

Blind spots and misguided optimism in cycling policies and policy-oriented bicycle research

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Abstract

Governments all over the Western world have introduced policies to promote cycling in daily transport. Social-scientific and traffic planning studies have addressed the development and facilitation of bicycle use. However, there seems to be no clear correlation between the policies implemented and the actual share of cycling in traffic in various countries. Similar policy measures have in fact produced widely different, either positive or disappointing, outcomes. To explain this divergence, this article questions the one-sided rational-instrumental approach and the optimistic belief in technocratic planning which are prevalent in bicycle policies and policy-oriented research. I argue that the influence of historical and cultural factors on levels and practices of bicycle use has basically been underestimated if not overlooked. Such factors can hardly be directly influenced through infrastructural engineering and social planning.

Introduction

Worries about energy depletion, environmental and noise pollution, traffic congestion and unsafety, ill health and obesity, social exclusion and unsafe streets have boosted the (re)discovery of the bicycle as a clean, silent, sustainable, healthy, flexible, inexpensive, democratic and humane means of transportation. Over the last two or three decades national governments and cities throughout the Western world have launched ambitious policy statements and programs aimed at promoting cycling. Apart from students in university towns, the vehicle's popularity increased in particular among young and well-educated residents of cosmopolitan cities. Also, it won a prominent position in the marketing of popular tourist destinations such as Paris, Amsterdam and Barcelona, and even of traditionally not very bicycle friendly cities such as London and New York.

All of this has nourished the belief that the Western world is witnessing a 'bicycle renaissance' and 'a veritable bike boom'.¹ Policymakers, policy-oriented bicycle researchers and activists seem quite optimistic about the possibilities to increase the bike's modal share in daily transport through infrastructural engineering and promotional campaigns. Such policies have been introduced not only in countries with relatively high or medium wheeling levels (The Netherlands, Denmark, Germany, Finland and Flanders (Belgium), Sweden, Ireland, Austria and Switzerland), but also in countries with lower cycling volumes (Great Britain, United States, Canada, Australia, France, Italy and Norway). In the Eastern part of Europe, where recent trends show declining levels of pedaling as a consequence of economic growth and fast growing car-ownership and motorized traffic, and also in Spain, Portugal and Greece, bicycle policies, if in place at all, are still in their infancy.

The underlying arguments of cycling policies are basically similar everywhere, but their implementation as well as actual wheeling volumes reveal significant and persistent differences between countries. Around 2000 the bicycle's modal share as percentage of total passenger transport amounted to 27 in the Netherlands and 20 in Denmark. It varied between 7 and 12 in Germany, Belgium, Austria, Switzerland, Sweden and Finland; between 4 and 5 in Italy, France and Norway; and between 2 and 3 in Great Britain, Canada, Ireland and the Czech Republic. And it stagnated at around 1 percent in the United States, Australia, New Zealand, Spain, Portugal and Greece.² The appreciation of and motivation for pedaling also show considerable variation. Whereas in countries with high cycling volumes a positive image and utilitarian purposes (commuting to work, school, shops and other activities and destinations) prevail, in countries with low wheeling levels views on the bike as a daily transport mode are more negative and pedaling is foremost a leisure, sportive or childhood activity.³

These substantial national differences raise questions. For one thing, what does the so-called 'bicycle renaissance' imply and what is its impact? Is it possible to explain variations in the frequency, purpose and appreciation of bicycle-use on the basis of geographical and climatological conditions, environmental and infrastructural planning, demographic characteristics, habits in mobility, and the public image of the bike? What is the impact of cycling policies in various countries? Are they effective at all?

This paper considers these issues on the basis of a meta-analysis of more than 200 bicycle-research papers⁴ and over thirty policy documents, mostly issued in the last two decades.⁵ In addition I rely on several historical studies about the social, cultural, political and national dimension of cycling. First I discuss policy-oriented research into the factors that advance or impede bicycling. Next I turn to the, in my view, misguided presuppositions and blind spots in such research and in policy plans. My claim is that bicycle researchers and policymakers largely ignore the historical and national-cultural dimension of cycling, although this overlooked aspect, which I discuss in the last part of this paper, is highly relevant for explaining international differences in both wheeling patterns and the effectiveness of policies.⁶

The basic assumptions of bicycle policies and research

The growing concern for bicycling in the transport policies of many Western governments has boosted social-scientific bicycle research in the field of mobility, traffic engineering and urban planning. Strikingly, most of these studies have appeared in the United States, the United Kingdom and Australia, where bicycle levels are low, while Dutch, German, Belgian and Scandinavian scholars also figure prominently.⁷ Quantitative and statistical methods, in particular the counting and measuring of traffic movements, as well as surveys set the tone in this research. Central concerns pertain to why people either use or do not employ the bicycle (in particular for utilitarian purposes) and how wheeling can be facilitated and promoted.

A basic assumption of cycling policy and the associated research is the more or less optimistic idea that wheeling can be stimulated on the basis of technical and social design. Policymakers, planning experts, and policy-oriented bicycle researchers feel themselves challenged by two main problems. The first one is that people who do not use a bicycle for personal transport, are hampered by material and environmental barriers, such as the dominance of motorized traffic and the lack of appropriate infrastructural facilities or other provisions. The second issue is that such people are not aware of the two-wheeler's benefits because they lack experience with it and have wrong ideas about it. The engineering and planning approach implies the belief that these drawbacks can be tackled by implementing the appropriate measures based on scientific (in particular quantitative) knowledge and technical expertise. This way of reasoning also presupposes to a large extent that that cycling is basically a matter of choice and conscious decision-making. Whether people cycle or not, is mainly viewed as a consequence of an individual and rational-instrumental consideration of costs and benefits. And it is assumed that such a consideration can be influenced by adapting land use patterns and the built environment, by building cycling infrastructures, by promoting a positive image of wheeling and by informing the public about its advantages.

Results of social-scientific bicycle-research

Based on my reading of many research reports, I distinguish six factors that possibly advance or impede cycling: (1) natural conditions; (2) land use patterns and built environment; (3) demography; (4) traffic infrastructure; (5) individual choice and motivation and (6) engrained habits with respect to mobility. Four of these determinants cannot be changed through direct and purposive human intervention, at least not in the short term: they largely depend on the forces of nature (1) or they have taken on a more or less fixed shape in long-term historical developments (2, 3 and 6). In principle, traffic infrastructure and individual choice and motivation can be influenced in the shorter term through goal-oriented policy measures. And policy as such – the choices and priorities made and their implementation – is of course a possible immediate influence on cycling levels in its own right.

Research shows that natural conditions (climate, weather and geography, especially differences in altitude) affect bicycle use, but they seem to play a subordinate rather than a decisive role.⁸ There are indications that spatial and urban attributes have more impact than natural conditions.⁹ Spatial and urban characteristics refer to population density and the built environment, the degree of (sub)urbanization, the separation or mixing of different urban functions such as living and working, the spatial spread of public and commercial facilities, and the availability, efficiency and attractiveness of various modes of transport (public transport, car, moped, bicycle and walking). Correlations between a high building density and high cycling levels have been established, but they are not equally significant in various cities and countries, and they seem to depend on other factors such as the (in)convenience of public transport.

In some countries there is a significant correlation between the bike's modal share and demographic, socio-economic and sociocultural characteristics of the population (age, gender, income, education, religion, family composition, lifestyle, ethnicity and political affiliation), but in other countries such a correlation is weak or almost non-existent. Whereas in the United States, Canada, Great Britain and Australia men, youngsters, students and yuppies are overrepresented among cyclists, and also in France and Belgium more men than women pedal, in the Netherlands, Denmark and Germany there is a stronger correspondence between the demographic traits of cyclists and those of the general population. Correlations between bicycle-use and education, wealth, income, family situation, religion and ethnicity are not straightforward and they vary between countries.¹⁰ Some research suggests that relatively high and low levels of cycling are related to higher and lower degrees of social egalitarianism and status-sensitivity as well as to certain ('green' and/or trendy) lifestyles.¹¹

Overall, it appears that cycling volumes are far from completely determined by geographical, climatological and environmental conditions or demographic characteristics. The relative influence of these factors and their mutual interactions are unclear.

Traffic systems and infrastructures have received much attention in policy-oriented bicycle research. Bicycle use may be influenced by traffic rules and speeds; whether or not there is a segregation between motorized traffic and two-wheelers, and between cyclists and pedestrians; parking space and costs for both cars and bicycles; the availability of bicycle paths, lanes, bridges, viaducts, tunnels, traffic-calmed streets and

other wheeling facilities such as marked routes and route networks, separate traffic lights, (guarded) parking lots, repair shops, changing rooms and showers in the workplace and storage capacity for two-wheelers at home. Additional elements in this category are bicycle rental facilities, the availability and density of public transport, and the costs and taxation of various modes of transport.

Existing traffic systems and infrastructures may offer more or less possibilities to install adjustments and facilities for cyclists. Many policymakers and bicycle researchers assume that such amenities, which make wheeling more efficient, comfortable, safe and pleasant, will result in increasing numbers of people opting for the two-wheeler in daily commuting. American bicycle experts in particular often display an almost unshakable optimism about the chances of promoting bicycle transport through infrastructural and traffic policies. Leading professor of urban planning John Pucher, for example, strongly believes that 'bicycling can be increased even under quite unfavorable circumstances, provided the right public policies are implemented.'¹² He claims that the high wheeling levels in the Netherlands, Denmark and parts of Germany as well as in some cities in other countries, are largely caused by policies and the wide availability and good quality of cycling infrastructures. A similar approach would be the solution for countries with few cyclists on the roads.¹³

In order to find out whether infrastructural adjustments and facilities indeed have encouraged cycling, many researchers have investigated who use such provisions and to what extent. Some of them have established a correlation between improved bicycle routes and networks and an increased modal share of the bicycle, but only under specific conditions and not in the same degree for all user groups.¹⁴ At the same time scholars have questioned the assumption that infrastructural policies promote cycling. It appears to be difficult to determine the precise impact of such facilities on bicycle use. Many of them find a correlation between the construction and availability of cycle paths and other provisions on the hand and the volume of bicycle traffic on the other. This does not, however, establish conclusive evidence that there is, as if often believed, a causal link. And if there would indeed be such a link, then it remains to be seen what is cause and what is effect. An inverse relation cannot be ruled out: instead of infrastructure causing an increase of cycling levels, improved facilities may also be a result of a preceding rise of the vehicle's modal share, which possibly has been triggered by other factors. There are indications that growing numbers of cyclists in traffic entail an increasing demand for facilities and a greater willingness of governments to meet such needs, in particular if they are articulated by determined bicycle activists and lobbyists. And if such provisions are realized, they chiefly tend to serve the needs of those who are already accustomed cyclists.

Self-selection should be taken into consideration: individuals who are motivated to use the two-wheeler for transport on a regular basis, may prefer to settle in a bicycle-friendly environment.¹⁵ One American study even concludes that there is no clear evidence for a correlation between infrastructure and bicycle levels, and that demographic factors are far more relevant. The authors claim 'that people who cycle do so irrespective of a supportive transportation infrastructure. Such commonly accepted

route-related correlates of cycling as bike lane, traffic conditions, and street connectivity [...] remain insignificant.’¹⁶

Some American and British longitudinal studies, which compare cycling levels before and after installing new bike facilities, show that the building of such infrastructure did not result in a substantial growth of (utilitarian) pedaling. To be true, there may be modest increases (especially of recreational cycling), but these seem to occur only in environments where the vehicle’s modal split already was above the national average.¹⁷ German and British researchers demonstrate that no direct causal link can be established between on the one hand higher or lower wheeling volumes and whether or not cycling is a matter of course and on the other hand the existing traffic infrastructure and current cycling policies.¹⁸ Dutch and Danish findings show that only a clear causal relation between policies and an increase in cycling can be demonstrated if pull measures such as the construction of bicycle networks are combined with push measures such as a restriction of motorized traffic and a substantial rise of parking rates for cars in urban centers.¹⁹ There are indications that Danish, Dutch and also German bicycle policies, which are a shining example for many bicycle advocates, researchers and planners in other countries, have not so much resulted in a substantial increase in the vehicle’s modal share, but rather have made cycling safer, more efficient, more convenient and more enjoyable for the fairly large numbers of people who already frequently used the bicycle for utilitarian transport.²⁰ Such outcomes are in themselves, of course, not without merit, but they are much less spectacular than facilities causing a considerable upsurge of cycling.

A growing number of researchers criticize the often one-sided orientation in bicycle policies to the ‘hard’ material conditions of cycling, particularly infrastructural provisions, and draw attention to the importance of ‘soft’ policy measures such as informing, advising, educating, instructing, promoting and marketing.²¹ Improving the image and status of the bicycle would be a crucial means to increase its attractiveness and use. These scholars focus on the individual motivation for either or not choosing the bike as a means of transport. Two perspectives can be distinguished in such studies. The first assumes that the choice for or against a means of transport is based on a rational-instrumental assessment by individuals of its costs and benefits in the light of their circumstances and available options. The usefulness of the bicycle as a utilitarian means of transportation is central in this perspective. The second perspective centers on the influence of so-called affective motivations (norms and values, beliefs, perceptions, attitudes and habits) that are largely shaped by the social environment and the wider culture. This perspective stresses that cycling experiences are molded in various ways and that they cannot be reduced to conscious decision-making on the basis of economic and other utilitarian considerations.²²

Several researchers, however, put the difference between instrumental and affective motivations in perspective. They argue that instrumental choices can only be understood in the context of affective incentives. In daily practice apparent objective cost and benefit assessments are usually imbued with subjective perceptions of advantages and disadvantages. Such perceptions are embedded in habits, routines, experiences and attitudes. When it comes to a cost and benefit assessment, for example

with respect to the investment of time, the physical effort, the health effects, the (in)convenience, the (in)efficiency, the (un)safety and the financial costs of cycling, judgments vary considerably between regular and experienced cyclists on the one hand and people who hardly or never use the two-wheeler on the other. The last group identifies far more barriers for using the vehicle than the first group and also evaluates the environmental and infrastructural conditions for bicycling more negatively.²³

The positive or negative evaluation of the bicycle and the associated perception of its advantages and disadvantages by individuals are also determined by the attitudes of people in the social environment and whether biking is part of the learned pattern of daily habits. The mechanism of the self-fulfilling prophecy can be observed here: a positive or negative image of the bicycle implies that either the advantages or disadvantages of its use are stressed. These perceptions determine whether or not people choose the bike as a means of transport and whether or not they develop cycling experience. And on its turn experience again determines perception. Choosing or not choosing the two-wheeler as the means of transport is embedded in an accumulation of corroborating and reinforcing meanings, perceptions and experiences, not only on the individual but also on a collective level. All of this suggests that the motivation to either use or not use the vehicle as a means of transport is to a large degree mediated by cultural and historical factors.²⁴

Just like the apparent success of the building of infrastructural facilities may be the consequence of a preceding increase in bicycle use, a similar tendency can be observed with regard to 'soft' policies. Information, promotion and marketing campaigns aimed at boosting the two-wheeler's image mainly affect those who already cycle and who don't have to be convinced of the practical benefits and fun of cycling, whereas the impact on the actual target group of such efforts, people who never or seldom mount a bike, are barely reached, let alone convinced, so that changes in attitudes, motivation and behavior do not occur.²⁵ Such insights may explain why hard and soft policies have largely failed to generate significant increases of utilitarian cycling in countries, in particular in the English-speaking world, with low average levels of cycling because it is not common practice in daily transport and not perceived as normal. Conversely, such policies seem to be more or less effective in countries where cycling levels are already relatively high and cycling is a time-honored custom, although the result is not so much a further substantial increase in the two-wheeler's modal share, but rather a consolidation and facilitation of existing cycle traffic.²⁶

The shortcomings of cycling policies and bicycle research

All in all, the available research offers no conclusive evidence that cycling increases substantially as a result of infrastructural and promotional policies. Pedaling practices and attitudes seem to be entangled in either restraining or stimulating vicious circles that are hard to break out of through policies. Their effects are largely determined by existing cycling volumes and practices as well as the dominant public image of the bicycle. That is not to say that the building of infrastructural provisions or promotional activities are entirely futile and would have to be discarded. At least they may

counterbalance several social, economic and technological dynamics that all over the Western world structurally impede pedaling: spatial up-scaling and increasing mobility over greater distances furthering motoring and the use of public transport; the continuing (neoliberal) prevalence of efficiency, speed and economic values; the regular priority of motorized transport in traffic policies; growing prosperity and car ownership; powerful automobile-lobbies and the proportional increase of the ageing population and non-Western ethnic minorities that are not familiar with bicycle transport.²⁷

Be that as it may, the diverse findings and partly uncertain and ambiguous conclusions in the field of social-scientific and traffic engineering studies of bicycling, tacitly rather than explicitly, call into question the basic premise of cycling policies: the belief that targeted technological and social interventions can bring about, more or less directly and in the shorter term, substantial changes in existing cycling patterns and levels. To a large extent pedaling levels seem to be determined by factors which are not amenable to rational planning: land use patterns, the built environment, large-scale traffic infrastructures, demographic aspects, attitudes and motivations, meanings and perceptions, and experiences, habits and routines. It is not entirely clear how these factors influence bicycle use, what their relative weight is, how they interact, and how they affect the outcomes of bicycle policies. Moreover, what is lacking in policy-oriented bicycle research is the consideration that most of the relevant determinants have taken shape and evolved in long-term, path-dependent developments – and also, largely, in the context of the modern nation state.

There are good reasons to question the assumption that travel behavior of people can be changed in the short term through targeted policy measures. For example, in their historical research on the development of British commuter traffic from the late nineteenth century, C.G. Pooley and J. Turnbull demonstrate that historical shifts in mobility patterns can be identified – before Second World War most people walked and cycled to work and after 1960 motoring became dominant – but that within different periods individual travel behavior showed a large degree of rigidity: few people switched to another means of transport. Their conclusion is that the individual's choice for a particular mode of mobility is largely determined by habits and routines, many of which, in turn, go back to the prevailing social practices and cultural values.²⁸ Such findings suggest that the historical dimension of bicycling is highly relevant. The impact of ingrained and taken for granted behaviors and choices, however, is only touched upon in social scientific bicycle research, but it is hardly analyzed in more detail and in a systematic way. And the influence of history is as good as completely lacking in such research.

Notwithstanding the more general pleas for a cultural turn in transport and mobility studies²⁹, policy-oriented bicycle researchers have not taken notice of the many cultural-historical works on bicycling that have been published in the past three decades – at least I did not find any references to such studies in their papers.³⁰ Some of them only refer in passing to the possible impact of history and culture, in particular if their surveys fail to establish correlations between wheeling levels and other factors, while at the same time they play down that influence.³¹ Typical is the assertion of John Pucher and Ralph Buehler that 'policies appear to be far more important than history and

culture in explaining [...] cycling trends.’³² Comparing American and European cycling levels, they claim that ‘[t]he much higher levels of cycling in Europe are not simply historical artifacts or culturally determined.’³³ Their way of reasoning suggests that policies can be made and implemented apart from historical and cultural contexts. Apparently, they do not consider that the more or less successful cycling policies and the extensive bicycle infrastructures in countries such as the Netherlands and Denmark could only be realized because of the bicycle-minded culture which had emerged and had been upheld in these nations since the early twentieth century.

Although more and more policy-oriented studies - more often implicitly than explicitly - suggest that the degree in which bicycle use can be substantially increased through policies depends on social-cultural contexts, only a few social-scientific researchers clearly acknowledge that historical factors may be highly relevant and deserve more serious attention.³⁴ Considering research into the relation between policies and infrastructures on the one hand and the volume of pedaling traffic on the other, the American bicycle scholars Gary Barnes and Kevin Krizek, for example, have pointed out that local variations in wheeling levels across different American regions and cities cannot be reasonably explained by differences in policies and infrastructures. ‘Unmeasured factors, perhaps cultural or historical,’ they write, ‘appear to play an extremely large role in determining the level of cycling in an area.’ In their conclusion they assert: ‘It seems that local or even “subcultural” attitudes and perhaps history play a very substantial role in the perception of bicycling as an appealing or even “normal” thing for an adult to do [...]’. They add that ‘soft factors such as culture and attitudes’ should be researched ‘in some systematic way’, without indicating, however, how this should be done.³⁵ Together with Susan Handy and A. Forsyth, Krizek also suggests that the disregard for history is related to bicycle researchers’ strong and optimistic belief in planning and design as well as their one-sided and possibly wishful focus on the practical effects of their studies. Their work is, according to these authors, ‘fraught with practical challenges as well as political ones: expectations are high, interventions are modest, and effects may be unclear,’ while planners and policymakers ‘have a responsibility to understand the limitations of the available evidence and not misuse that evidence in making the case for bicycle and pedestrian interventions.’³⁶

For Krizek and his co-authors this appears to be no reason, however, to fundamentally question the basic (quantitative social-scientific) approach and (policy-oriented) purpose of bicycle research and to take up their earlier suggestion that historical and cultural analysis should be included. On the contrary, in an evaluative survey Krizek and his co-authors A. Forsyth and D. Rodríguez call for more research along the established lines on the basis of more refined data collection and analysis, more sophisticated social-scientific theories and models as well as more precise quantitative methods in order to increase the practical relevance of such work for policymaking.³⁷ In my view the purport of such an appeal and the implied belief in procedural rationality is disputable, and perhaps even counter-productive, because it may undermine the very societal (and also scholarly) relevance of such research.³⁸ Apart from the fact that history and culture are beyond planning and design, one of the main reasons that these ‘soft’ factors appear as residual categories and remain largely

invisible in social-scientific bicycle research, is precisely that they cannot be probed on the basis of the prevailing quantitative methods. Since bicycle-researchers hardly question their basic assumption that bicycling can be planned and designed, and they do not put in perspective their narrow approach, they continue to disregard the cultural and historical dimension, and therefore also the tenacity and persistence of wheeling patterns.

The historical emergence of national cycling cultures

As a first move towards bridging the gap between historical and policy-oriented bicycle studies, I would suggest that, overall, three, partly contrasting bicycle cultures can be distinguished in the Western world on the basis of different volumes and purposes of bicycle use, different meanings, images and perceptions of pedaling, different patterns of entrenched cycling behavior, different characteristics of cyclists and their motivations, and differences in the nature of cycling policies and activism. There is a marked contrast between on the one hand the prominent role of the two-wheeler in daily transport in the Netherlands and Denmark, which is historically rooted in its image of a 'democratic horse' and 'civilizing tool', and on the other its marginalized or exclusive position, as either the poor man's humble utensil or as alternative and trendy vehicle, in the English speaking countries and to a certain extent also in Germany. The third bicycle culture can be found in France, Italy and Belgium, where the popularity of cycling has centered on sports and (professional) racing: the bike was (and is) especially glorified as a record-breaker, while pedaling for utilitarian purposes, with the exception of the Flemish part of Belgium since the last decades, has declined to rather low levels.

These cycling cultures have taken shape in specific historical trajectories and in the context of modern nation states. In the following sections I will briefly sketch these trajectories and contexts on the basis of existing studies about the social, cultural and political dimension of pedalling. Three phases in the bicycle's twentieth-century history can be identified and they entailed a growing diversity in cycling patterns between countries.³⁹ First, when bicycles made their entry into society in the late nineteenth century, specific meanings and values were attached to pedaling, and particular wheeling practices were highlighted and promoted. Second, in the first half of the twentieth century the two-wheeler established itself as a means of transport for the masses and at the same time cycling practices and experiences were increasingly affected by growing motorized traffic. Third, after the Second World War, the nationally diverse wheeling patterns which had evolved in the previous period consolidated in restraining or enhancing vicious circles. The various relevant factors – cycling volumes and practices; meanings, perceptions and public images; attitudes and habits; land use, urban design and traffic infrastructures; government policies and bicycle lobbying and activism – mutually supported and strengthened each other in either a inhibiting or stimulating way and hardened in positive and negative spirals.

In the decades around 1900 the two-wheeler, as an optimal symbiosis of man and innovative technology, was broadly viewed as a promising vehicle of modernization. As such the first users experienced it as a 'freedom machine' and associated pedaling

with flying. Surpassing the average pace of real horses, the 'mechanical horse' facilitated flexible individual mobility at an unprecedented speed, and it thus involved a new experience of time and space, and a widening mental horizon. For townsfolk the bicycle was attractive as a 'relaxation device' for compensating the stressful effects of modern life and for a temporary escape from the monotonous routines of daily work. Pedaling was praised as healthy exercise which not only took physical energy, but also generated new vitality. Through this activity people participated in dynamic modernity, while at the same time keeping balance and inner tranquility. Touring in the countryside became a popular pastime which advanced recreation in nature and tourism. The bicycle was used to discover one's fatherland, to cross national boundaries and to make long journeys, even around the globe. For women the bicycle could be an emancipatory vehicle. It enlarged their independent mobility and loosened constrictive dress codes, although they were also pressured to cycle in a decent way.

The effects of the bicycle as a utilitarian means of transport were even more far-reaching. As a practical and cost saving substitute for the horse, it was introduced in postal and wire services, police and fire departments, and the army. Traders, sales-men, shopkeepers, artisans, doctors and clergymen used it for transporting goods and offering their services. In some countries bikes were employed to bridge long distances in barren areas for economic exploits. The two-wheeler enabled a longer distance between home and work, and thus contributed to suburbanization. In the countryside it was a socializing vehicle which ended local isolation. Schooling and dating opportunities broadened. Distant relatives and friends, new consumption options and participation in social and club life on a regional and even national scale came within reach.

Until the First World War cycling patterns and the bike's public image were rather similar in the Western world. However, in the course of the twentieth century cycling did not evolve in a uniform practice and did not follow the same course all over the Western world. Class distinctions and national differences made their influence felt when it became a utilitarian vehicle for the masses and cycling changed from a fashionable and exciting pursuit into daily routine. In Great-Britain, France, Germany, and America – countries with large automobile industries – the upper and later also the middle class increasingly distinguished themselves from the pedaling working class by switching from the bicycle to the motorcycle and the car. Motoring began to embody modern progress, whereas the two-wheeler was downgraded to the status of an outmoded and inferior 'humble utensil' and the 'poor man's vehicle'.

It was the changing public image rather than a decline of actual cycle traffic on the roads – in fact its volume peaked in the 1940s and 1950s in many parts of the Western world – that generated the devaluation of wheeling. Next, in most countries policymakers, traffic engineers and urban planners, backed up by the ever more powerful motoring interests and the growing number of drivers, largely excluded cycling from their modernistic frame of reference. The result was that the advance of motoring forced most cyclists off highways and that pedaling was more and more considered as dangerous and reckless. In the English-speaking nations as well as in the Mediterranean (and to a lesser extent Germany), where cycle levels dropped to the lowest in the Western world, the bicycle became foremost a children's toy, a means of transport for

those who cannot drive or afford a car (youngsters and students) and a fringe mode for losers and eccentrics, or, on the other hand, a tool for sportive recreation and racing (the overwhelmingly male 'sweaty Lycra-and-helmet, sporty-and-skilled' activity) and the trendy lifestyle vehicle for yuppies ('cycle chic'). Bicycle policies and infrastructures, often implemented in a haphazard and incomplete way if they exist at all, do not elicit broad support (of tax-payers and the overwhelming majority of motorists) and are sometimes contested.⁴⁰ In the public perception of utilitarian cycling, negative valuations stand out, such as dangerous, abnormal, inferior, impractical, uncomfortable, (too) strenuous and (especially among women) incompatible with good appearance. The relatively small minority of regular cyclists, most of them younger or middle-aged men in good shape, share a strong identification with their vehicle and pronounced motives, such as environmental awareness, healthy living and social criticism. All of these associations and images, which to a large extent are related to life-style, education, class and status, hamper the acceptance of the bicycle as a mainstream mode of transport.

Whereas in France, Belgium and Italy (professional) cycle racing – the bike as a 'record-breaker' – has been a source of national pride since the early twentieth century, the Netherlands and Denmark came to be regarded by their own populations as well as others as bicycle nations par excellence. The development of cycling in the last two countries was different from that in other Western countries. The two-wheeler's lasting ubiquity and popularity in daily traffic was not only related to favourable geographical and spatial conditions, the absence of large automobile industries, the substantial taxation of cars, and effective and widely supported bicycle policies, but even more to the socio-political meaning which was attached to the vehicle. In both countries cycling was associated with certain civil virtues which were defined as typical national qualities: independence, moderation, simplicity, practicality, level-headedness and diligence and perseverance - the cyclist struggling against the wind as the prototypical Dutchman. The bicycle was praised as an equalising, civilizing and assimilating tool, as the 'democratic horse' for all layers of the population. The vehicle's diffusion among the working class did not entail that the middle class and policy-makers turned their backs on it. The promoted ideal of the cyclist was the respectable and responsible participant in traffic and public life, a model that applied to all ranks and file. The two-wheeler advanced the elevation of the lower orders as prudent citizens and their integration in the nation. All of this has contributed to the shaping of a bicycle culture in which practical cycling is an entrenched habit among all social strata, age-groups and genders. Riding a bike is hardly associated with a particular social position, status, lifestyle or political orientation. Cycling policies are pragmatic and largely based on consensus between policy-makers, bicycle-activists and the public. Whereas in other countries wheeling and motoring were increasingly considered as mutually exclusive and conflicting, in the Netherlands and Denmark their complementary nature and shared needs were underlined – which reflected that most drivers were also accustomed to pedaling. Therefore the Dutch and Danish cycling organizations, which were rooted in civil society, succeeded in influencing government policies more effectively than the marginalized bicycle interest groups elsewhere. Apart from ethnic minorities, for most Dutch and Danes the usefulness and benefits of pedaling are self-evident.

Conclusion

The often assumed causal link between infrastructural planning and promotional activities on the one hand and the volume of bicycle use on the other has not been confirmed. Policies have failed to generate substantial increases of utilitarian cycling in countries with low average levels of wheeling, whereas in countries with relatively high cycling volumes such policies have contributed to their consolidation rather than to a further growth. The widely diverging national cycling volumes and their large degree of permanence are rooted in diverse long-term national trajectories which have shaped built environments and traffic infrastructures as well as enduring mobility patterns and the interrelated attitudes, perceptions, experiences and habits with respect to various means of transport. These factors are largely immune to direct and short-term planning and policies, which are based on the assumption that travel behavior is motivated by conscious and rational decision-making.

Taken together, the factors that are relevant for cycling levels appear to be trapped in either an inhibiting or stimulating vicious circle, in dynamics that are difficult to break out of. In countries where land use patterns, urban planning and the traffic infrastructure are not conducive to cycling and the two-wheeler is not broadly regarded as an obvious means of transport is, few people use it. As long as cycling continues to be a fringe mode either of the poor who cannot afford driving or of an exceptionally motivated and skilled minority, motoring will dominate traffic, the idea will prevail that pedaling is abnormal, inferior, uncomfortable, dangerous, strenuous and demanding, and there will be lack of sufficient social pressure, democratic support of tax-payers, and willingness among policy-makers for changing the traffic infrastructure and the image of the bicycle. Although governments in the English-speaking world have made efforts to promote bicycling, overall, apart from some modest results on the local level, the outcomes have been disappointing because such efforts are not structurally embedded in policies, in civil society and lack continuity. In Denmark and the Netherlands, and perhaps increasingly in some other countries, such as Germany and Flanders, on the other hand, the enduring high or increased bicycle volumes and the familiarity of the majority of or a substantial part of the population with wheeling guarantee broad or adequate support for bicycle policies. The steady and structural development and upkeep of cycling facilities warrants that pedaling remains attractive and a matter of course. In these countries bicycle policies have contributed less to a significant growth of bicycling than to a consolidation of its existing level.

Policy-makers and experts in the field of traffic engineering, infrastructure and urban planning, who tend to follow a technocratic approach, have largely disregarded the persistent influence of history and (national) culture on current cycling levels and patterns. Both determining factors, which are largely invisible in policy-oriented bicycle research, put limits on what policies can realize in the short run. As a corrective of the overoptimistic belief in rational planning and in order to develop more realistic and effective policies, it may be advisable for policymakers and bicycle researchers to consider the historically and nationally specific interrelations between natural and built

environments, traffic infrastructures, meanings and perceptions, and habits and attitudes with regard to cycling. Adopting historical knowledge and an international comparative angle may temper unrealistic expectations among bicycle researchers and policymakers, and help them to attune policies to what is feasible and what is not within existing bicycle cultures. Also, it may be wise to shift the focus in bicycle policies from rational planning to nudging strategies in order to influence through more subtle, socio-psychological and cultural means the engrained habits and attitudes that play such a crucial, but not always clearly visible motivational role in traffic behavior and mobility patterns. Finally, efforts to promote bicycling can only be successful in an enduring way if politicians and other policymakers have the guts to defy powerful car-lobbies and inveterate drivers, and to introduce structural measures that discourage and curb motoring.

Notes

¹ J. Pucher, C. Komanoff and P. Schimeck, 'Bicycling Renaissance in North America? Recent trends and alternative policies to promote bicycling', *Transportation Research A*:33 (1999) 625-654; J. Pucher, R. Buehler and M. Seinen, 'Bicycle renaissance in North America? An update and re-appraisal of cycling trends and policies', *Transportation Research A*:45 (2011) 451-475; J. Pucher and R. Buehler, *City Cycling* (Cambridge/London 2012) 2; T.A. Carstensen and A-K. Ebert, 'Cycling cultures in Northern Europe: From 'golden age' to 'renaissance', in J. Parkin (Ed.), *Cycling and Sustainability* (Bingley 2012) 23-58; T. Birkholz, 'Die stille Revolution – das Fahrrad kommt zurück', in M. Bäumer and Museum der Arbeit, *Das Fahrrad. Kultur/Technik/Mobilität* (Hamburg 2014) 160-167; P. Smethurst, *The Bicycle – Towards a Global History* (Houndmills, Basingstoke, New York, 2015) 3-4, 143. For putting this belief in perspective see M. Stoffers and A.-K. Ebert, 'New Directions in Cycling Research. A Report on the Cycling History Roundtable at T2M Madrid', *Mobility in History* 5 (2014) 9-19; Smethurst, *The Bicycle*, 144-148.

² For these and other quantitative data see J. Dekoster et al., *Cycling: the way ahead for towns and cities* (Luxemburg 1999) 19; U. Huwer, 'The 10 Point Pedaling Action Programme to support cycling', *World Transport Policy & Practice* 6:2 (2000) 40-44, here 41, 43; European Conference of the Ministers of Transport, *Implementing Sustainable Urban Travel Policies. National Policies to Promote Cycling* (Paris 2004) 19-20, 24; P. Rietveld and V. Daniel, 'Determinants of bicycle use: do municipal policies matter?', *Transportation Research A*, 38 (2004) 531-550, here 534; K. van Hout, *Literature search bicycle use and influencing factors in Europe* (Hasselt 2008) 8, 14-18; J. Pucher and R. Buehler, 'Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany', *Transport Reviews* 28:4 (2008) 495-528, here 498-499; D. Bassett, et al., 'Walking, Cycling, and Obesity Rates in Europe, North America, and Australia', *Journal Physical Activity and Health* 5:6 (2008) 795-814, here 799; Directorate-General for Internal Policies, Policy Department B, Structural and Cohesion Policies, *The Promotion of Cycling* (Brussels 2010) 28; 'Bicycle Statistics: Usage, Production, Sales, Import, Export', retrieved from <http://www.ibike.org/library/statistics-data.htm> (19-10-2012).

³ Huwer, 'The 10 Point Pedaling Action Programme', 43.

⁴ Within the confines of this paper, I can only refer to a selection of these reports.

⁵ Ministerie van Verkeer en Waterstaat, *Nota Fietsverkeer 1983: een volledig beeld* (The Hague 1983); European Commission, *Policy and provision for cyclists in Europe* (Brussels 1989); Ministerie van Verkeer en Waterstaat, *Beleidsnotitie Masterplan Fiets* (The Hague 1991); Federal Highway Administration, *The FHWA National Bicycling and Walking Study case study No. 3: What needs to be done to promote bicycling and walking?* (Washington DC 1992); Federal Highway Administration, *The FHWA National Bicycling and Walking Study case study No. 4: Measures to Overcome Impediments to Bicycling and Walking* (Washington DC 1993); Finnish Ministry of Transport, *Finland Moving on Two Wheels* (Helsinki 1993); U.S.

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⁶ The variations in cycling volumes between regions or cities within countries are beyond the scope of this paper.

⁷ There may be a selective bias in this observation since my selection of research reports only includes those written in English, German and Dutch.

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