. Portland’s physical and cultural structure was receptive to the changes which were proposed in the 70s and 90s. The argument could go the other way around, the decisions in the 70s and 90s were and outcome of the physical and cultural constellations. Nonetheless, I would argue that these events were to a larger extent contingent then determined by structures. It could well be argued that the developments in the 1990s could have flipped to a less bicycle friendly pathway. To put the ‘Portland Story’ in CR terms, the physical (e.g. dense city grid pattern) and cultural (e.g. outdoorsy culture) structures were activated by the events in the 70s and 90s. This historical argument can be used to understand the empirical observations regarding experience and behavior. These two dimensions relate both to more universal insights about bicycling, such as the importance of safety and bike facilities, as more particular characteristics of Portland such as the lifestyle and grid pattern. In sum, both more universally applicable causal mechanisms as the geo-historical context have to be taken into account. I will get to the details of this statement in Chapter 7, where Portland and Amsterdam are compared.
6. Amsterdam: A Bike Fairy Tale?

The bike flat next to the Amsterdam Central Station really is the temple of bicycling. (Tom Miller, Chief of Staff of the Mayor of Portland)

Amsterdam is often considered the ‘bicycle capital’ of the world. The mode split in the city centre is above forty percent and the ubiquity of bicycles has led to the rare phenomenon of bike congestion and parking issues. Bike planners and engineers from all over the world come to see this best practice of bicycle use. Amsterdam functions as the Promised Land, a bike utopia. The implicit assumption is that Amsterdam’s bike culture could be nurtured in other contexts too. Planners and academics tend to focus on the current functioning of a system and overlook the historic pathway which has led to this constellation. I would argue that this dimension is critical to make statements about causal processes of a more universal kind. How cyclists behave and what they experience is not only related to the physical environment, but also to the historically shaped socio-cultural context in which it is embedded. This chapter has a similar format as the previous; I will start with a description of the city, then describe the historical pathway and the current context, and end with description of bicycle behavior and experiences in Amsterdam.

6.1 Background of Amsterdam

Amsterdam is the capital of the Netherlands, although the actual government is located in The Hague. The city has about 750,000 inhabitants, while the population of the Metropolitan Region is around 2 million. The city is located in the West of the Netherlands, a delta area where some major European rivers such as the Maas and the Rhine flow into the North Sea. Also called, the Randstad (the ‘belt city’) this area is mainly located below sea level and lacks any hills or mountains. The economy is mainly based on service industries, with the nearby Schiphol airport providing excellent connections to destinations all over the world. The historic core, a Unesco heritage site, attracts a large number of tourists every year. Around this area is ‘belt’ of dwellings built in the 19th century, which has gentrified significantly over the last twenty years. The Outer West, parts of North of the river IJ and the Southeast are dominated by post-war housing stock. Although Amsterdam is not a segregated city at all by American standards (Musterd 2003), these areas show a lower socio-economic composition and a higher percentage of non-Western immigrants. The dispersion of non-Western immigrants is depicted in Figure 6.1.

Figure 6.1: Non-Western immigrants by city borough

Source: O&S

A notable exception is De la Bruhéze en Veraart’s (1999) study on the history of bicycling in European cities. This is not to argue that these two variables are necessarily causally related. There is, however, a strong correlation.

58
The relevant layers of government and their function with regards to bicycling are shown in Table 6.1. Traffic laws are nationally decided, the enforcement of this laws is a local decision which differs from place to place. In the last 10 years Amsterdam has been particularly keen on ‘educating’ bicyclists with regards to lights on their bikes (and ticketing in case of failing to do see) and fighting the immense black market of stolen bikes.

Table 6.1: Layers of government relevant for bicycling in Amsterdam.

<table>
<thead>
<tr>
<th>Scalar level</th>
<th>Name</th>
<th>Function/Responsibility for Bicycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>The Netherlands</td>
<td>(some) funding, national plans</td>
</tr>
<tr>
<td>State (Provincie)</td>
<td>North Holland</td>
<td>(some) trails</td>
</tr>
<tr>
<td>City Region (Stadsregio)</td>
<td>City Region of Amsterdam</td>
<td>Funding, intraregional plans (e.g. trails)</td>
</tr>
<tr>
<td>City</td>
<td>Municipality of Amsterdam</td>
<td>Policy making: infrastructure, marketing, parking garages,</td>
</tr>
<tr>
<td>Neighborhood Borough (Stadsdeel)</td>
<td>Various: East, West, Centre, North, South, South East, New West.</td>
<td>On street parking, local concerns</td>
</tr>
</tbody>
</table>

Bicycle use is not evenly dispersed across the population nor among also the different parts of the city (see Figure 5.2 and Table 6.2). The inner areas of the city tend to have higher rates of bicycling. This is both related to the more suited spatial structure (density and multiplicity of functions) and the population which is more highly educated and consists of more native Dutch. As argued before, there is a socially constructed dimension to the fact that immigrants tend to cycle less (Rietveld and Daniel 2004).

In the department of transportation, until 2005 only one person worked on bicycling in particular. In the decades before (from around 1975 onwards) the main policy incentives for the rise in bicycle use came from parking policy (i.e. increase in parking rates) and improvements in traffic safety (Rob Smiers, Interview). In the most recent bicycling plan (Hilhorst 2007) three focal points stand out: safe and extensive parking, safety and attitudes of young people. Theft has been a major problem in Amsterdam, but has decreased significantly over the last decade because of stricter police enforcement and better parking facilities. The latter is another critical problem, because especially around train stations and in popular areas in the city centre bicycles are changing public space into a mass bike parking facility. Safety issues mainly concern the so called ‘black spots’; parts of the bicycle network which are not connected by safe bike lanes or involve dangerous situations. The focus on a change in perception, finally, relates to teenagers (12-18) particularly from a non-Western background (Hilhorst 2007: 20) who tend to bicycle less than autochthones. The cause is not necessarily the lack of infrastructure, but the negative perception of bicycles. This pattern is also reflected by Figure 6.1 and 6.2 show that concentrations of people from a non-Western background tend to overlap with low bicycle use.
Table 6.2: Bicycle Modal Split (all trips) in Amsterdam by borough.

<table>
<thead>
<tr>
<th></th>
<th>Bike</th>
<th>Public Transit</th>
<th>Car</th>
<th>Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre</td>
<td>43%</td>
<td>15%</td>
<td>18%</td>
<td>25%</td>
</tr>
<tr>
<td>West</td>
<td>32%</td>
<td>18%</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>South</td>
<td>39%</td>
<td>14%</td>
<td>29%</td>
<td>18%</td>
</tr>
<tr>
<td>East</td>
<td>36%</td>
<td>19%</td>
<td>26%</td>
<td>19%</td>
</tr>
<tr>
<td>North</td>
<td>17%</td>
<td>15%</td>
<td>38%</td>
<td>30%</td>
</tr>
<tr>
<td>New-West</td>
<td>17%</td>
<td>23%</td>
<td>37%</td>
<td>23%</td>
</tr>
<tr>
<td>Southeast</td>
<td>14%</td>
<td>27%</td>
<td>31%</td>
<td>28%</td>
</tr>
<tr>
<td>Amsterdam Total</td>
<td>29%</td>
<td>18%</td>
<td>28%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Source: dIVV (2009)

Figure 6.2: Modal split in Amsterdam by city borough.

6.2 History: Modesty, Mercantilism and Movements

6.2.1 Before the car: the Horse of Democracy

The first documented appearance of the bicycle Netherlands was in 1868 when the vélocipède came in use for higher classes. In the subsequent decades bicycle use rose rapidly and lost its function as an elite vehicle. In 1889, only two percent of the population owned a bicycle, a number which had risen to around thirteen percent in 1920 (Harms 2008: 10). Between the start of the 20th century and the Second World War, the bicycle became one of the most important means of transportation; a road count in 1916 showed that 75% percent of the vehicles were bikes44 (De la Bruhèze en Veraart 1999: 45). The Netherlands were considered the ‘cycling nation’ of Europe, where the bicycle was used both for utilitarian and pleasure purposes (Ebert 2004: 348). Moreover, bicycling was relevant throughout different social strata, a status reflected by the compelling synonym ‘the horse of democracy’. The latter could be related to Max Weber’s (1958 [1905]) thesis that the success of capitalism can be explained by the Protestant work ethic. For the Dutch context this is Calvinism, which is, arguably, at the root of Amsterdam’s relatively sober built

44 This is not the same as mode split, pedestrians and public transport are not taken into account in the count.
environment, the successful colonial expansion in the 17th century, and social norms in which deviant or ostentatious behavior if frowned upon (Nijman 1999, Kuipers 2010). Moreover, high rates of bicycle use in the Netherlands show a strong correlation with the so-called protestant bible belt, a concentrated area of high protestant church participation (Van Boggelen 2001). This does not imply a monocausal relationship; the built environment has changed and many of the villages in these areas have secularized. It does suggest that the why question of Dutch bicycle culture should be answered by analyzing the development of the cultural structure, the political structure and the physical structure of the country. Culture refers in this regard mainly to Calvinism and low class differences (see also Hofstede 2001), politics to the strict central planning regime and physical to the flatness and dense built environment of the Netherlands.

In Amsterdam the bicycle had an equally important role, especially after the First World War, when the bicycle provided a quick alternative for travel by foot. Although the city has lost its 17th century position as a global metropolis, Amsterdam still was a bustling city. It had one peculiar characteristic, however: 'The intensity of traffic in these years [post WW1] is comparable to other large European Cities. Only the high share of bike traffic is remarkable.' (De la Bruhéze en Veraart 1999: 63). An American journalist noted jokingly in 1938 that during rush hour all Dutch bicyclists were in the Leidsestraat [a busy street in Amsterdam] (Jordan 2010). Since both the Netherlands and Amsterdam had a unique position compared to the rest of Europe, the question becomes why this is the case.

I would argue that two structural factors are relevant in explaining the particularly high bike use in the Netherlands. First, the geography of the Netherlands is particularly suitable for bicycling. The country is extremely flat, with only some hills in the southeast corner of the country. Moreover, the weather is particularly suited for bicycling with cool summers and mild winters (De la Bruhéze en Veraart 1999: 41-42). The second argument emphasizes the socio-cultural constellation in which the bicycle was embedded. Class differences are generally not pronounced ostentatiously in Dutch society. Consequently, the bicycle was not captured by the elite as a status symbol nor was it a symbol of poverty (Ebert 2004, Kuipers 2010). The bike was a relatively neutral means of transportation, a status which was exacerbated by the attempts of the government to make it a symbol of Dutch identity:

(...) the bicycle is part of an information system and a 'carrier of ideas'. 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.' (Ebert 2004: 349)

Obviously, bicycling in Amsterdam was also influenced by these structures. The bicycle culture in Amsterdam did not evolve in exactly the same way as the Netherlands did, most importantly because urban density creates a different type of travel behavior than a rural spatial setting. Critical to understand the early development of bicycling is the economic history and resulting structure of the city. Amsterdam flourished in the 17th century when it was an epicenter for colonial trade from all over the world. Although it lost this position to London in less than a century, trade and financial services remained important sectors (Bontje et al. forthcoming). Whilst first the rest of the world (starting in Manchester) and in a later stage other Dutch cities like Enschede and Rotterdam industrialized, Amsterdam missed the boat45. Much of the buildings from the prosperous 17th century (including the famous ‘canal belt’) remained intact. When the city government debated in the 1920s about modernization of the city, an important argument was that these buildings with ‘cultural historic value’ had to be saved from demolition (De la Bruhéze en Véraart 1999: 65). The centre of Amsterdam as we know it now is still to an important extent based on the city grid of the 17th century built on a pedestrian scale. Moreover, the historic core was relatively large in size, which mitigated unconditioned modernization (Terhorst en Van de Ven 2003).

45 There was some industrial development in Amsterdam, but not comparable to the impact it had in cities like Rotterdam, Manchester or Liege.
6.2.2 Post WW2: Modest Modernization

The decade after the Second World War the bike kept its role as Amsterdam’s dominant mode of transportation. The population of the city also grew to its postwar maximum of 870,000 (Bertolini 2003). More and more people started to commute into the city from adjacent towns and villages. In the 1960s, cars became cheaper and more widely accessible. Simultaneously, and to some extent consequently, distances between work and home grew which resulted in the rise of suburbs. Between 1959 and 1984 Amsterdam lost almost 200,000 inhabitants. Cars became symbols of modernity, whereas the bicycle was the anachronistic ‘horse of democracy’. Moreover, commuting into Amsterdam grew from around 1000 in 1900 to 64,700 in 1971 (De Pater and Schmal 1982). While mobility exploded, the bike was not paid attention to in any of the plans. Between 1920 and 1975 there was not any policy specifically tailored to bicycles (De la Bruhéze en Veraart 1999: 54). Moreover, bicycles had to behave like other vehicles; sharing the same roads and adhering to the same traffic regulation. Bicycle modal decreased with more than 30 percentage points between 1955 and 1970 (De la Bruhéze en Veraart 1999: 181). The period between the mid-sixties and mid-seventies was a crucial decade for the development of bicycling both because of the things that did happen and the things that did not happen.

Already in the prewar years, the city government had made plans improve the city’s transportation infrastructure through a road and public transportation network. The most well-known example was a four lane road build on top of a subway which would connect the Central Station with areas south of the city, such as the newly built Bijlmer Neighborhood. This plan resulted in heavy civil protest against the demolition of dwellings, which had important consequences; the particular subway was built, but afterwards no other large projects were undertaken anymore. The high way never reached the central station, and now ends half way (Bertolini 2003). Attempts to modernize the city’s housing stock also faced fierce resistance by neighborhood residents and squatters (Pruijt 2004). Two particular movements are relevant to mention: the Provo movement and the Fietsersbond. The Provo movement (derived from ‘to provoke’) entered the stage in 1965 and gave a voice to growing dissatisfaction with the norms and values driving the governing elite. This is not the place to elaborate on this movement, but one aspect is particularly relevant with regards to Amsterdam’s bicycle culture. The Provo movement critiqued power structures and argued for a more livable city in which the bicycle would play an important role (Furness 2010). By means of the ‘white bicycle plan’ they proposed a free system of bicycles owned by the community. Although practicalities of these ideas turned out to be complex, the Provo movement played a role in a shifting discourse around transportation and sustainability. The Fietsersbond (bicycle union) took a more concrete stance in promoting bicycling, their foundation in 1975 marked a new era of rising bicycle use. Before I will elaborate on this period, a synthesis of the four most important structural consequences of the three postwar decades:

1.) Unlike cities like New York, London or Rotterdam, Amsterdam never developed an extensive and well-functioning public transit network. Consequently bicycling is in many instances competitive or even quicker than this mode of transportation.

46 However, in the Second World War the Germans installed a law which have cars priority on crossings, this law was only converted as of the beginning of the 00s (De la Bruhéze en Veraart 1999).
47 It should be noted that the city did have any attempt to completely retrofit the urban structure for large scale car and transit networks. The ‘existing street grid did not lend itself for mass transportation by car’ (De la Bruhéze en Veraart 1999: 67).
48 At the moment the city is involved in another large scale project called the North-South subway line. No buildings are demolished, but the project has turned out to be extremely complex and expensive.
49 For excellent work on the Provo movement see Mamadouh (1992), for the relation of the Provos with bicycling see Furness (2010).
2.) The majority of the inner city and the adjacent 19th century remained intact after the Second World War. This has resulted in a dense, well-connected and multifunctional environment which is well-suited for bicycling.

3.) Related to this argument, Amsterdam lacks extensive traffic corridors in the city centre. This both makes the city safer and more attractive for bicycling and has a negative influence on the role of the car as a competing modality for bicycling.

4.) From the 1970s onwards city government took the stance\textsuperscript{50} that large scale, modernistic developments\textsuperscript{51} and mass car use were not suited for Amsterdam.

6.2.3 1975-now: Toward a bike capital

In 1975 the Fietsersbond\textsuperscript{52} was founded to give the bike a more prominent role in policy making and the transportation system. Until then the bicycle was not treated negatively by government interventions, but an omission existed regarding specific solutions tailored to bicycles. The demands of the Fietsersbond found a fertile soil in the changing political and institutional constellation. The oil crises in the 1970s had made the Netherlands aware that other modes of transportation than cars should be taken into account. From this period onwards, specific bicycle policies were developed. The number of bicycle kilometers in the Netherlands increased with 35% between 1976 and 1983 (De la Bruhéze en Veraart 1999: 56-57). It could be argued that this revival of bicycling can be explained because it had become part of the Dutch ‘national habitus’ (Kuipers 2010). Bicycling became institutionalized in governmental bodies and regulation, materialized in bike lanes and parking structures, but also a process of normalization occurred. Bicycling became an important part of Dutch people. Thus the word habitus which refers in the case of bicycling to:

\((...)\) learned practices, habits, feelings, and standards which have become part of ourselves to such an important extent that they feel self-evident and natural. Habitus is our socially and culturally determined ‘second nature’. What becomes part of us, as a member of a society with a certain position becomes engrained in our body and becomes our self\textsuperscript{53}. (Kuipers 2010, translation mine- emphasis by author)

This is an important insight for the section 6.4 and 6.5 which reveal the practices and experiences of individuals. Following this line of reasoning, statements about bicycling like it being ‘normal’, ‘rational’ or ‘logical’ should be taken with care. Normality is not a neutral concept, but an outcome of historical processes. Moreover, attitudes and resulting behavior about bicycling have become part of the self. A national habitus is an ‘internalized structuring impetus which more or less strongly influences social practices’ (De Cillia et al. 1999: 156).

The economic structure also begun to change from a Fordist economy based on mass production to a Post-Fordist economy in which flexibility and services plays a central role (see e.g. Bell 1975, Sassen 1991, Scott 1998). Amsterdam was well suited for this development; the inner city provided the right spaces for small, flexible companies (Terhorst and Van de Ven 2003) and the heritage of Amsterdam as a trade city and financial center related well to this new type of economy (Bontje et al. forthcoming). From 1984 onwards the population of Amsterdam started to rise again. In the 1990s neighborhoods in the 19th century

\textsuperscript{50} As De la Bruhéze en Veraart (1999) this idea was already earlier apparent, since the 1970s it was also firmly instutionalized.
\textsuperscript{51} A notable exception is the North-South subway line.
\textsuperscript{52} This name was only made official in 2000.
\textsuperscript{53} (...)duidt op aangeleerde praktijken, gebruiken, gevoelens, en standaarden die zo zeer deel van ons zelf zijn geworden dat ze vanzelfsprekend en natuurlijk voelen. Habitus is onze cultureel en sociaal bepaalde “ tweede natuur”. Wat we ons eigen maken als lid van een samenleving, met een bepaalde sociale positie, raakt ingesleten in ons lichaam, en wordt ons zelf.
ring, such as de Pijp and Oud-West gentrified; the city became richer and more highly educated (e.g. Wagenaar 2003). Bicycle modal split rose from 21% to 29% between 1990 and 2008 (diVV 2009). However, this increase was not dispersed equally. The growth came from the city centre and adjacent boroughs, whereas bicycle use in outer areas even stagnated or declined, see Figure 5.3. Unfortunately, no data about the change in bicycle infrastructure in the last three decades are available. It is clear, however, that the number of separated cycle tracks rose dramatically. On the many narrow streets in the city centre, bikes and cars share the road. In designing roads the city plans for three types of traffic users: motorists, bicyclists and pedestrians. Another important development is the constant rise in parking prices, which has made Amsterdam one of the most expensive cities in the world to park a car. As a result car use is discouraged as a substitute for bicycles and car traffic is low compared to other metropolises, which positively influences the environment for bicyclists.

Figure 5.3 Change in bicycle modal split by city borough between 1990 and 2008.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New-West</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southeast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amsterdam Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: diVV (2009)

In sum, the development of Amsterdam’s bicycle use is to a large extent similar to changes in the Netherlands. After extremely high bike use before the Second World War and a descent in the postwar decades, bicycling begun to rise steadily from 1975 onwards. Both on the local and national level specific bicycle policies were developed. The strict spatial planning regime in the Netherlands functioned as a buffer against sprawl and in the 1970s the first critical remarks were made with regards to unlimited car use. However, Amsterdam’s path also has particular characteristics. Regarding the built environment: the city never developed an extensive transit network, the historic core remained intact providing a dense and well-connected environment. Crucial were the late 1960s and early 1970s when civil protest prevented large scale restructuring and consequently providing a necessary spatial condition for the bike as mass transportation. Moreover, the city has become one of the most prosperous economic areas of the Netherlands, leading to gentrification of most of the inner neighborhoods. Moreover, highly educated immigrants evaluate the bicycle as a positive asset of Amsterdam (Pethe et al. 2009). As also exemplified by the Meerjarenplan Fiets the city is more and more paying attention to marketing aspects of bicycling; an approach which has relevance for both the internal and external attitudes about bicycling in Amsterdam. The latter refers to the aggressive attempts of Copenhagen to replace Amsterdam as the ‘bicycle capital’ of the world. More and more the city is starting to
realize that high rates of bicycle use are not only a component the transportation system, but also an asset to attract tourists, academics and creative knowledge workers.

6.3 The Republic of Amsterdam or a Dutch habit?
Although the inner parts of Amsterdam have a particularly high rate of bike use and bicycling is somewhat more chaotic than in the rest of the Netherlands (more details in section 6.4 and 6.5), the city is not deviant from the rest of the Netherlands. Or as Jan Nijman (1999: 151) puts is:

Dutch culture in general and the urban culture of Amsterdam are so closely intertwined. The general characteristics of Dutch culture are often especially salient in Amsterdam and sometimes, indeed, ‘made’ in Amsterdam.

As in the rest of Holland bicycling is seen as a normal and logical means of transportation. Nonetheless, three important differences with the national context stand out. Firstly, Amsterdam has a particularly high rate of non-Western immigrants, which have a tendency to bicycle less. Secondly, large parts of the city are dense and have a multiplicity of functions. Finally, the city has two large universities (University of Amsterdam and Free University) and several applied science institutes which results in a significant student population of over 100,000 and a particularly creative and knowledge intensive economy and workforce (Deben and Bontje 2005, Bontje et al. forthcoming). Nonetheless, a highly dense urban environment and a young and highly educated population is not a sufficient condition for a bike culture (just look at New York), nor is a high non-Western immigrant population necessarily a barrier to bicycling (for instance the significant amount of Latino bicyclists in Los Angeles). To understand bicycling in Amsterdam, it is necessary to get beyond approaches rooted in cultural essentialism (‘bicycling is an intrinsic part of the Dutch national psyche’) or physical determinism (‘people bike in the Netherlands because the country is so flat’). As I have tried to show in the previous section, the development of bicycle culture in the Netherlands can be explained be a set of latent structures which were activated, changes in culture, the built environment and the economy and contingent events. A more detailed account on how this relates to insights from CR and path dependence is given in the next two chapters. First I will now describe the behavior and experiences of bicyclists from a firsthand perspective.

6.4 Bicycle Behavior
Bicycling in Amsterdam is something which is done by a lot of people and is perceived as a ‘normal’ thing to do. This discourse and the particular physical environment lead to a mode choice and a type of bicycling behavior. I will now go into more detail of bicycle behavior and describe the –narratives of- behavior by individuals.

A first remarkable observation is that a lacuna exists between the way in which traffic laws exist on paper and how they are interpreted on a day-to-day basis. The most compelling example is traffic lights which are interpreted ambiguously and not completely according to the intended function. Some people feel stopping for a red light is a necessity, whereas it breaks the flow for others:

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)

---

54 A case in point is the national organization Fietsberaad which is devoting time and money to sell the Dutch bike culture abroad.

55 Not all of these students live in Amsterdam, especially students following an applied science education tend to be younger and still live with their parents outside 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)

Most bicyclists are well aware of the fact that they have to stop for red lights, but deliberately decide to run them. On most quiet intersections this can be done relatively safely (Although this should not be read as an advice to run red lights!). The dense and well-connected city grid leads to a high number of intersections. Stopping for every traffic light takes time and breaks the momentum, and is, consequently, not seen as an always necessary thing to do. This could be related to the highly paced city life, but also to the Dutch trait of ‘culture of allowance’ (gedoogcultuur). As with soft drugs and prostitution, regulations are not necessarily strictly enforced nor obeyed. Pragmatism is the driving force of many decisions in social settings.

In the process of route decision making directness is the critical factor. Apart for a couple of notorious streets and intersections, most roads in Amsterdam either have separated cycle tracks or lack flows of rapidly moving cars. Consequently, most cyclists take the fastest route, rather than focus on scenery or the safest option. Because of the large number of cyclists, 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. As one of the respondents replied on a question about route choice

I don’t like the Museum square, because you have to wait so long for the traffic lights, but furthermore no, I don’t avoid certain streets. So it is really about speed and directness? Yes, absolutely! (Johanna, student)

Some cyclists take the Vondelpark (a park in the city centre of Amsterdam) because of the convenient ride, but only if it happens to be not too much of a detour. However, several interviewees pointed out that arguments like scenery and a pleasant ride were more important in leisure trips than utilitarian trips. John Urry’s (2003) plead to overcome the distinction between utilitarian and recreational transportation is contradicted by these statements, since a different experience and behavior is attached to these categories.

Pivotal to explain bicycle behavior in Amsterdam is the role of other, competing modes. This dimension is relevant for two reasons: other modalities function as competitors or substitutes for bicycles and other modes are fellow users of the city streets and influence the bike ride. Regarding the first argument, parking and the relatively slow public transit network stand out. On street parking rates are with around five Euros per hour in the city centre among the highest in the world and there is a long waiting list for parking permits for dwellers. This is less so in outer neighborhoods, accordingly car use is higher here (see also Table 5.2)\(^{56}\). Besides the issues with parking, it is difficult to navigate through the inner city of Amsterdam with its small, 17\(^{th}\) century streets by car:

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)

The public transit system also is suboptimal; there is only one subway line in the city centre while an additional line is being build. The tram and bus system mostly has to share the road with cars or at least have breaks at one of the ubiquitous intersections. Consequently, bicycles in the city center are not only a cheaper and more convenient option, they are often also quicker. Or to use the terminology of transportation researchers: the generalized costs of bicycling are low compared to other modes. Associated with this constellation is a streetscape where the car and public transit do not dominate (see also Photo 6.1 and 6.2). On the contrary, it could even be argued that bicyclists are the rulers of Amsterdam’s streets; cars

\(^{56}\) It should be noted that bike parking started to become a push factor in the choice of a modality, a notorious example is the Central Station which some bicyclists avoid because of the parking issues.
are a marginalized means of transportation. Cyclists are the dominant and sometimes behave rather in an anarchist way: ‘I think motorists are having a hard time in Amsterdam to react to all the “irregularities” of cyclists.’ (Elly, retired)

In the Netherlands bicycling is considered a ‘normal’, ‘logical’ and ‘rational’ thing to do. In Amsterdam in particular, these kinds of evaluations have solid ground in the built environment which makes the bicycle an attractive option. Nonetheless, bicycling in Amsterdam cannot solely be explained by rational choice theory. Riding a bicycle is commonsensical, part of the aforementioned ‘national habitus’; bicycling has become the norm in the Netherlands (cf. Elster 1989). As a result, it becomes a very complex task to disentangle rationality from habit. I would argue both dimensions have to be taken into account: a historic perspective which emphasizes that bicycling has become part of the norms and socio-cultural constellation and a rational choice approach which sees bicycle use as an outcome of a decision process in which a set of options are weighed.

Photo 6.1 Casual bike riding in the city centre and the ‘bicycle flat’ near the Central Station, Amsterdam.

57 A similar argument, albeit in a different vein, was made by council member Robert Flos of the right wing VVD in a recent interview (Van Loon and Pelzer, forthcoming).

58 These two dimensions are similar to cultural and historical approaches on bicycling on the one hand and approaches in transport geography on the other.
6.5 Bicycle Experiences

Notions of neutrality and normality of bicycling can also be found in the experiences people in Amsterdam attach to bicycling. It should be noted that this notion of the bike as a ‘normal’ vehicle is not shared by all Amsterdammers. The biggest immigrant groups in Amsterdam, Moroccans, Turks and Surinamese, do not perceive the bicycle in the same manner as native Dutch. Moreover and as already pointed out earlier, there seems to be a difference between utilitarian and recreational bicycling in terms of how the bike ride is perceived. Moreover, in several cases not the bike ride itself was central in the mind of people, but the bike ride was rather used to take a step back and think of other things:

I’m thinking about papers I have to write, problems I have. (...) I am aware of traffic, but in a more subliminal way. (Johanna, student)

My daily bike commute is really a way to structure my thoughts. (...) I tend to think of a case I’m working on. (Jorge, lawyer)

The possibility to abstract from experiences directly related to traffic is to a certain extent an outcome of the socially constructed position of bicycling in the Netherlands; not an exciting activity, but a routine pattern. On the other hand, contrary to what some exaggerated journalistic accounts want us to believe, Amsterdam intrinsically is a safe city to cycle. Speeds of both cars and bikes are low, which eases the reaction on movements of other traffic users. Situations are easily manageable and cars are not seen as a threat, but just another part of the transportation system. A statement by a bicyclist from a Surinamese background nicely reflects both the cultural and material dimension to cycling:

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

Cyclists dreaming away while riding being a common thing does not mean that bicycling in Amsterdam is boring or predictable. Bicycling in Amsterdam sometimes feels like anarchy – an important difference with rural parts of the Netherlands. A constellation which has positive consequences according to Ed Soja (2007 [1990]), who calls it ‘the stimulus of a little confusion’. An interviewee has a similar observation:

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. (Elly, retired)

Following this statement, agency is an important aspect of the decisions that are taking in the chaos of bikes, cars, trams and pedestrians. This is not to argue that traffic in Amsterdam is completely unstructured. Like Portland’s bike coordinator Roger Geller observed when he visited the city:

Look how close everybody comes and nobody seems to mind. (...) It’s a complicated dance and everyone knows the steps. (Mapes, 2009: 61).

As puzzled Italian and Spanish tourists on rental bikes reveal, these ‘steps’ are not self-evident or easy to learn. How to use and interpret the physical and social environment are an outcome of socialization processes and a set of assumptions about the behavior of the other participants in traffic.

6.6 Conclusion

The world’s bike capital cannot be understood without paying attention to the world’s leading bike country. Amsterdam’s bike culture is to some extent nested in the national context, but is also deviant and particular. I started this chapter by pointing at the internal differentiation regarding bicycle use, both from a neighborhood and cultural background perspective. The city does not have a homogenous bicycle culture,

A recent article in the University of Amsterdam magazine Folia (Van Kooij 2010) is a case in point, rather than comparing the actual safety of Amsterdam to other contexts, the author took a couple of tragic events and the fact that the divVV is trying to improve safety as indications of the risk of riding a bike in Amsterdam.
but is an amalgam of bicycle cultures. This study is clearly biased towards the inner city and highly educated cyclists. Notwithstanding this non-representativeness, I would argue this chapter has revealed some important insights about bicycling in Amsterdam.

The absolute starting condition of Dutch bicycle culture is the country’s flatness, which -literally- paved the way for the mass bicycle use in the interbellum (period between WW1 and WW2). Because of the centralized planning system, large scale urban sprawl leading to an endless suburbia never took place. Moreover, the Netherlands relatively early started to question the uncontested role of the automobile as a means of transportation. In conjunction with the egalitarian class structure, this has made bicycling part of the Dutch national habitus. Amsterdam’s bike history starts in the 17th century when the city was a prosperous metropolis and much of the current city centre was built on a pedestrian scale. The inner city largely survived the wave of modernization and never got a transit or highway system permeating the city. Another important development was the installation of bike lanes and facilities from the 1970s onwards. A decade later the city started to grow and change towards a more knowledge intensive and service orientated type of economy. This cannot be seen separately from the revival of bicycle use which set in from this period onwards.

On the one hand, the causal explanation of Amsterdam’s bicycle culture is historical and related to national processes. On the other hand it also important to look at the causal power of the current institutional and physical structure. The reason that people bike, even newcomers to the city, can be explained by density, ubiquity of bike paths, lack of suitable other means of transportation and the extremely high parking rates. To a certain extent it is rational to bike in Amsterdam; it is simply the modality most tailored to the environment. Bicycle behavior and experiences relate both to this notion of a logical choice and the historically grown position of bicycling in the Netherlands.

The most pronounced expression of the latter is the perception of bicycling as a ‘normal’ thing to do. On the one hand there is a relation with the built environment which makes bicycling a rational and logical decision. These concepts are related to a notion of ‘normal’ in both experiences and behavior. Feelings of adrenaline, anxiety or enjoyment do not come so much to the fore in an activity as mundane as shopping or doing the dishes. To be able to experience this sense of normality, people have to be ‘programmed’ by historical events and socialization processes. Interestingly, the software (to say in the metaphor) is open source rather than fixed. Both practices and feelings about bicycling can be described as chaotic. The anarchy is exemplified by traffic rules not being obeyed and the unpredictable moves in traffic situations. The most compelling example is the ‘covert regulation’ regarding traffic lights, which are by a substantial part (the exact number would require a study in itself) of the population perceived as a way to decrease speed and look for traffic rather than an actual reason to stop. A less extreme case is the route choice, where directness is pivotal rather than steered by the availability of bike paths (cf. Dill and Gliebe 2008). On the one hand this is an outcome of a physical environment with a widespread bicycle infrastructure. It is also a reflection of the commonsensical mentality related to bicycling. If and where you bicycle is not a deliberate consideration, but something you just do. Amsterdam deviates from the Netherlands in the chaos and anarchy that characterize cycling. Remarkably, this does not lead to a fundamentally different outlook on the mode of transport. Rather than to thrills or excitement, Amsterdam’s bike anarchy leads to contemplation about things in another place and time.

Although I will save more robust confrontations with theoretical insights for the next chapter, now a brief synthesis of the relations between the empirical findings and the core concepts of path dependence and a CR position. From a bicycle perspective the prosperity of Amsterdam in the 17th century was a crucial
contingent event\textsuperscript{60} which set in motion a set of sequences leading to the current situation of a city grid suited for bicycling (i.e. possessing causal power). The protests in the 1960s and 1970s were other important events to remain the historic core. Other changes show a more predictable causal pattern; once the historic core was ‘there to stay’ it became an understandable choice to invest in bicycle infrastructure and increase parking rates. Besides the density it is important to note other structures which have causal powers which got activated in Amsterdam historical bicycle path: the flat geography of both the city and the country, the egalitarian class structure, the highly educated social composition and the centralized planning system of the Netherlands. Moreover, Andrew Sayer’s (2000: 96) insight that reasons can also be causes is particularly relevant here. Amsterdam’s bike culture can on the one hand be understood as a set of both contingent and causally related historic processes. On the other hand, the aggregate way in which bicyclists behave and experience is also defined by causes which are not necessarily temporally separated from their consequences.

\textsuperscript{60}This is not to argue that the ‘Golden Age’ was entirely contingent in itself, but for the study of bicycle culture it is an external event.
7. Comparing Portland and Amsterdam

If you don’t have the density, you’re just not gonna have it. (...) I think most people know it (Portland) will never be like Amsterdam or Copenhagen. (Jonathan Maus, BikePortland.org)

In this chapter, I will compare Amsterdam and Portland. The format will be relatively close to the format used in the theoretical framework (Chapter 3). The core aim is to find the most important differences and similarities in bicycle culture in the two cities. To put the cases in context I will start with comparative statistics. Subsequently, I will dig into the historical pathways, bicycle use and experience and the physical, institutional and socio-cultural environment. I will end with an overview of the most important causal mechanisms which are at work in both cities.

7.1 Comparative statistics

In table 7.1 a set of available relevant statistics with regard to bicycle use in both cities is depicted. However, since the way in which the data is gained in both cities differs, they should be taken as indicative. Regardless of the problematic comparability of data, some relevant differences in bicycle use and explanatory factors in both cities stand out. Amsterdam a modal split about four times higher than Portland. Moreover, while in some Portland neighborhoods the bike is almost absent, even the lowest scoring neighborhood in Amsterdam has a bike mode split of 14%. While the population size and educational attainment are relatively comparable, density reveals an important difference. In Amsterdam, on average three times as many people live on a square kilometer than in Portland. Not surprisingly this has important repercussions for the mode choice in both cities, as density is considered an important determinant of travel behavior. These numbers do not reveal much in their own; therefore I will now dig more deeply into the historical and qualitative aspects of bicycle culture in both cities.

Table 7.1 : Comparative Statistics on Amsterdam and Portland

<table>
<thead>
<tr>
<th></th>
<th>Portland</th>
<th>Amsterdam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle Modal Split</td>
<td>7%</td>
<td>29%</td>
</tr>
<tr>
<td>Neighborhood with highest Bicycle Modal Split</td>
<td>14% (Inner Northeast)</td>
<td>43% (City Centre)</td>
</tr>
<tr>
<td>Neighborhood with lowest Bicycle Modal Split</td>
<td>1% (East)</td>
<td>14% (Southeast)</td>
</tr>
<tr>
<td>City population</td>
<td>582,130</td>
<td>767,849</td>
</tr>
<tr>
<td>Population density (people/sq kilometer land)</td>
<td>1655</td>
<td>4580</td>
</tr>
<tr>
<td>Educational attainment &gt;Bachelor</td>
<td>42.8%</td>
<td>39.0%</td>
</tr>
</tbody>
</table>


7.2 Differences and similarities in historical pathways

It should be noted that mode split in Portland refers to primary means of transportation to work, whereas in Amsterdam it reflects all trips. It is hard to tell in which direction this skews the comparison, because in Portland a significant number of recreational and other non-commute trips are both by bike and car.

At least a college degree in the US and at least an Applied Science Bachelor (HBO) in the Netherlands.
As for any historical process, (latent) structures are an important explanatory factor. Just look at the important role of mountain ranges in shaping countries and cultural regions. I will save an extensive account on the comparison of structures to the next section and will focus here on development paths, critical events in the history of cities and the way structures are shaped. The section will have a thematic order, in which historical sequences are continuously juxtaposed. The aim is to understand to current constellation historically; the question is what developments are at the root of bicycle culture in both cities and to what extent is this outcome of contingency or structural factors.

7.2.1 The Building Blocks

An important difference between the two cities is their starting point in history and the related technology belonging to that era. Amsterdam was founded around the late 12th century (Mak 2005) and had its first boom in the 17th century. In this era, ships, horse-powered vehicles and travel by foot were the means to get around and transport goods. The famous canal belt, for instance, was (besides its aesthetic and residential function) designed to provide access by ship to warehouses directly adjacent to the water. Since the majority of the population only had their own feet for transportation, travel distances had to be short. Moreover, the famous General Extension plan for Amsterdam (Algemeen Uitbreidingsplan voor Amsterdam) from 1934, which guided much of the postwar developments, emphasized the importance of a relatively dense city (Van der Cammen and De Klerk 2003). In Portland the first settlements were built almost 700 years later, when industrialization had already taken off. Part of the city was designed on a streetcar grid, but much of the city (especially the more suburban areas) were designed with the car in mind. Consequently, I would argue that Amsterdam has a historically shaped comparative advantage with regards to spatial form. Partly as a consequence of this difference in material configuration, bicycle use in the interbellum era was extremely high in Amsterdam. A status it never attained in Portland. Moreover, in the decades after the Second World War both cities had a planning regime which restricted unlimited suburban sprawl.64 Whereby it should be noted that Dutch policy of ‘concentrated deconcentration’ was not necessarily beneficial for bicycle commuting, since distance between home and work in some instances increased.

This observation fits well into a path dependence framework, in which it is both important what happens and when it happens (Mahoney 2000). The first settlement and boom period (which are from a bicycle perspective contingent events) happened in timeframes with a different discourse and technological possibilities regarding mobility. Since the physical environment is hard to change cities become locked in to the mode(s) the city was designed for. This does not imply that this particular mode will remain necessarily dominant; it does mean that future modes are using a city that was designed with another means of transportation in mind. As the waves of car-orientated modernization in the post-war period have shown, a powerful regime has the potential to implement a particular mode of transportation. In other words, the creation of a new path and the avoidance of a lock in situation.66 Although far from an easy task, changing or adapting a transportation system is often far more feasible than a shift in land use. While attempts to make cities denser are gaining popularity, they are not easy to implement. To make an urban environment less dense is an even a more rare67 phenomenon. For instance, the car-driven

---

63 The plan had a modernistic vision on the city, which was not necessarily positive about bicycling. By ensuring a relatively dense extension within the city boundaries, Amsterdam remained a relatively compact city.
64 A time lag should be noted; Amsterdam already had its extension plan in 1934, whereas the Urban Growth Boundary was only installed in the late 1970s.
65 Although the conversion of Harbor Drive in Portland is an interesting counter example.
66 An excellent example is the way in which Robert Moses created highways in New York (see Flint 2009).
67 Shrinking cities in Eastern Germany are case in point, however.
suburbanization after the Second World War created a dispersed spatial pattern, but did not reconfigure inner city neighborhoods. Although many inner cities deteriorated in this period (as did Amsterdam and Portland) and restructuring was not uncommon, the city grid remained largely intact.

Regarding the transportation system, Amsterdam and Portland have histories that show similarities and differences. To focus on the variation, starting in the 1940s Portland got a highway system and arterials permeating much of the city. Particularly the city centre of Amsterdam never became really suited for car use, attempts to build arterials and a high way system failed due to civic resistance. Moreover, an extensive subway system was never established. An important factor was the cultural-historic value of the city centre, which was not only appreciated by activists, but also by parts of the traditional elite. Portland lacked such a heritage to refer back to. However, as in Amsterdam, a discourse around a sustainable and livable city was settled in the 1970s. Unlike the Dutch case, the movement was not so much about conservation, but rather about change of the existing built environment. I would argue this is one of the reasons why Amsterdam has become had a more effective shift towards a bike friendly city; in general it is easier to conserve an existing material constellation than to radically change it. Besides conservation being cheaper and delay is often a fruitful strategy, the sustainable city movement in Amsterdam could also build coalitions with neighborhood councils and cultural institutions (Pruit 2004). The conversion of Harbor Drive was an important symbolic act and created well-functioning public space along the Willamette river. Nonetheless, Portland still is a city designed for and dominated by cars. Next to the struggle over the physical outlook of the city, the 70s marked the start of a new era in which a new cultural constellation would be shaped.

Whereas the rise in car use and suburbanization after the Second World War are ‘relatively deterministic causal patterns’ (Mahoney 2000: 511), I would argue the resistance against unconditioned modernization are contingent events. In Amsterdam, the struggle over arterials through the city center was far from decided on forehand. Although it should be noted that the unique historic core gave the activists and conservationists a good starting point. Contingency plays out more strongly in Portland, which – although it had some unique characteristics- was not very different from other American cities. I would argue that the developments of Portland in the 1970s were to an important extent shaped by the agency of its leaders. Both Mayor Goldschmidt and Governor McCall had strong opinions about a livable city. To some extent this was a ‘reactive sequence’ (Mahoney 2000: 509) to the deteriorated situation the city was in. However, several other American cities faced the same situation and did not radically regained public space.

7.2.2 1970 onwards: Towards Post-Fordism

The change in the structure of the economy affected both cities fundamentally. Mass production of homogenous, concrete goods was replaced by a more flexibly organized type of economy with an emphasis on ideas, services and specialized goods. With the renewed appreciation of proximity of working and living, this shift was at the root of the revitalization of cities (e.g. Bell 1975, Florida 2002, Scott 1998). Moreover, the growing international trade and transfer resulted in the rise of financial and trade networks with

68 It should be noted that these developments in Amsterdam started around five years (around 1965) earlier than in Portland (early 1970s).
69 For instance, Amsterdam’s powerful alderman in the 1960s and later prime minister, Joop den Uyl, was very much in favour of demolition of the 19th century belt and the instalment of traffic radials (Bleich 2008).
70 In this regard, I think it is appropriate to equate agency and contingency.
71 A methodological problem in comparing agency in Amsterdam and Portland is that American historical accounts tend to emphasize personal qualities such as leadership more strongly, while Dutch accounts tend be focus more strongly on structural variables.
72 If the Medieval Hanseatic league is not taken into account.
certain cities function as nodes (Sassen 1991). The rising prosperity of cities is, among other things, reflected by processes of gentrification. This describes the transition of formerly decayed neighborhoods into popular and expensive areas through a combination of market forces (Smith 1986) and the influx of artists with low economic, but high cultural capital (Ley 2003). In both Portland and Amsterdam this process really took off in the 90s, which is reflected by increasing educational levels, housing prices and the quality of the dwellings. Concomitantly, the iconic mode of the modernistic era, the car, also lost its status and practical use. While Amsterdam had already started to develop its bike network in 1975, Portland started this process in the 1990s. Based on literature review and interviews, I would argue that the development of a bike network in Portland was to an important extent dependent upon a contingent event. The personal convictions, passion and actions of Mia Birk and Earl Blumenauer were critical for the development of a bike network. As in the 1970s, agency in critical institutional positions was an important determinant of a change in the physical environment. I would argue that this development is contingent, because the city would have taken another historical path with different people in the transportation department. Amsterdam was less dependent upon individual decisions. From the mid 1970s onwards there was a widespread consensus that bikes needed to have a place in the transportation network. The Amsterdam based Fietsersbond was an important player to give the bicycle a voice in transportation, but they represented concerns more widely felt in the city. Put differently, the organization filled a vacuum with regards to transportation policy.

7.2.3 Understanding Historical Layers and Processes

Both cities had a phase in which an determining part of the physical environment was built, in Amsterdam this was the Golden Age in the 17th century from which much of the city centre stertns, whereas in Portland (although less pronounced) the street car grid from the early 20th century is crucial. Although mitigated by a set of changes in the built environment, in these areas the building blocks for the physical aspect of the current bicycle culture were laid out. The late 1960s and the 1970s were important era’s because they restricted (Amsterdam) or reconfigured (Portland) modernistic spatial planning attempts.

Besides these important historical incidents and layers, the bicycle history of both cities tapped into macro social change, most notably the process of modernization (and the reaction to it) which already had set in before the Second World War and the subsequent changing structure of the economy which resulted in the revival of cities. An important difference in terms of the history of bicycling in both cities is the mass use of bicycles in the Netherlands, and thus Amsterdam, in the interbellum. Although this position was rapidly lost after the Second World War, bicycles never completely disappeared; they were rather a latent structure. When bicycle use started to rise in the 1980s and 1990s Portland had to develop a bike culture, whereas Amsterdam could to some extent build on its historical cultural layers. In sum, the evolvement of the bicycle culture in both cities is shaped by contingency and structural processes. Two types of contingency can be distinguished: as external and as agency. The first is closely related to CR’s approach of

---

73 I am aware of the crude generalization with regards the shift to Post-Fordism. For a more nuanced account, it is recommendable to refer to the authors mentioned in the citations.

74 This is not the place to elaborate on this particular phenomenon. For an excellent account see Lees et al. (2010).

75 Again the methodological issue regarding the emphasis on leadership in American culture applies.

76 Of course there was debate about what type of and were facilities needed to be build, there was no discussion, however, about the importance of the bicycle as a means of transportation.

77 I am not defaming the work of the Fietsersbond in Amsterdam here; the fact that there was a need for an organization like this says nothing about their activities and ideas, the merits on which the organization should be judged.

78 Whereby it should be noted that much of the modernistic plans did succeed, such as the highway system designed by Robert Moses’ team.
contingency (Sayer 1992, 2000), which emphasizes the importance of external conditions which set causal powers in motion. Relevant instances include Amsterdam’s 17th century spatial form and Portland’s streetcar orientated city grid. From this perspective the shift to Post-Fordism and the related revitalization of inner cities starting in the 1980s could also be seen as a contingent event. The second and more conventional notion of contingency refers to unpredicted and coincidental event. To some extent this is related to agency, since individuals in important positions have the influence to change the course of history against the grain. The developments in the late 1960s and 1970s which restricted and converted modernization processes only fulfill these criteria to a certain extent. Although the leaders and movements in both cities played a unique role and went against dominant modernistic ideas, they also had support of much of the population. The development of Portland’s bike network in the 1990s is a better example. The population was not particularly in favor of bike lanes or was the city staff at the bureau of transportation. Agency of a selected number of people in key positions made the difference. I think it is safe to say that Portland wouldn’t have been the bike capital it is now if it would have had people with a more modest stance towards bicycling in government and activism at the time.

In sum, I would argue that Portland’s bicycle culture is to a more important extent contingently shaped than its counterpart in Amsterdam, especially because for the latter bicycling was a revival rather than a revolution. The Netherlands was the world’s cycle nation in the 1920s which can be explained by a set of explanatory factors: class structure, geography and density. Before I will elaborate on these kind of structures, first an overview of the most important similarities in bicycle behavior and experiences.

7.3 Comparing Behavior and Experiences
Throughout the empirical chapters I have emphasized why people bicycle, how they do this and what they experience during the ride. In the interviews several themes were frequently mentioned regarding bicycle use and bicycle experience. These inductive findings (see also Corbin and Strauss 1990) were combined with already known insights about behavior and experiences related to bicycling (see Chapter 3). The result is a set of sub-categories which I will present now, and elaborate on through the empirical findings in both cases. Mode choice I will not treat bicycle mode choice (in the conceptualization part of bicycle use) separately, since this is a intertwined with bicycle behavior (without mode choice there is no behavior). It is rather treated as an intermediate step towards bicycle behavior.

7.3.1 Bicycle Behavior
I would argue four dimensions comprise bicycle behavior: (1) Type or Purpose of the Trip, (2) Interaction with Traffic Regulation, (3) Interaction with other Traffic Users, (4) and the Route Choice (4).

Type or Purpose of the Trip
Type or purpose is about where people bike and with what reason they do so. To some extent this category is related to bicycle mode choice; a decision bike somewhere is not only a choice for a type of trip, but also a preference of the bicycle above other modes of transportation. The most well-known differentiation regarding type of cycle trips is between recreational and utilitarian. I would argue this difference is pronounced more strongly in Amsterdam than in Portland. Most interviewees pointed out that they just rode their bike for utilitarian purposes. The people that did ride their bike recreationally often did this on

79 It should be noted that these events and developments are not necessarily intrinsically contingent, but have no necessary relation to bicycling.
another type of bicycle, such as a road bike, often rode in the weekend and went North (e.g. Waterland) or South (e.g. Along the Amstel river) of the city. Although similar patterns can be observed in Portland, the demarcation is less pronounced. Although there are no data on this topic, based on both user and expert interviews I think people that ride their bike utilitarian also do this recreationally (such as on the famous Springwater Corridor). In general, the act of utilitarian bicycling resembles recreational bicycling more closely. While in Amsterdam all you have to do is jump on your battered bike and paddle to your destination, cycling in Portland involves more preparation. Most bicyclists wear bike clothing, gloves and a helmet, and ride on a road bike or other type of bicycle with thin tires. Speeds are high, as are distances to cover. From this perspective, being on a race to work is not very different from a trip in the weekend. Obviously, this also results in different experiences to which I will turn in the next section.

Interaction with Traffic Regulation

In principle, traffic regulation (based on traffic laws) has a clear function. Traffic lights, STOP signs and 'Shark Teeth' require a traffic participant to stop or yield. However, daily practices in both cases reveal a different picture. Traffic regulation is not neglected, but often interpreted differently.

In Portland, STOP-signs often just lead to a decrease in speed rather than a full stop. Running a red light is generally not socially accepted. In Amsterdam it is more accepted to run a red light; although it should be noted that younger people are more likely to do so. This behavior should be seen in the chaotic situation of traffic in, especially the inner parts of, the city. Moreover, the ubiquity of bikes makes motorists more aware (even when they have a green light) and bicyclists feel more dauntless. This could also be related to the fact that the city has a relatively low proportion of older people and parents, who are often more careful riders. Although the bike population in Portland is even more skewed towards younger people, the physical environment is a stronger determinant here. In quiet, residential areas it is often considered quite useless to come to a full stop. As most bicyclists know, continuously breaking and accelerating is a very annoying act. However, running a red light is tricky and requires a degree of fearlessness.

Interaction with other Traffic Users

Fine-grained mechanisms are at work which steer behavior of bicyclists vis-à-vis other road users. Significant differences exist between Portland and Amsterdam. In Portland, interaction with motorists often is problematic and leads to anxiety. A notorious example is a right turn when a bicycle lane continues straight. But also sharing the road in the absence of striped bike lanes can be problematic. To put it very succinctly, the interaction between bicyclists and motorists has not matured yet. Bicyclists address other bicyclists almost as team members rather than fellow road users. Interactions are without exception positive and include head shakes when passing by, thumbs up, or help in case of mechanical problems. Because bicyclists do not dominate the streetscape, traffic interactions are rare. Amsterdam’s situation is different. Bicyclists continuously pass and cross each other, a process which works pretty smoothly. Although he probably had never ridden a bicycle, the sociologist Erving Goffman captures the essence well:

City streets, even in times which defame them, provide a setting where mutual trust is routinely displayed among strangers. Voluntary coordination of action is achieved in which each of the two parties has a conception of how matters ought to be handled between them, the two conceptions agree, each party believes that this agreement exists and each appreciates that this knowledge about the agreement is possessed by the other. In brief, structural prerequisites for rule by convention are found. Avoidance of collision is one example of the consequences. (Goffman in Kasinitz 2003: 274)

80 When the triangle (‘teeth’) is pointed at a traffic participation at an intersection he or she has to yield.

81 The busy Hawthorne bridge is a notable exception and worth a study in itself.
Although interaction with cars generally is more problematic, dangerous situations are relatively rare\(^2\). Cars are a subordinate mode in Amsterdam’s traffic system, a position the bike has in Portland.

**Route Choice**

Finally, the bike route choice is about which roads and bike paths bicyclists take in order to get to their destination. While for cyclists in Portland safety and convenience are the most important determinants of bicycle routes (also Dill and Gliebe 2008), in Amsterdam this is directness since it is convenient to bike on almost any route. Moreover, several interviewees indicated that they prefer to take collector streets because they are simply the quickest. Although I found a strong emphasis on safety and convenience in Portland, several respondents also indicated that they prefer the striped bike lanes on arterials to quiet residential streets.

7.3.2 Bicycle Experiences

For experiences a similar strategy as for behavior was applied. Theoretical insights were combined with findings from the interviews. It should be noted, however, that two important dimensions of bicycle experience were distilled from the literature: bodily and socially constructed. Although the two are in constant interaction, it is relevant to make a distinction between experiences which are very much embedded in a discourse and feelings which are more universal and material. This also results in a problem when trying to understand experiences empirically. If it is part of a discourse to talk about bicycling in a neutral way, it becomes challenging to assess bodily experiences rigorously through interviews, notwithstanding their existence. I will now elaborate on the three most significant types of experience.

**Environment**

In Portland, interviewees emphasized the experience of the environment more strongly than in Amsterdam. The feeling of being outside and close to the surroundings, rather than in the ‘iron box’ of a car is an important characteristic of bicycling. Although this feeling is rooted in material reality, it is to an important extent rendered by a car dominated discourse. Amsterdam lacks this kind of intense outdoor experiences. Although the material experience is pretty much the same and the virtues of bicycling are also elaborated, the discourse is different. Cyclists find it nice to be outside, but the experience of bicycling is not continuously juxtaposed to driving a car and not experiencing the environment. Moreover, Amsterdammers emphasizing to ride their bike recreationally say they have a more intense experience during this kind of trips. This has to do with the actual environment which is nature rather than a bustling city where you always need to pay attention. The role pattern also has to be taken into account. Dutch cyclists feel different when they are on their way to a destination than when they ride for leisure.

**Intensity**

Fear and adrenaline are important components of the experience of bicycling in Portland. These concepts have a material and a discursive cause. On the one hand the continuous risky interaction with motorists leads to feelings of heightened awareness, exemplified through fear and adrenaline. The latter are in a dialectic relationship; although fear can be a push factor it is also part of the intense experience of bicycling in which feelings excitement and adrenaline play out. These experiences are exacerbated by the high speeds of bicyclists in Portland. However, the bodily experience is only a part of the equation. The discursive force of automobility should not be underestimated. Riding a bike is often an act of deviance.

\(^2\) A notable example is some recent accidents with right turning trucks. However, in some instances the drivers could simply not see the bike rather than that they were unaware of the presence of bicycles.
(although less so in Portland than other American cities) against what is considered a normal mode of transportation. I would argue this leads to a heightened specific attention and awareness; bicycling is not a habitual practice but a fringe phenomenon. A similar interplay between discourse and socio-spatial practices can be observed in Amsterdam. The content is very different, however. Although bicycling in Amsterdam is sometimes considered chaotic and anarchistic, this leads only rarely to feelings of anxiety or heightened awareness. Being part of the ‘complicated dance’ (Mapes 2009: 61) is something people are used to. An approach related to the normal or neutral position of the bicycle in Dutch society (see also the notion of ‘national habitus’ in Chapter 6). Consequently, it is common to abstract from the act of bicycling and think of other topics such as work or study.

**Sociality**

As also shown in the section on bicycle behavior, social interaction with fellow bicyclists is an important part of cycling in Portland. I would argue it also constitutes the experiences related to bicycling. Being on a bicycle is also being in a social environment or ‘field’ (Bourdieu 1985) in which the social position is permanently reinforced and modified. Cyclists feel part of a wider movement; emblematic is the notion of camaraderie; a sense of social connection to fellow bike users. Because of the sociality of bicycling, several respondents also pointed at the ‘fun’ of bicycling. Obviously this is also influenced by thrills and natural experiences, but the fact that cyclists feel a sense of belonging corroborates feelings of fun. Nonetheless, the city is not a homogenous entity. There are cyclists very much appreciating the sub-cultural aspect related to cycling and join in for group rides (an emblematic example of social interaction while riding, see Photo 7.1 and 7.2), whilst others just commute, but do feel related to other bicyclists. In Amsterdam manifest social interaction beyond practicality is rare. The ties between cyclists are latent and are particularly relevant at a national scale. A case in point are non-Western immigrants who feel cycling is something typically Dutch. Indeed, cycling is part of the national habitus rather than a way to interact within Amsterdam’s boundaries. To understand these experiences properly it is necessary to start with the structures (or context) in which they are embedded. I will start with the physical and institutional environment, but the main focus will be on understanding the socio-cultural environment and its relations to behavior and experiences.

**Photo 7.1 and 7.2: The yearly Pedalpalooza festival in Portland (both pictures by BikePortland.org).**
7.4 Comparing the Physical Environment

As shown in a range of empirical studies, the physical environment has an important influence on bicycling. Geography is an important starting point to create a bike culture. Regarding the weather, no important differences between Amsterdam and Portland stand out. Both cities have a relatively mild winter and cool summer. Whereby it should be noted that wind speeds in Amsterdam tend to be a bit higher and the summers in Oregon a little bit warmer. More revealing is the difference in surface; several areas in Portland are marked by steep hills whereas in Amsterdam and the Netherlands are flat. Amsterdam has two comparative advantages for bicycling. Firstly, hills are negatively weighed in the individual decision to ride a bike, at least for utilitarian purposes (e.g. Rietveld and Daniel 2004, Dill and Car 2003). Secondly, the flat surface of the Netherlands is an important determinant of the Dutch bike culture. Since hills were never a barrier to bicycle -with the notable exception of Southern parts of Limburg- bicycle use could disperse relatively equally. This made possible national identification processes in the pre-war period (Ebert 2004) and bicycle policy related to a centrally organized national planning regime (e.g. De La Bruhèze en Veraart 1999, Van der Cammen and De Klerk 2003). However, a flat surface is no sufficient condition for high bike use. For example, Kansas is the flattest state in the US\textsuperscript{83}, but still has marginal rates of bicycling.

A crucial addition to geography is the built environment. In terms of land use, Amsterdam has a much higher population density as shown in table 7.1. In terms of multiplicity of functions the comparison is more difficult to make. To assess this aspect, a framework of relevant functions and their maximum distance has first to be defined. Although Portland’s growth strategy has prevented massive sprawl which has happened in many Sunbelt cities, a city like New York, with 10,630 people per square kilometer (ACS 2009), is more than six times as dense as Portland. The aforementioned ‘quadratic relation’ (Rietveld and Daniel 2004) between density and bicycling also applies in a cross-cultural context. Especially since their core argument for a decrease in bicycle use and an increase in density, the competitiveness of public transit, applies in both cases. Despite Portland’s heavy investments in Street Car and Light Rail, the city lacks a sufficient degree of density for an extensive and encompassing public transit system\textsuperscript{84}. Amsterdam is denser and also has a more extensive transit system. However, I would argue the public transit system in Amsterdam is sub-optimal based on the city’s land use pattern. This is mainly because the many historic buildings were a barrier in the past and continue to impede or even obstruct transit infrastructure\textsuperscript{85}.

The latter also explains the difficult accessibility of the city centre by car. On this aspect Portland and Amsterdam differ significantly. Distances from the city centre to highways are revealing. While Amsterdam has a ring road encompassing the city that has a diameter of around 4 kilometer and only a few arterials lead into the city centre, from downtown Portland it never takes more than a kilometer to reach a highway\textsuperscript{86}. Although it could be argued that parking facilities are also part of the transportation system, I will address them as part of the institutional environment because of the important role of pricing.

As a cause and consequence of differences in bike use, bike facilities show significant differences. In Portland the majority of bike ways are striped lanes on roads primarily designed for car traffic (63%), bike trails (27%), and bike boulevards (10%) (PBOT 2010). The bike facilities in Amsterdam look different and are all based on a pretty straightforward design standard. Roads on which the maximum speed (for cars) is 50 km/h or higher need to have separated cycle tracks, whereas on streets with a lower maximum speed

\textsuperscript{83} Compelling is the American saying: ‘As flat as Kansas’.

\textsuperscript{84} A similar argument was made by John Charles, a well-known critique of Portland’s light rail system. In its current form, I see the light rail as complementary rather than competitive to bicycling.

\textsuperscript{85} The enormous problems with the North-South subway line are a case in point.

\textsuperscript{86} Estimations were made through Google Earth, although a more fine grained analysis through a GIS is possible, his is an example to corroborate the argument rather than an analysis in itself.
(generally 30 km/h) bicycles share the road with cars or have striped bike lanes\textsuperscript{87}. A separated cycle track in Amsterdam and a striped bike lane in Portland are depicted in Photo 7.3 and 7.4.

\textbf{Photo 7.3 and 7.4: Separated cycle track in Amsterdam and a striped bike lane in Portland}

As has been shown in the previous section, this not only leads to a higher bike use, but also a different type of cycling. Besides facilities related to actual mobility, it is also important to look at the stationary aspect of bicycling: parking. In Portland, the facilities seems to suit the demand pretty well, with some larger parking structures (such as the ‘bike corals’ and the bike parking at PSU), but mainly small structures suitable for two bikes at the sidewalk. Amsterdam is a different cup of tea. Although it boasts some of the biggest bike parking structures in the world, especially the city centre has an enormous lack of parking spots\textsuperscript{88}. However, as the high mode split reveals this is generally not perceived as a barrier to choose a bicycle. An exception is parking around the Central Station, which (as several interviewees pointed out) is very difficult and time consuming.

\textbf{7.5 Comparing the Institutional Environment}

Dutch law gives bicyclists more rights in case of a collision than the Oregon state law (and American laws in general, see Pucher and R. Buehler 2008). However, I would argue that this regulation is more a reflection of the socio-cultural environment than a truly determining causal factor. The STOP sign is a type of traffic regulation which is almost absent in Amsterdam, but ubiquitous in Portland. Moreover, Amsterdam has specific traffic lights for bicyclists, whereas only a few of these have appeared in Portland. Surprisingly, both

\textsuperscript{87} Although this is the standard, because of space restrictions the city also has several striped bike lanes on 50 km/h roads, particularly in the center.

\textsuperscript{88} Green Left council member Fjodor Molenaar got publicity on national TV and in the local newspaper \textit{Het Parool} by pointing at the enormous problems involved with bike parking in Amsterdam, see also Van Loon and Pelzer (forthcoming).
in Amsterdam and Portland bicycling is a relatively small part of the transportation department, both in terms of funds available and personnel. Hereby it should be noted that bicycling has long been an integrated part of transportation policy in Amsterdam. The fact that there was no specific department or labeled money does not mean no attention was paid to bicycles. Over the last thirty five years the bike network has been built out steadily. I would argue this constellation could be related to the normal and rational status of bicycling; for years it never got institutionalized because it was not seen as a distinct mode or cultural phenomenon, but part of an integrated approach to planning. Besides de Fietsersbond, a strong sub-culture or social movement for bicycling does not exist.

7.6 Comparing the Socio-Cultural Environment
As already became apparent in the previous section, bicycling has a very different cultural status in Portland than in Amsterdam. Before I will try to understand and explain this position, a brief comparison of observations on socio-cultural variables. The most important differences include: gender, ethnicity/race, and the role of educational attainment and income. While in Portland males tend to cycle more than females, the situation in Amsterdam is almost equal. As shown in chapter 3 (see also Garrard et al. 2008) a physical environment in which bicycling is more dangerous will lead to fewer women bicycling. A very interesting example is the way in which the local governments address their population. In Portland, safety is the crucial dimension, the core aim of the Bicycle Masterplan for 2030 is to get Portlanders who are ‘interested but concerned’ about bicycling on their bikes (PBOT 2010: 11). Obviously, Amsterdam also has safety improvements high on the agenda. The city has no specific typology of their population. However, when describing target groups of bicycle policy the Meerjarenplan Fiets (Hilhorst 2007: 20) states: ‘Amsterdammers with a non-Western background cycle less than fellow city dwellers. (…) For Amsterdammers with a Non-Western background and for lower income groups the bicycle also has little status (‘poor man’s vehicle’).’ I would argue that the different focus in Portland and Amsterdam can be explained by two reasons. Firstly, bicycling in Portland is indeed more dangerous and thus a valid dimension to base a typology on. Secondly, the social composition of both cities should be taken into account. Portland is a ‘bubble city’ because of its focus on sustainability and subculture, but also because it has relatively small proportion of immigrants and Afro-Americans. Moreover, these groups hardly ride bikes. Amsterdam, on the contrary, is very heterogeneous in terms of ethnic background; especially people from countries which provided ‘guest laborers’ in the 1960s and 1970s (Turkey and Morocco) and former colonies (Suriname and the Dutch Antilles) are well-represented. Provided the poor man’s vehicle thesis is valid, the classification of people from a Non-Western background as a target group is understandable. Particularly interesting is the fact that this differentiation is not only expressed along ethnic lines, but also spatially. Neighborhoods with high percentages of non-Western immigrants tend to have low percentages of bike use. Since these neighborhoods are also further away from public functions and have a (modernistic) spatial form better suited for cars and transit, it becomes problematic to disentangle the causal determinants (also Schwanen and Mokhtarian 2005). Moreover, the city centre has a social

89 The fact that the Department of Infrastructure Transport and Traffic subsidizes de Fietsersbond with a yearly €120,000 (Hilhorst 2007) is emblematic.
90 This should not be read as a view of purely essential masculine courage; gender patterns are socially constructed and exacerbated by life situations (e.g. carrying along children will lead to a different outlook on transportation).
91 Amsterdammers met een niet-westerse achtergrond fietsen minder dan andere stadsgenoten. (…) Bij Amsterdammers met een niet-westerse achtergrond en bij lagere inkomensgroepen heeft de fiets eveneens weinig status (‘poor mans vehicle’)
92 There is an analogy here with studies of Neighborhood effects (see e.g. Musterd 2005), which try to distinguish the causal effects of parts separate of a social composition from the ‘independent effect’ of that particular constellation.
composition which leads to a higher likelihood of bicycling. In Portland, a similar situation can be observed. Neighborhoods which have gentrified over the last decades (i.e. ‘became hip’), saw a change in both socio-demographic composition and bicycle infrastructure. Accordingly, bicycle use rose most rapidly in these neighborhoods. While the developments show a clear pattern, the precise causality remains opaque. Nonetheless, I think it can be safely stated that to explain the internal differentiation of Portland and Amsterdam both the physical environment and cultural variables have to be taken into account. Cultural capital related to bicycling is a key concept to understand the concentration of cyclists in the city center. I will turn to this and other cultural explanations of bicycling now.

7.7 Understanding the Socio-Cultural Environment

7.7.1 Bicycling as a Habit

In chapter 3 I have introduced Pierre Bourdieu’s (1985) concept of habitus and have stressed it in different forms in the empirical chapters. Recall the definition of habitus from chapter 3:

The conditionings associated with a particular class of conditions of existence produce the habitus, systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representation. (Bourdieu 1990:53)

Put differently, the habitus is a kind of objectified meta-structure which steers behavior and practices (I will pose some critical remarks on this position in the next chapter). The concept can be used for both cities, but I would argue it is particularly relevant for Amsterdam as being part of the national habitus of the Netherlands. Both the experiences and spatial practices of Dutch bicyclists are characterized by a sense of ‘something you just do’, a second nature. Bicycling has become part of the ‘self’ rather than an act to reflect a social position\(^93\) (Kuipers 2010). The physical environment in Amsterdam has enforced and conditioned this national habitus. Cycling in Amsterdam is easy, convenient and does not require the focus and attention needed in an American city. Separated cycle tracks are a case in point, when you ride here there is no worry about traffic with a much lower or higher speed\(^94\), such as pedestrians or cars. Moreover, bicyclists think about other things when they ride. Cycling can be done on the autopilot. Carl Abbott (2001: 205) makes a similar argument, although not explicitly related to bicycling but rather to civic culture which comprises the ‘Portland Way’. Living in and experiencing the city leads to a set of attitudes and practices. Clearly, bicycling fits well in this mindset of sustainability, civic involvement and independency. I am less convinced of bicycling as a second nature. A comparison of Carl Abbott’s notion of the ‘Portland Habitus’ and Giselinde Kuipers approach of the Dutch national habitus reveals differences\(^95\):

‘(…) shared predispositions and common ideas about how the world does and should work that arise out of the experience of living in particular places.’ (Abott 2001: 205)

Learned practices, habits, feelings, and standards which have become part of ourselves to such an important extent that they feel self-evident and natural. Habitus is our socially and culturally determined ‘second nature’. What becomes part of us, as a member of a society with a certain position becomes engrained in our body and becomes our self. (Kuipers 2010, translation mine- emphasis by author)

So while both authors emphasize the importance of learning and experiencing a certain context, Kuipers’ definition does not only include predispositions and ideas, but also behavior. Moreover, the fact that

---

\(^93\) Of course, it could be argued that cycling is a way to express Dutch identity (see also Ebert 2004). However, if this is the case it happens in a very unconscious way.

\(^94\) Although the recent rise of mopeds on cycle tracks is a risk to this peaceful constellation.

\(^95\) I deliberately leave Bourdieu’s own definition for the conclusion, since the focus is here on comparison, not refinement of theory.
bicycling is ‘engrained in our body’ explains the brief way people describe bicycling in Amsterdam and the abstraction from the actual practice of riding. Since Portlander’s are far more articulate and deliberate about bicycling, I would argue that the concept of cultural capital is pivotal to understand both the embodied practice and the status consideration related to bicycling. A lifestyle approach is more suited in this regard.

7.7.2 Bicycling as a Lifestyle

As emphasized in Chapter 3, lifestyle is commonly used but somewhat hard to pin down. I follow Van Acker et al. (2010) in discerning three dimensions of a lifestyle: stage in life, cultural and economic. Although the latter can have an important relation to bicycling as cheap means of transportation (e.g. the notion of a ‘poor men’s vehicle’), this dimension was hardly emphasized by the research in both cases. To stage in life I will turn shortly, but I will start with the concept I ended the last section with: cultural capital. As I have argued in Chapter 5 about Portland, there is an important relation between gentrification and rising bicycle use. Or as one of the seminal authors in the field of gentrification, Sharon Zukin, puts it:

To some extent, also, gentrifiers’ locational preferences reflect their withdrawal from a transportation and distribution infrastructure that they perceive as being archaic. Many of them prefer walking or bicycling to work instead of making a long journey to the city by car or train. Similarly, they abandon suburban shopping centers for the smaller scale of shops and the range of goods and services available in the city. (Zukin 1987: 144)

Cycling is a part of ‘objectified cultural capital’, an act to reflect or implicitly enhance a social position. Riding a bike suits the ‘Portland Way of Life’ of sustainability and self-empowerment. Related to the doubts on the application of the concept of habitus in Portland, I am also less convinced of the notion of ‘embodied cultural capital’, since cycling is not something people do because it is logical or self-evident. Portlanders have a thorough belief in the benefits related to this particular mode of transportation. In Amsterdam, the notion of ‘embodied cultural capital’ is more relevant. The differentiation in terms of Dutch and non-Dutch is striking. Dutch people reflect their social position as part of the Dutch culture in a non-deliberate way. Something most Dutch people do not even notice, but which was revealed by two of my Surinamese interviewees and becomes clear from statistics on bicycle use and ethnicity. A similar mechanism is at work with the ‘creative class’ who tend to cycle more than people with low education and/or an industry or low skilled service job. Again, however the bicycle does not seem to play out as ‘objectified cultural capital’, but is rather internalized and embodied.

The built environment is of course a caveat in both cities; strong self-selection processes are at work regarding the population in cities. In fact, this residential movement could also be considered part of a lifestyle. Consequently, cultural capital works in two ways: as direct cause of choosing a bicycle and a reason for movement to bicycle friendly neighborhoods. When the second process is at work the causal power of the built environment gets activated and can lead to a bicycle mode choice.

The third aspect of lifestyle, stage in life also is particular relevant for the social composition of cities. Both Portland and Amsterdam have a relatively high percentage of students and one person households. In general, inner cities tend contain less families (e.g. Karsten 2007) Although less so in the Netherlands, in general the bike is a less attractive means of transportation in a busy family life or at an older age. Exactly these are the categories that are underrepresented in cities. Although this is a somewhat blunt operationalization of stage in life (for a more nuanced approach see Van Acker et. al 2010) it captures

96 However, Western immigrants tend to cycle more than non-Western immigrants, but this would require a study in itself.

97 Although I am not particularly fond of this concept, it captures the homogeneity in cultural capital in this regard well, by referring to among others students, academics, artists and parts of the service industry.

98 From this perspective, I would argue ‘embodied cultural capital’ overlaps with the concept of habitus.
the essence well. Both cities have a relatively young population with a small proportion of families. Categorizations in lifestyles can be revealing and provide a new insight for policy making (Van Acker forthcoming). However, they do not give insight in what the attitudes and preferences of a lifestyle comprise. As I have shown in the previous section, in the Netherlands it has become a national habit. A constellation which did not come falling from the sky, but is rooted in Calvinism and the physical environment. In Portland, bicycling does not have such a historic legacy or dominant position. On the contrary, the United States are often characterized as an extreme case of car culture. Therefore, it is relevant to specifically look at Portland when evaluating the idea of bicycling as a counter culture.

7.7.3 Bicycling as a Counter Culture
Although the bicycle had the status as a vehicle of the counter culture of the Provos for a brief period in the sixties, it has never become a sign of deviance or confrontation in the Netherlands. The situation in the United States is rather different. Critical Mass radically argues for a different type of economic and transportation system and the bicycle has been adopted by parts of the punk movement (Furness 2010). Portland, however, is a somewhat peculiar case in the American context. Although the city is considered a Nirvana of sub-culture and alternative world outlooks, it is not radical. Decisions are taken in a process of continuous participation and cooperation. I have cited Carl Abbott (2001:205) earlier about Portland’s habitus which reflects a deeply engrained civic culture. Whilst not particularly relevant for bicycling in itself, it does reflect that the Portland way of doing things is aimed at cooperation rather than conflict. Although several bicyclists juxtaposed bicycling with car use, radical opinions and behavior towards motorists are not the norm. The consensus is rather to educate motorists about the practices (and virtues!) of bikes. Notwithstanding the lack of confrontation in Portland, as in any American city bicycling can only be understood in opposition to cars. In both the experiences and behavior of cyclists cars are always present. My argument is that the position of the bicycle as an antidote and the way in which it is embedded in a consensus seeking civic culture should be understood as dialectic. The two are seemingly incommensurable, but come to a synthesis in Portland’s unique Bicycle Culture of strong civic involvement and an alternative to unrestrained American capitalism.

7.7.4 Counter Culture and Habit: testing the hypothesis
Based on the literature review in Chapter 3 I posed the following hypothesis:

H1: The role of bicycling in the Socio-Cultural environment in Portland should be understood as a Counter Culture, whereas in Amsterdam as a Habit.

This hypothesis can only partially be confirmed. Bicycling as a habit is a valid analytical dimension for Amsterdam as I have attempted to prove with the analysis about the national habitus. Bicycling as a Counter Culture is in Portland only one part of the equation. It is true that bicycling can only be understood in the antagonistic relation toward the car. However, Portland’s civic culture with an emphasis on cooperation rather than conflict results in a situation in which the bicycle is alternative rather than opposite to the car. An analogy which could also be used to describe the city’s position in the US: deviant rather than contradicting. A lifestyle approach fills the lacuna left by the Counter Culture framework. A significant amount of the population of Portland has a way of life in which a combination of the outdoors, sustainability, do-it-yourself and alternative cultural forms is appreciated. Bicycling as a means of transportation and recreation fits well into this mindset. This argument is harder to make for Amsterdam. However, the high concentration of bicycling in the inner city points at an urban lifestyle prone to bicycling.

99 The Bicycle Master Plan 2030 is an excellent example of intense public participation in Portland.
At the same time downtown Amsterdam is also the most dense and bike friendly environment of the city. This underwrites an important caveat that should be kept in mind while studying socio-cultural factors in urban contexts: the physical environment should always be attended to.

7.8 Synthesizing observations: Empirical Mechanisms

As a way to synthesize the empirical findings, an overview of the ten most important ways in which the observed phenomena interact. This reflects both historical processes and mechanisms that were revealed by studying the practice of bicycling.

1.) Path Dependence

A first important observation is the importance of path dependence to understand the causal mechanisms which have lead to the current bicycle constellation in both cities. Amsterdam’s 17th century bloom period (to which I will turn in the next mechanism) and the high bike use in the Netherlands in the 1920s and 1930s have created a path which is hard to copy, both in terms of density and the cultural status of cycling. An example of a different path (in this regard emblematic for most American cities) is Portland, which is locked in to a spatial configuration tailored to the car. As the recent changes in the city have shown, it is possible to break away from this path. In this new ‘path creation’ historical layers have to be taken into account (see also Bontje et al. forthcoming); the future development of Portland’s bike culture will be post-car, rather than a copy of Amsterdam.

2.) Historic Grid

As already shown in the previous mechanism, the historic grid of the city is very important to understand bicycle culture. The current bicycle use can be traced back to the time period in which the city was started. An important intervening condition is the modernization in the postwar decades in which it was en vogue to completely refurbish cities. When this was done rigorously, a new starting point was created. In Portland this has happened to a certain extent.

3.) Habit

Related to the historical development of bicycling is the notion of habitus. Two starting conditions come together in this concept. On the one hand the historical development which leads to a set of practices which is considered normal, in this regard bicycling. Secondly, the upbringing of individuals corroborates the feeling of bicycling as a second nature. These two constituents of habitus face a critical conjunction with the physical environment. When the bicycling is a convenient and easy experience (as in Amsterdam and much of the Netherlands) this result in a normalized and habitual set of socio-spatial practices and experiences.

4.) Gentrification

In both Amsterdam and Portland the shift to Post-Fordism changed the composition of the population fundamentally. Although this is neither a sufficient nor a necessary condition for bicycle use, it does explain the boom of bicycling from the 1970s onwards in both cities. Cultural capital is an important explanatory variable; bicycling is a reflection of a social position and it explains the preference for an urban environment of a specific subset of the population. However, the causal power of cultural capital can only
be activated under physical circumstances suited for bicycling. A notable example is Portland’s investment in bike infrastructure in the 1990s and the subsequent boom in bicycling.

5.) Informal Regulation
The physical structure of a city and formal traffic regulations are the constituent structures which lead to the ‘informal regulations’, which can be seen as a part of a 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.

6.) Route Choice
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. A clear example is that Amstelhammers emphasize the directness of the route, while Portlanders focus more on convenience and safety.

7.) Determinants of Bicycle Use
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 choose 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. Consequently, the physical and socio-cultural environment interact in a very subtle way in determining bicycle use.

8.) The Car
Another 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.

9.) Sociality
There is a stronger sense of community or camaraderie 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. The discourse around bicycling as an alternative to driving interacts with a physical environment which leads to intense experiences. In conjunction the two create social bonding. The fact that both this discourse and physical environment are absent in Amsterdam explains the variation of the two cities.
10.) Purpose

Finally and related to the former argument, the distinction between recreational and utilitarian riding is less pronounced in Portland than in Amsterdam. To understand this, a range of the previously made empirical mechanisms have to be taken into account. In the Netherlands the bicycle is considered a normal means of transportation. Programmed by the habitus, many people take the bike to get somewhere. Making a recreational ride, however, is a more deliberate act and need to fit in a lifestyle. The proportion of people doing this is lower, and the experiences and practices are different. In Portland riding a bike is a reflection of a lifestyle, often based on deliberate arguments. When the choice is made to become a bicyclists, this extends beyond the daily commute.

In this chapter the main similarities and differences in bicycle culture in Amsterdam and Portland have been mapped out. It is important to keep in mind that two types of causal arguments have been made. On the one hand an emphasis on historical processes in revealing causal chains. The aim of this approach was mainly to understand how the current physical, institutional and socio-cultural constellation has been shaped. On the other hand causal arguments have been made which focus on relatively short temporal time lags or causes as reasons. The aim of these kinds of arguments was to get a better understanding of what is at work in the current bicycle culture. I will now synthesize these two types of causation by answering and reflection on the research questions and hypotheses and pose a set of causal mechanisms.
8: Bicycle Theory Refined

Explanatory mechanisms in the domain of the real are postulated, and the task of the researcher is to try to demonstrate their existence. (Blaikie 2000: 109)

While the previous chapter has primarily focused on empirical issues, in this chapter theoretical concerns are central. I will use the findings from both cases to amend, modify and critically reflect upon the conceptual framework from chapter 3 and develop causal mechanisms which create and constitute a bicycle culture. Two research questions are central in this chapter and will be subsequently answered:

RQ1: How can bicycle culture be conceptualized?
RQ4: What are the causal mechanisms that constitute a bicycle culture?

8.1 Refining the Conceptual Framework
Recall the conceptual framework from Chapter 3 (see Figure 8.1). The most important addition to this framework is the way in which behavior and experiences are defined. Mode choice has a somewhat peculiar position, because it does not reflect actual behavior, but rather the intention to choose for a modality. I have argued that behavior consists of four categories: (1) Interaction with Traffic Regulation (2), Interaction with other Traffic Users, (3) the Route Choice, (4) and Type or Purpose of the trip. Experience has both a bodily and a socially constructed component, bicycle experience is constituted in a dynamic feedback loop between attitudes and perceptions and physiological processes. Moreover, I have stated that bicycle experience consists of three sub-concepts which reflect a particular type of experience: (1) the environment, (2) intensity, and (3) sociality. Including these sub-concepts leads to a refined conceptual framework, this is depicted in Figure 8.2. The conceptual framework provides an overview of which variables are at work in a bicycle culture, but not how they are related. I have explored these causal mechanisms by looking at historical pathways, user interviews about behavior and experiences and literature describing these relations.
Figure 8.1: Original conceptual framework of Bicycle Culture

Figure 8.2: Refined conceptual framework of Bicycle Culture
8.2 Evaluating the Conceptual Framework

A problematic aspect of the model resulting from the theoretical insights (see figure 8.2) is the static nature. While I have extensively illuminated the historically shaped and dynamic nature of a bicycle culture, the model only provides a snapshot overview. Therefore it should be addressed as a heuristic device or an analytic framework rather than a matured theoretical model. When studying bicycle culture, it provides guidance in judging what aspects should be taken into account. An important remark with regards to land use is that a high density is not necessarily beneficial to bicycle use, because public transit becomes a more appropriate solution. While the subdivision of a bicycle culture in a physical, socio-cultural and institutional environment has been done -albeit in a from a different perspective- in other studies (e.g. Rietveld and Daniel 2004, Xing et al. 2008), I am not aware of any study which has approached bicycle culture by focusing on historical pathways, bicycling as a habit, lifestyle and counter culture, and a focus on both behavior and experiences. Therefore I will now evaluate the suitability of this set of heuristic tools by testing three hypotheses from Chapter 3. Since Hypothesis 1 has already been emphasized in the previous chapter, I will start with hypothesis 2:

**H2: The development of a Bicycle Culture is a path dependent process.**

A problem with this hypothesis is that a distinction has to be made between the extent to which the historical pathways leading to a bicycle culture are particular for Portland and Amsterdam or can be more universally applied. In judging the latter I will focus on the characteristics of the pathway which are relatively deterministic, since the start of the pathway is contingent and thus necessarily unique.

I have shown that particularly in Amsterdam the starting point in 17th century paved the historic pathway towards a bicycle culture. Moreover, in both cities reactive sequences to modernism were a starting point for a direction towards a more sustainable type of transportation. Moreover, in Portland there were critical events in the 1990s. It is too strong to say that these events set in motion ‘relatively deterministic causal patterns’. While in Amsterdam the rise of bicycling in conjunction with a new type of economy was relatively predictable, it is still far from given that Portland will keep developing its bicycle culture. A virtuous circle could be observed in Amsterdam, the suitable physical environment leads to bicycling and it becomes engrained in the habitus, improvements in the bicycle infrastructure are a logical consequence and this again has positive effects on bicycling. Keeping the dominant role of the car in mind, in many American cities the circle is vicious for bicycling. Moreover, a problematic aspect is that it is hard to tell whether Amsterdam is ahead or deviant. If the latter is the case there are different pathways which could lead to a bicycle culture and the notion of a universal type of path dependence to bicycling evaporates. I would argue nonetheless that the relation of bicycling to the physical environment is tight and applicable across various cultural contexts. Suburbanization and modernization have lead to a boom in car use which is still persistent. A city like Amsterdam which has conserved much of its historic core has an advantageous starting point for bicycling. Consequently, unless radical new forms of bicycling will be developed or the physical environment will be fundamentally changed, many –particularly American- cities are locked into the historical road of the car. In sum, I would argue that the development of a bicycle culture is only to a certain extent path dependent. It is clear that the physical environment and national discourses of transportation are difficult to change once they are set in motion. Especially American cities are locked-in a physical environment which contributes to car use. However, as the histories of Amsterdam and particularly Portland reveal, the outcome was far from settled from the outset but shaped by contingencies and agentic decision. The next hypothesis is:

**H3: Lifestyle, Counter Culture and Habit are necessary analytic dimensions to understand the socio-cultural environment related to bicycling.**
This hypothesis is confirmed by the study, but only on the condition that the analytic dimensions are used in conjunction and in a particular way. The concept of Counter Culture is a good way to illuminate the dominant forces which bicycling faces. In many countries the ‘system of automobility’ (Urry 2004) is dominant in both discourse and practice. From this perspective, the material and experienced act of cycling can only be understood when juxtaposed to car use, and the wider impacts car culture has on society. The dichotomous nature of the concept is problematic, since it assumes a clear distinction between proponents of bicycling with a concomitant critical view on car use and opponents of bicycling in favor of cars. In practice, this distinction is blurred; many bicyclists also own and ride a car. Moreover, with the world wide increase of bicycling as a mode of transportation it is more and more losing its fringe status. In developing a fruitful academic bicycle culture paradigm, a counter culture approach only has potential in conjunction with other analytic dimensions.

An example hereof is lifestyle, which can include a set of beliefs and practices which align with a counter culture. In itself the concept of lifestyle is generic and has no particular relation to transport or bicycling. It rather details the way in which lifestyle should be understood as an embodiment and reflection of a social position. The notion of cultural capital as ‘objectified artifacts’ can be related to bicycle use in two ways: as a direct reflection of cultural capital and as a choice of an urban environment. In the case of the latter bicycle use is an outcome of both lifestyle and the built (urban) environment. Cultural capital as embodied by individuals is particularly relevant when applied to people from a different national or ethnical background. However, I would argue that in this regard the concept of habitus is more insightful.

To study the notion of ‘Bicycling as a Habit’, I have deployed Pierre Bourdieu’s term habitus. I would argue that there are three ways to use this concept with regards to bicycling. Firstly, it is relevant to understand where the habitus comes from. In the Netherlands, for instance, the central role of cycling in national habitus is rooted in Calvinism and egalitarianism. Secondly, the way habitus has shaped experience and behavior historically is revealing. A case in point here is the ‘normalized’ experience of bicycling in the Netherlands. This is both related to the physical and institutional environment suited to bicycling as an upbringing in which the bicycle is central. It could also be argued that driving is part of the national habitus in the United States. Consequently, a transport habitus should be perceived spatially, shared behavior and experiences are do not occur in a vacuum but are shaped by material surroundings. I would argue the concept of habitus fits well in recent academic attention to previous experience to explain current mode choice (e.g. Weinberger and Goetzke 2010) Finally, a habitus is not an entirely ‘objectified structure’ with causal powers (King 2000). What the habitus contends is an outcome of social practices; meaning is created in social interaction. So to reveal what a ‘bicycle habitus’ consists of it is necessary to pay close attention to behavior and experiences. This is not unlike Clifford Geertz’ (1973) plead for ‘thick description’. The next hypothesis is:

H4: To understand the micro dimension of a bicycle culture it is crucial to pay attention to both socio-spatial practices and experiences.

Based on the findings of this study I would argue this is a very valid statement. While bicycle behavior is commonly studied, less attention is paid to the experiences accompanying these practices. The way experience of bicyclists has both influence on the in situ traffic behavior and enduring perceptions and attitudes about bicycling. Accordingly, bicycle experiences are in a reciprocal relationship with the socio-cultural environment. A discourse leads to an individual perception of a situation, but the aggregate of individual experiences also shapes the socio-cultural environment. In sum, an approach sensitive to both experience and behavior has the potential to get a deeper insight in the relation between taxonomic

---

100 This is not ‘aggregate’ in a mathematic way, power relations are an important part of a discourse and lead to unequal representation.
explanatory variables and bicycle use (e.g. women and low bicycle use) and point at the underlying mechanisms. Moreover, structures which are not easily visible (e.g. the penetrating power of the ‘system of automobility’) can be unraveled by focusing on what people feel while riding.

8.3 Causal Mechanisms

I have looked at two ways in which a bicycle culture can be explained. On the one hand the historical processes which have lead to this particular constellation and on the other the other the internal relations of the different concepts comprising a bicycle culture. Rather than trying to dissect all the relations between the relevant concepts (which would require several independent studies), I will give an overview of the five most important causal mechanisms I found, which describe and explain the creation and internal relations of a bicycle culture. To make things clearer, Andrew Sayer’s scheme of causal explanation is depicted in Figure 8.3. Each mechanism is accompanied by a similar scheme and a figure pointing at the aspects of the conceptual framework which are described. Note that the definition of ‘event’ is somewhat different in Sayer’s (1992: 109) view than in the conceptual framework. While I have equated events with micro behavior and experiences, in Sayer’s view event is defined more broadly and can also be a change or an outcome. In describing the causal mechanisms I remained close to Sayer’s definition and focused more on change and outcomes than a specific emphasis on the macro-micro relation. Consequently, positioning the mechanism in the conceptual framework is sometimes problematic. I will come back to this macro-micro issue in the conclusion.

Figure 8.3: The structures of causal explanation

<table>
<thead>
<tr>
<th>Object</th>
<th>Causal powers and liabilities</th>
<th>Conditions (other objects with powers and liabilities)</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>{p_1, p_2, p_3, l_1, l_2, l_3}</td>
<td>c_1, c_2, c_3, c_4</td>
<td>e_1, e_2, e_3, e_4</td>
</tr>
</tbody>
</table>

Object X, having structure S necessarily possessing causal powers (p) and liabilities (l) under specific conditions (c), will:

- (c_1) not be activated hence producing no change - e_1
- (c_2) produce change of type e_2
- (c_3) produce change of type e_3 etc

Source: Sayer (1992: 109)
The first causal mechanism which could be observed is when the historic built environment is addressed as an object. It has two causal powers: a relatively high density of people and functions and a well-connected street pattern. These causal powers are activated when a high proportion of the population has cultural capital related to a creative and Post-Fordist lifestyle a change often part of gentrification processes (1) and there is an institutional constellation which invests in bicycle infrastructure\(^{101}\), for instance through deliberate bicycle policies (2). This results in an increase in bicycle mode choice. The mechanism is depicted in Figure 8.4, the concomitant parts of the conceptual framework in Figure 8.5.

![Figure 8.4: Causal Mechanism 1, Activation of a Historic Built Environment.](image)

The second mechanism (depicted in Figure 8.6 and 8.7) explains the experience of bicyclists. The object is cities with a bicycle mode split higher than five percent. The cut-off point is somewhat arbitrary; central is the argument that these kind of cities have a bike infrastructure leading governing bicyclists’ behavior and there are regular bike-car interactions. Subsequently, there are two sets of conditions which lead to particular experiences. The first set of conditions (this could be Amsterdam) consists of a comfortable bike ride caused by separate bike infrastructure, habitual bicycling because of a culture in which bicycling is

---

\(^{101}\) This is a different conceptualization as I have used previously, the institutional environment in this regard has causal power to lead to a different built environment. Of course this is a pretty obvious relationship.
nurtured, short bike trips because a dense and well-connected environment and an easy ride not interrupted by too many relief as a consequence of a flat surface. The conjunction of these structures results in what I would call a ‘normalized experience’ of bicycling. The other event, an intense experience, is an outcome of a set of conditions which to a certain extent are the opposite of the conditions leading to event 1: an aware bike ride because of on street facilities, a dominant position of the car rendering the bike ride, both materially and discursively, in continuous interaction with automobility. Finally, a physical environment leading to longer trips and the ascent of hills. Two caveats are in place: the distinction between separated and shared traffic facilities only has causal power in a situation where car speeds are high and the bustling situation of an inner city which could lead to an intensified experience (although I have not observed this in this study).

Figure 8.6: Causal Mechanism 2, explaining bicycle experience.

<table>
<thead>
<tr>
<th>Object</th>
<th>Causal powers and liabilities</th>
<th>Conditions</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>City with bicycle mode split of &gt;5%</td>
<td>( P_1 ): bike infrastructure (order in bicyclist’s behavior) ( P_2 ): regular bike car interactions (common causal patterns)</td>
<td>C1: primarily separated bike facilities (comfortable bike ride) C2: bicycling as part of upbringing (habitual bicycling) C3: density and connectivity (short bike trips) C4: flat surface (easy bike ride) C5: primarily on street bike facilities (aware bike ride) C6: bicycling embedded in car culture (car as a discursive and material force) C7: auto oriented grid (long bike trips) C8: hills (strenuous bike ride)</td>
<td>E1: normalized experience E2: intense experience</td>
</tr>
</tbody>
</table>

Figure 8.7: Causal Mechanism 2, positions in conceptual framework
The third Causal Mechanism (see Figure 8.8 and 8.9) attempts to explain variation in which bicycling is experienced and practices\textsuperscript{102}. The object is a constellation in which a person needs to get somewhere, which necessitates a mode choice. If this decision is made in a convenient environment to bicycle, with a high bicycle mode split and short distances the trip will be conceived as utilitarian. If on the other hand the environment is challenging, bicycling reflects an outlook on the world and long distances are to be covered, the demarcation between utilitarian and recreational gets blurred and the role of bicycling should be understood holistically.

Figure 8.8: Causal Mechanism 3, explaining type of trips.

<table>
<thead>
<tr>
<th>Object</th>
<th>Causal powers and liabilities</th>
<th>Conditions</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constellation in which movement of person is needed.</td>
<td>P1: mode choice</td>
<td>C1: Convenient environment to bicycle \cbrackets{Normalized experiences} \newline C2: High bicycle mode split \cbrackets{diverse subset of population will ride} \newline C3: Short distances \cbrackets{short trips not needing devotion or preparation}</td>
<td>E1: Bicycling perceived as utilitarian</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 8.9: Causal Mechanism 3, positions in conceptual framework

The fourth causal mechanism (see Figure 8.10 and 8.11) describes how informal regulation can result from the conjunction from traffic regulation with causal powers disputing that. Traffic regulation has the causal power to steer behavior, but is also liable to a different interpretation by traffic participants. Three types of

\textsuperscript{102} Note that the type/purpose of the trip is problematic in this regards because it relates to both experience and behavior.
conditions need to be in place to activate this mechanism: (1) a tension of what bicycle behavior would be comfortable for the built environment and what the traffic regulation prescribes, (2) loose enforcement by the government, so the consequences of not obeying to the traffic law are low are a small risk, (3) and a type of traffic regulation designed for cars. The resulting informal regulation is an outcome of both the intended function of traffic regulation and behavior which is more convenient for the particular environment. This type of informal regulation is not unlike the ‘mobility culture’, as defined by Jensen (2003: 160-161, see Chapter 3) who emphasizes the combination of official and tacit regulations.

Figure 8.10: Causal Mechanism 4, explaining interaction as social bonding.

<table>
<thead>
<tr>
<th>Object</th>
<th>Causal powers and liabilities</th>
<th>Conditions</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Regulation</td>
<td>{P1: Determines behavior \li1: Is interpreted differently than intended function}</td>
<td>{C1: Tension built environment and regulation (other behavior than rules prescribe)}</td>
<td>E1: Informal Regulation</td>
</tr>
</tbody>
</table>

---necessary relation

---contingent relation

Figure 8.11: Causal Mechanism 4, positions in conceptual framework

The fifth and last mechanism (depicted in Figure 8.12 and 8.13) explains under which conditions interactions among bicyclists become a way of social bonding rather than just a way to navigate through traffic. Again a city with mode split higher than five percent and, consequently, a fair amount of interactions among bicyclists. Three conditions are needed to make these interactions social bonding rather
than just a way to navigate through traffic. Firstly, there has to be an challenging environment to bicycle resulting in a shared feeling of intense experiences of being in constant interaction with cars. Secondly, bicycling needs to have a minority status. The proportion of bicyclists needs to remain relatively small, so encounters are limited and there is a sense camaraderie. Thirdly, the group of bicyclists needs to be culturally homogenous so the social distance to other bicyclists is small. This can be a shared lifestyle or ethnicity, depending on the situation.

Figure 8.12: Causal Mechanism 5, explaining interaction as social bonding.

In this chapter I have briefly refined the conceptual framework and revealed the most important causal mechanisms relating the relevant concepts. I will now critically reflect on the findings of this study and give recommendations for further research.

9 Conclusions and Reflections
In the previous eight chapters bicycling has been perceived from a range of theoretical and empirical perspectives. Since the study did not build on a wealth of existing literature, many of the findings have been gained inductively or have been taken from other fields than bicycle or even transportation studies. This all has functioned to answer the central research question: How can bicycle culture in Portland and Amsterdam be explained? I will start with a brief synthesis of the findings in both cities.

9.1 Bicycle Culture in Portland and Amsterdam

Although both Portland and Amsterdam are considered bicycle capitals, I think they boast more differences than similarities. Regarding the geography, both cases have a sea climate, while Amsterdam’s surface is flatter than that of Portland. The cities share a regional development process which has prevented unlimited sprawl. Yet, the outcomes are different; Amsterdam is a lot denser than Portland. The most striking difference is the transportation system (e.g., bicycle infrastructure) which is more orientated towards bicycles in Amsterdam. The structure most emphasized in this study, the socio-cultural environment, is harder to pin down, as the issues with studying culture in chapter 3 have exemplified. Nonetheless, three important observations regarding the socio-cultural environment could be done. Firstly there is an important difference in the national context. While Amsterdam is embedded in a very bicycle-minded country, Portland is a deviant case in a nation dominated by cars. Secondly, the population of Amsterdam is much more heterogeneous in terms of ethnicity. While Portland is ethnically homogenous (i.e., from Caucasian race) compared to other American cities, Amsterdam has a very diverse social composition. The two cities resemble each other in the sense that they both flourished economically in the recent decades. Consequently, the population is highly educated and orientated towards the service economy. In other words, their inhabitants have cultural capital which is positively associated with bicycling.

These differences and similarities in structures become relevant when judged on their outcome: bicycling. I have made a distinction between what people do and what they feel. In Portland, bicycling is experienced intensely, as feelings of fear and adrenaline reveal, while in Amsterdam bicycling is considered normal and leads to thoughts abstracted from reality. Accordingly, speeds are higher and interactions with traffic trickier in Portland. I would argue that the physical environment is the most determining factor in this regard. The context in Portland necessitates heightened awareness (both positively and negatively), whereas a bicyclist can pedal safely and conveniently through most of this environment. While Portlanders prefer convenience and safety, Amsterdammers tend to go for directness. Still, the built environment does not have an objective causal power. A bicyclist from Amsterdam visiting Portland would behave very differently than a local and vice versa. I would argue that the car is a pivotal explanation for the difference in behavior between the two cities in a discursive and a material way. In Portland, being on a bicycle is simultaneously not being in a car, while in Amsterdam this juxtaposition is absent; riding a bike is a particular act. To some extent this variation can be explained by the physical environment of Portland in which the car is almost never absent. However, in this regard the socio-cultural environment has to be taken into account. Unlike the US, car culture is not engrained in the Dutch psyche as opposite to the bicycle. Moreover, bicycling is for many people a habit; a national habitus which could be traced back to egalitarianism and Calvinism. Bicyclists in Portland tend to have stronger and more deliberate considerations about bicycling. Strong attitudes and perceptions about the negative aspects of car culture
or a lifestyle based on sustainability and health need to be in place – ride a bike. Obviously the proximity of likeminded people in Portland leads to a virtuous cycle. The social environment influences bicycle use both manifestly through social networks and latently through structures like the habitus. While in Amsterdam the demarcation between utilitarian and recreational bicycling is relevant, the strong conviction of bicyclists in Portland evaporates this distinction. Cycling is not only a means of transportation but also a lifestyle.

9.2 Representativity and Critical Realism

Two dimensions are related to the central research question. On the one hand how bicycle culture can be understood in the particular instances of Portland and Amsterdam (as briefly shown in the previous section), and on the other hand how bicycle culture can be understood in general. While Chapter 3 and 8 have focused on a universal theoretical approach to bicycle culture Chapter 5, 6 and 7 have dealt with bicycle culture in Portland and Amsterdam specifically. Since the conceptual considerations and causal mechanisms from Chapter 8 are partly based on empirical findings in two cases, the question becomes to what extent the findings from this study are relevant for other contexts.

I would argue that the conceptual framework is applicable to a wide set of urban contexts. Every city has a combination of scores on the physical, institutional and socio-cultural environment, and socio-spatial practices and experiences which could be evaluated through this framework. Moreover, the analytic dimensions habit, counter culture, and lifestyle could be used interchangeably and possibly extended with new analytic dimensions that are revealed through studies in other contexts. As I have argued in Chapter 2, there are three ways to address the micro-macro dimension in a bicycle culture. The main focus of the conceptual framework is on macro-micro relation, particularly since the physical environment is not directly shaped by behavior and experiences. However, in conjunction with the institutional and socio-cultural environment socio-spatial practices do play an important role in activating causal powers of the built environment. Consequently, while studying behavior and experiences it is not only to ask how they reflect structures, but also how they have the potential to create structures.

It becomes trickier when trying to make universal claims about the way in which a bicycle culture is created and how the concepts are internally related. Two strategies have been applied to bridge the findings in Portland and Amsterdam to a wider set of cases. Firstly, through a retroductive process the combination of theoretical and empirical insights has been converted into causal mechanisms which are formulated in terms abstracted from the empirical. Secondly, J.S. Mill’s (1843) most different logic has been applied, which questions how two very different cases come to a similar outcome. I would argue this is similar to CR’s approach of generative causal mechanisms, which emphasizes a sensitivity to the geo-historical context, but seeks to reveal the underlying pattern across different contexts. Because Amsterdam and Portland are very, or arguably: most, different in terms of the characteristics of their bicycle culture and still can be explained by the same causal mechanisms, this corroborates the findings.

This study has only revealed a bounded view of the contingent relations involved in the mechanisms, and the resulting events which are aggregate and represent complex and multilayered phenomena. The causal powers of the different types of environments have a tendency to result in events (e.g. density to bicycle use) but the exact configuration is contingent (Naess 2004)

Regarding necessity, only for causal mechanism 4 (informal regulation) this case could be convincingly made. The same goes for causal mechanism 1 (increase in bicycle use), but this mechanism does not reveal the –classical positivist- question how much of the increase is explained by the causal power of the three structures. Mechanism 2 (experience), Mechanism 3 (type of trips) and Mechanism 5

103 According to a strict CR perspective this is even impossible since systems are open (Sayer 2000).
(sociality) face a similar problem. The event or outcome has been made into a dummy variable to match the causal mechanism, while reality is more complex and continuous. Bearing these arguments in mind, and evaluation of the fifth and final hypothesis

**H5: Critical Realism is beneficial for the study of bicycling.**

The verdict is mixed. There are a number of advantages and a set of frictions that evolve from studying bicycling from a CR framework. As mentioned before, a pivotal problem is the conception of causation consisting of necessity and contingency. Almost every study on bicycling I came across addressed causality in terms of regularity and probability. This is particularly relevant when assessing the causal power of space in relation to bicycling. Although a bike friendly physical environment clearly influences mode choice, this relation is far from deterministic. Not even in conjunction with institutional and socio-cultural causal powers. I can only approve the aforementioned proposal of Naess and Jensen (2002: 310) to address transportation as a ‘quasi-closed system, rather than a completely open system. Moreover, fitting empirical observations of behavior and experiences within this framework is problematic. Making the step from micro observations of bicycling (‘the empirical) to describing structural causal mechanisms (‘the real’) turned out to be complicated. Notions like ‘retroduction’ and ‘iterative abstraction’ only provide crude direction on the way in which empirical data should be used in relation to theory. I have dealt with this these issues in this thesis by trading off a purely CR framework to empirical and theoretical insightfulness. The conceptual model is based on a positivist epistemological stance, rather than a CR perspective.

On a positive note, CR was a very useful to analyze historical processes. It relates well to the concept of path dependence through the focus on contingency and necessity, the latter is closely resembles James Mahoney’s (2000) idea of ‘relatively deterministic causal patterns’. Moreover, CR is relevant in analyzing historical pathways because of the focus on the activation of causal powers through a conjunction with other conditions. As studies on bicycling deal with the interaction of material and cultural structures, CR gives methodological tools to dissect this concurrence. I would argue the intransitive dimension of knowledge could be equated with the act of sociospatial practices and the physical environment. Notwithstanding any socially constructs, climbing a hill on a bicycle is a material act which results in a set of physiological processes. Consequently, this aspect of the intransitive dimension or the ‘real’ provides ontologically clear building blocks to base theory on. Since this study took place in a theoretically immature field, approaching bicycle culture in a retroductive and iteratively abstractive way also had advantages. Theoretical insights from other fields could continuously be weighed and related to findings to findings in both cases. This also resulted in failures: theoretical approaches which were not suited to understand bicycle culture. A retroductive stance provides the opportunity to throw unfruitful theoretical insights away. In sum, I could not agree more with Andrew Sayer’s (2000 ) argument that doing social research is a ‘creative and innovative process’.

Finally, an aspect of CR which I have deliberately left out of the foregoing to not complicate matters too much. CR is not only Realism, but also Critical; it challenges existing knowledge and has emancipatory potential (Sayer 2000:18). Whilst this has not been the central aim of this study, since there was not an existing body of theories to challenge. I have adhered to this adagio in two ways. Firstly, I have tried to uncover the penetrating impact of what John Urry (2004) has called a ‘system of automobility’ in both discourse and practice. Several very sophisticated studies in transportation and bicycling research (e.g. Rietveld and Daniel 2004, Dill and Carr 2003) tend to neglect this dimension. Secondly, and in line with the work of Andreas Wimmer (2007) I have tried to evade the use of ethnic variables as explanatory without rigorously assessing their value. While the association between non-western ethnicity and low bicycle use are striking, there is a story underneath which has to be told.
9.3: Limitations and Directions for Further Research

9.3.1 Limitations
Partly due to the explorative nature of this study, there are several limitations which restrict both the scope and depth of this study. The number of user interviews is relatively small, especially compared to the large scale of the cases (cities). This makes it very difficult to make reliable claims about the whole population of bicyclists in both cities. The secondary data used are not always reliable (especially the mode split data are a concern) and do not always reflect the exact phenomena I tried to research. Moreover, the comparison of historical pathways is mainly based on existing literature, whereas primary data would have given a more precise and valid overview. This argument also goes for the assessment of the physical environment, which -particularly in Amsterdam- could have been done with original research. The institutional environment has remained underexposed, while for a thorough study of bicycle culture all three dimension of bicycle culture need to be attended to. Finally and as a consequence of the retroductive approach, the interviews were not conducted with the three analytic dimensions of the socio-cultural environment in mind. With a more extended knowledge of the theoretical basis this relies on in an earlier stage, attitudes, counter culture and lifestyle could have been made more explicit in the interviews. Moreover, a quantitative survey of these aspects would have made the empirical findings more reliable.

9.3.2 Directions for further research
The main strength of this study is that it has given tools to understand the socio-cultural environment related to bicycling more properly and has given a set of causal mechanisms at work within a bicycle culture. The causal mechanisms can be tested in other contexts to refine and amend their workings. Moreover, aspects of the conceptual framework which have been neglected because they were absent in the two cities could emerge from research in other cities. With regards to the analytic dimensions, I think the lifestyle approach in particular has potential for follow-up research (also Van Acker et al. 2010). It would be revealing to study how cultural capital relates to bicycling as both an embodied practice as an objectified artifact. Moreover, this could assess both the way in which lifestyle is directly related to bicycling and indirectly via locational preference (Van Acker forthcoming). As I have also argued elsewhere (Pelzer forthcoming) the concept of habitus is not only relevant to understand why and how a particular group rides, but also why other groups do not. In the Dutch context looking beyond the bicycle as a ‘neutral’ means of transportation could give better insights in the reasons why people from a non-Western background bicycle less. Although counter culture turned out to be a somewhat problematic concept. This study has also found the omnipotent role of automobility. Future studies should not address modalities as equal, but be sensitive to the role of cars as a dominant material and discursive force. The causal mechanisms resulting from this study could be empirically tested and modified. Moreover, while the role of symbolic interaction in the public realm has been studies extensively (e.g. Jacobs 1961, Lofland 1998, Bertolini 2003).These kind of studies have generally not scrutinized the particular role of bicycling in relation to social exchange in public space. Finally, while this study has relied specifically on a CR philosophy and mainly on qualitative methods, the conceptual framework and the causal mechanisms could be studied more extensively through quantitative methods. Such an approach does not necessarily have to be based on a CR stance, since this has mainly been a way to build theory about bicycle culture, rather than to test it.
Epilogue: Policy Recommendations

While history, culture, topography, and climate are important, they do not necessarily determine the fate of cycling. (Pucher and R. Buehler 2008:4)

This chapter is not a cookbook solution for the creation of a bicycle culture. Local planners have a far better insight in their city and the things that could work. Nor is this an overview of policy interventions which could lead to an increase in bicycle use (see Pucher et al. 2010 for an excellent attempt). I will rather point at specific insights that were drawn from this study and themes that tend to get less attention in academic and scientific discourse. It should be noted that the recommendations to not neatly follow out of the study and have been phrased in blunt and straightforward terminology to make them as useful as possible.

Public space tends to get a lot of attention in urban spatial planning. A well maintained square can function as a ‘living room’ of a city. An impressive amount of studies (e.g. Jacobs 1961, Lofland 1992, Hajer and Reijndorp 2001) has pointed at the importance of social exchange and symbolic interaction for the fabric of a city. Nevertheless, the user of public space is almost without exception a pedestrian. Although bicyclists move more rapidly through public space, social interactions also are an important part of the bike ride. Moreover, at traffic lights they are on equal foot with pedestrians. Consequently, to reap the social benefits of bicycling and let them become part of a city’s culture it is important to create the conditions for interactions with fellow bicyclists and pedestrians. Obviously, safety concerns have to be taken into account. However, the idea persistent in particularly the US which treat bicycles as vehicles, neglects the socially interactive nature of bicycling.

In general, high density of population and functions is seen as a panacea to increase bicycle use. While the resulting short trip distances absolutely have a positive effect on bicycling, this solution is simultaneously one of the most difficult and expensive. The Portland Story shows that even in a relatively dispersed city (at least to European standards) it is possible to create a bicycle culture. Bicycling coalesces with a set of attitudes of a progressive and sustainable world outlook. Moreover, unique characteristics such as health, fun and cheapness replace the role of a built environment particularly suited for bicycling, such as in Amsterdam. So while American cities need keep looking at Europe for design practices, a strong emphasis on the socio-cultural environment is needed to counterbalance low densities. There is not one universal pathway to a bicycle culture. Copenhagen and Amsterdam are not only ahead but also different. While the bike has become ‘just’ a means of transportation, a vacuum cleaner, the role of the bicycle as an identity marker in the US needs to be cherished. The dilemma for policy makers involved in marketing is to come up with a narrative which is both inclusive and emphasizes the uniqueness of bicycles. Potential lies in the differentiation of bikes. There is an analogy with shoes here: while everybody wears them, the brand and type reflect your image.

For Portland in particular, I fully agree with the aim of the Bicycle Master Plan for 2030 to build more separated cycle tracks. This should not be taken too lightly, since even the most avid cyclists in my sample emphasized feelings of fear while riding. Accordingly, the categorization of bicyclists based on a safety dimension makes sense. However, this approach needs further contemplation. In future developments, a subdivision could arise of bicyclists riding for rational reasons (health, environment, costs) and bicyclists which feel they are part of a sub-culture and consider riding as their lifestyle. The core aim in marketing the bicycle is to build a multilayered narrative which includes Naked Bike riders, but also the sporty 45 year old with a full time job. This would not only be beneficial, but also necessary. Portland
cannot rely on its infrastructure to get people on their bikes, but needs a strong image which overrules individual decision making processes based on rationality. Finally, I would advice to change STOP signs into yield signs. At the moment even the most decent bicyclists do not always adhere to this type of regulation. Since stronger enforcement is unlikely, specific yield signs for bikes in low traffic environments would make traffic situations clearer and safer.

How then to advise the world’s bicycle capital, Amsterdam? I would argue there are three concrete things the city could do to not only increase bicycle use, but also to make the bicycle culture better and more equal.

1.) Ban mopeds from separated cycle tracks. The findings in the US show the important role fear can play in deciding (not) to bicycle. Mopeds are a form of motorized traffic which has a negative influence on the bicycle experience, especially for children and elderly.

2.) Be more aware of the role of bicycling as a national habit when addressing immigrants. Mode choice considerations which are considered ‘rational’ by many Dutch can be perceived differently by immigrants. A focus on the emotional and status related appeals of bicycling (hip, fun, health) also has potential.

3.) Cooperate with adjacent municipalities regarding bike infrastructure of a higher length (7.5 -15 km) and emphasize the benefits (health, fun, costs) related to such a commute. As the Portlanders on their fast road bikes have shown, there is a world to win in the long distance segment.
References


dIVV (2009) *Tabellenboek fietsgebruik.* Data about bicycle use in Amsterdam provided by the Department of Infrastructure, Traffic and Transport.


Kuipers, Giselinde (2010) ‘De fiets van Hare Majesteit: Over nationale habitus en sociologische vergelijking’ Inaugural lecture for acceptation the position of Professor at the Erasmus University, Rotterdam.


Pelzer, P. (forthcoming) ‘Fietsmulticulturalisme’, AGORA, No.4


Te Brömmelstroet, M. And E. Crouse (forthcoming) ‘Psst...Fietscultuur kopen? AGORA, No.4.


Thomas, William I. (with Dorothy Swain Thomas) (1928) The child in America. New York:


Appendix 1: Overview of Interviewees

Table 1: Overview Interviews bicycle experts Portland

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Name</th>
<th>Function/Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>February 13, 2010</td>
<td>Jeff Mapes</td>
<td>Author ‘Pedaling Revolution’</td>
</tr>
<tr>
<td>2.</td>
<td>February 23, 2010</td>
<td>Rex Burkholder</td>
<td>Founder BTA &amp; Metro Councilor</td>
</tr>
<tr>
<td>3.</td>
<td>March 2, 2010</td>
<td>Mia Birk</td>
<td>Principal Alta &amp; former bike coordinator</td>
</tr>
<tr>
<td>4.</td>
<td>March 2, 2010</td>
<td>Jonathan Maus</td>
<td>Editor-in-Chief Bikeportland.org</td>
</tr>
<tr>
<td>5.</td>
<td>March 4, 2010</td>
<td>Sheila Lyons</td>
<td>Bike coordinator ODOT</td>
</tr>
<tr>
<td>6.</td>
<td>March 5, 2010</td>
<td>John Charles</td>
<td>Director Cascade Policy Institute</td>
</tr>
<tr>
<td>7.</td>
<td>March 5, 2010</td>
<td>Jay Graves</td>
<td>CEO Bike Gallery and bike advocate</td>
</tr>
<tr>
<td>8.</td>
<td>March 16, 2010</td>
<td>Roger Geller</td>
<td>Bike Coordinator PBOT</td>
</tr>
<tr>
<td>9.</td>
<td>March 17, 2010</td>
<td>Tom Miller</td>
<td>Chief of Staff Sam Adams prominent BTA member</td>
</tr>
</tbody>
</table>

Table 2: Overview Interviews bike users Portland

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>March 3, 2010</td>
<td>Kendra &amp; Mark</td>
<td>-</td>
<td>m/f</td>
</tr>
<tr>
<td>2.</td>
<td>March 6, 2010</td>
<td>Jenny</td>
<td>-</td>
<td>f</td>
</tr>
<tr>
<td>3.</td>
<td>March 7, 2010</td>
<td>Em</td>
<td>-</td>
<td>f</td>
</tr>
<tr>
<td>4.</td>
<td>March 8, 2010</td>
<td>Don</td>
<td>74</td>
<td>m</td>
</tr>
<tr>
<td>5.</td>
<td>March 9, 2010</td>
<td>Ken</td>
<td>44</td>
<td>m</td>
</tr>
<tr>
<td>6.</td>
<td>March 9, 2010</td>
<td>Kathleen &amp; Caitleen</td>
<td>24/26</td>
<td>f/f</td>
</tr>
<tr>
<td>7.</td>
<td>March 8, 2010</td>
<td>Ben</td>
<td>-</td>
<td>m</td>
</tr>
<tr>
<td>8.</td>
<td>March 12, 2010</td>
<td>Otis</td>
<td>26</td>
<td>m</td>
</tr>
<tr>
<td>9.</td>
<td>April 6, 2010</td>
<td>Francine</td>
<td>42</td>
<td>f</td>
</tr>
<tr>
<td>10.</td>
<td>April 6, 2010</td>
<td>Justin</td>
<td>21</td>
<td>m</td>
</tr>
</tbody>
</table>

Table 3: Overview Interviews bicycle experts Amsterdam

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Name</th>
<th>Function/Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>April 20, 2010</td>
<td>Goverth de With</td>
<td>Coordinator Fietsersbond Amsterdam</td>
</tr>
<tr>
<td>2.</td>
<td>June 2, 2010</td>
<td>Maarten Bakker and Martijn Sargentini</td>
<td>Policy makers Stadsregio Amsterdam</td>
</tr>
<tr>
<td>4.</td>
<td>June 17, 2010</td>
<td>Frank Borgman</td>
<td>Policy maker, Fietsersbond the Netherlands</td>
</tr>
<tr>
<td>5.</td>
<td>July 7, 2010</td>
<td>Pascal van Noort</td>
<td>Consultant, Velomondial</td>
</tr>
</tbody>
</table>
Table 4: Overview Interviews bike users Amsterdam

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>July 7, 2010</td>
<td>Elly</td>
<td>64</td>
<td>f</td>
</tr>
<tr>
<td>2.</td>
<td>July 13, 2010</td>
<td>Titia</td>
<td>57</td>
<td>f</td>
</tr>
<tr>
<td>3.</td>
<td>July 19, 2010</td>
<td>Esther</td>
<td>-</td>
<td>f</td>
</tr>
<tr>
<td>4.</td>
<td>July 19, 2010</td>
<td>Sylvana</td>
<td>47</td>
<td>F</td>
</tr>
<tr>
<td>5.</td>
<td>July 20, 2010</td>
<td>Jorge</td>
<td>44</td>
<td>m</td>
</tr>
<tr>
<td>6.</td>
<td>July 20, 2010</td>
<td>Renathe</td>
<td>34</td>
<td>f</td>
</tr>
<tr>
<td>7.</td>
<td>July 21, 2010</td>
<td>Marianne</td>
<td>48</td>
<td>F</td>
</tr>
<tr>
<td>8.</td>
<td>July 29, 2010</td>
<td>Tim</td>
<td>22</td>
<td>m</td>
</tr>
<tr>
<td>9.</td>
<td>August 3, 2010</td>
<td>Johanna</td>
<td>21</td>
<td>f</td>
</tr>
</tbody>
</table>
## Appendix 2: Calculations with Cycle Zone Analysis

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>Correlation (Pearson)</th>
<th>Significance (1-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Longitudinal Analysis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ Bike Use ’90-’00</td>
<td>Δ BQI ’90-’00</td>
<td>0.09</td>
<td>0.32</td>
</tr>
<tr>
<td>BFB ’90-00</td>
<td>Δ Ed. Att. ’90-’00</td>
<td>0.36</td>
<td>0.02*</td>
</tr>
<tr>
<td>Δ Bike Use ’90-’00</td>
<td>Δ Ed. Att. ’90-’00</td>
<td>0.55</td>
<td>0.00*</td>
</tr>
<tr>
<td>Δ Bike Use ’00-’09</td>
<td>Δ BQI ’00-’09</td>
<td>0.327</td>
<td>0.03*</td>
</tr>
<tr>
<td>BFB ’00-09</td>
<td>Δ Ed. Att. ’00-’09</td>
<td>-0.07</td>
<td>0.36</td>
</tr>
<tr>
<td>Δ Bike Use ’00-’90</td>
<td>Δ Ed. Att. ’00-’09</td>
<td>0.18</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Static Analysis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bike use 2009</td>
<td>BQI</td>
<td>0.36</td>
<td>0.02*</td>
</tr>
<tr>
<td>Bike use 2009</td>
<td>Connected Node Ratio</td>
<td>0.79</td>
<td>0.00*</td>
</tr>
<tr>
<td>Bike use 2009</td>
<td>&lt; $15,000 p/y</td>
<td>0.32</td>
<td>0.03*</td>
</tr>
<tr>
<td>Bike use 2009</td>
<td>$15,000-24,999 p/y</td>
<td>0.38</td>
<td>0.02*</td>
</tr>
</tbody>
</table>
## Appendix 3 Change in bicycle modal split 1990-2008 by city borough in Amsterdam.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre</td>
<td>30%</td>
<td>37%</td>
<td>38%</td>
<td>40%</td>
<td>43%</td>
<td>+13%</td>
</tr>
<tr>
<td>West</td>
<td>22%</td>
<td>26%</td>
<td>28%</td>
<td>32%</td>
<td>32%</td>
<td>+11%</td>
</tr>
<tr>
<td>South</td>
<td>23%</td>
<td>27%</td>
<td>26%</td>
<td>31%</td>
<td>39%</td>
<td>+16%</td>
</tr>
<tr>
<td>East</td>
<td>22%</td>
<td>24%</td>
<td>28%</td>
<td>31%</td>
<td>36%</td>
<td>+14%</td>
</tr>
<tr>
<td>North</td>
<td>17%</td>
<td>19%</td>
<td>15%</td>
<td>18%</td>
<td>17%</td>
<td>-1%</td>
</tr>
<tr>
<td>New-West</td>
<td>14%</td>
<td>16%</td>
<td>17%</td>
<td>15%</td>
<td>17%</td>
<td>+3%</td>
</tr>
<tr>
<td>Southeast</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>12%</td>
<td>14%</td>
<td>0%</td>
</tr>
<tr>
<td>Amsterdam Total</td>
<td>21%</td>
<td>24%</td>
<td>25%</td>
<td>27%</td>
<td>29%</td>
<td>+8%</td>
</tr>
</tbody>
</table>

Source: dIVV (2009)

---

Change is in percentage points.