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The importance of bicycle parking management

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ABSTRACT

Encouraging cycling to make cities more liveable, healthy and sustainable has been very effective in the Netherlands, Germany and Denmark (Pucher & Buehler, 2008). In these countries cycling is not limited to recreation or utilitarian purposes, but used for a wide range of daily activities (Pucher & Buehler, 2008). It is the opinion of the authors based on recent reports and articles in newspaper that this intensive use also has a backside: bike parking facilities are lacking or have too limited capacity, for example around (Dutch) train stations,[1] shopping malls and sports centres and the consequences of lacking bike parking management are underestimated, for example in the city centres of Delft,[2] The Hague,[3] Utrecht[4] and Copenhagen[5]. Many scholars have written on the aspects of improving bike ability, on biking policies, on mode choice, on route choice and on the perception and attitude of bikers. Bike parking is one of the core aspects for all of these subjects. Nevertheless, bike parking and the issues around stations, shopping malls and in city centres are hardly mentioned. This paper describes the issues raised in the Netherlands and Denmark recently.

1. Introduction

The development of car-free city centres encourages the use of slow-modes: these city centres are better accessible by bike and walking is more enjoyable. In the sixties the first pedestrian-only streets emerged: In Copenhagen the 'Stroget' was pedestrianized and changed from a car-dominated street into a pedestrian-only street (Gehl, 1971). Since then the pedestrian area in Copenhagen grew from 16,000 sqm in 1968 to over 100,000 sqm today. In the last decades this concept has been extended not only in Copenhagen but also in mayor cities all around the world: i.e. Amsterdam, Berlin, Ghent, London, Melbourne, Sydney and more recently New York.

Cities need pedestrians and bikers as these active slow-modes make the city lively and meet the objectives for good quality city life (Gehl, 2010). Replacing car travel with active modes contributes to cleaner, healthier and happier cities.[6] But this development also has a backside: When huge flows of bikes are attracted, congestion on bike lanes and bike storage capacity becomes an issue, like recently manifested in Denmark and the Netherlands (Larsen, 2015). As a result of the lacking bike parking capacity, bikes are 'illegally' parked everywhere, obstructing access to stores, blocking streets and making the shopping streets and public squares less attractive and less appreciable[7]: "*Clearly, the provision of convenient, secure, sheltered bike parking is essential to cyclist, just as car drivers need parking for their cars. The current policy focus in Dutch, Danish and German cities is to increase the security of bike parking (…). The random parking of bikes in public spaces can obstruct pedestrians on sidewalks and is considered by some to be a visual eyesore. Thus, the supply of bike parking is being expanded not only for greater cyclist convenience but also to deal with the clutter of randomly parked bikes. Somewhat similar to car parking in the USA, there never seems to be enough bike parking.*" (Pucher & Buehler, 2008). Based on these experiences the authors state that management for bike parking is essential to keep the city centre liveable. The objective for the cities is to keep the city centre accessible and benefit from the slow-modes, but improve the conditions on the street. Many scholars have written on the aspects of improving bike ability, on biking policies, on mode choice, on route

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[1] Berenschot (2010) Report "*Fietsparkeren bij stations: Oplossingsrichtingen voor een systeemsprong*" published 04/06/2010.
[2] MKB Delft (2012) "*Parkeren van fietsen in de binnenstad: chaotische toestanden in de huiskamer van Delft*".
[3] Centrum Fietsdiefstal (2013) "*Haaglanden gaat strijd aan met fietsoverlast*", published 29/03/2013, http://www.centrumfietsdiefstal.nl/ (visited October 14, 2014).
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choice and on the perception and attitude of bikers (Akar & Clifton, 2009; Fernández-Heredia et al., 2014; Hochmair, 2015; Krizek, 2007; Martens, 2007; Nakamura & Abe, 2014; Parkin, Wardman & Page, 2007; Pucher et al, 2010; Puello & Geurs, 2015; Rietveld, 2000). Bike parking is one of the core aspects for these all of these subjects (Larsen, 2015; Martens, 2007; Pucher & Buehler, 2008; Pucher et al., 2010; Puello & Geurs, 2015; Rietveld, 2000). Nevertheless, bike parking and the issues around stations, shopping malls and in city centres are hardly mentioned.

This paper will focus on managing solutions for bike parking. In the first section the issues will be described. The following section contains theory on bike parking and discusses criteria for attractive biking conditions. In the last sections solutions and examples will be described, followed by a conclusion section (Image 1).

2. Issues

In many countries local authorities and bike associations try to introduce the bike or improve biking and biking facilities. The bike offers a flexible and sustainable alternative mode of transportation (Martens, 2007): A bike can drive, wherever and whenever wanted, and be parked almost everywhere. Barriers can be crossed easily and in emergency, the bike can use the sidewalk. Besides, in dense city centres the bike proves to be even faster than motorized traffic[8]: "The many restrictions on car use and parking reduce the relative speed, convenience and flexibility of car travel compared to cycling" (Pucher & Buehler, 2008; Rietveld & Daniel, 2004). The flexibility of the bike is also a disadvantage: City- and traffic planners often do not take the space needed for bikers into account while they assume bikers will use the existing, often too fast and narrow, motorized traffic infrastructure or help themselves in the scarce public space.

Nevertheless, in some countries, such as the Netherlands and Denmark, the bike is very successful (Pucher & Buehler, 2008): According to the BBC[9] there are five times more bikes in Copenhagen than cars and over 50% of the people commute by bike. This success of the bike also has a downside: In several European cities biking seems to have reached the maximum capacity at specific locations at specific times. "New" issues appear: capacity of bike infrastructure, and availability of bike parking. Networks are overcrowded, crossings deliver (too) long delays and congestions arise. *Significant bicycle flows* block crossing car traffic and bike paths are too narrow. At the destination, *bike parking* is lacking, under capacity or not offering the expected quality. The demand at train stations is usually much larger than the supply of storage capacity. Besides, bikers want to park their vehicle as close as possible to the destination and for free (Martens, 2007). As a result, bikes are left randomly, attached to street furniture or left as an organised barrier of bikes. Examples are near train stations, at public transport stops, and at destinations such as at schools and universities, at sports clubs and sports events, near shopping malls or in the city centre, and even at home locations such as student housing. This does not only influence the accessibility of facilities, the image of our direct environment, but also delivers safety and security issues. In the US people are allowed to bring their bike inside buildings, even to their office, as facilities for bike parking are lacking. According to Mikael Colville-Andersen, of the Copenhagenize Design Company, cycle parking is the "last great bastion" that cycling-friendly cities have yet to overcome. Although only 4% of people commute by bike in London, some boroughs face huge issues with bike parking due to the recent enormous increase of cycling popularity, e.g. Market, Covent Garden, Piccadilly Circus, Carnaby Street and Soho.

The success of the bike has not only been an issue of the 21st century. In 1906 already, the Amsterdam newspapers and municipality reported about the increased number of cyclists and thereby encounters the spatial issues of parked bikes blocking the sidewalks and the train station areas. More than hundred years later, the issue seems to be unsolved. The bike issues nowadays have revealed a neglected spatial issue (Jordan, 2013).

Bike parking is a spatial–temporal issue (Puello & Geurs, 2015). Universities and schools attract students and scholar during specific hours and during specific weeks. In Delft the morning rush hour takes place around 08:30 when students and scholars form an impassable chain from the city and central station to the university. Bike facilities at the station become empty while storage at the university and surrounding offices fills up quickly. In the evening it is the other way around. During weekends and special shopping days it is logical that shopping streets are not accessible by bike. Access points to the city get overcrowded with bikes. On the other hand, during regular weekdays or at night parking a bike in front of a shop or pub in an almost empty shopping street might not be an issue at all.

In the case of city centres, several *user groups* are affected[10]: *inhabitants*, *visitors* and *shopkeepers*. Especially in historic city centres space is scarce, houses are smaller and in many cases do not or hardly offer indoor parking capabilities. *Inhabitants* mainly depend on storage in public space, but the available public space is limited: Here pedestrians, cars, bikes and 'green' are competing. The lack of attention that is given to the biker as part of the infrastructure and its public space is often visible by the randomly parked bikes (Image 3).

The needs for parking a bike vary per group. Inhabitants usually require a safe bike parking spot 24 × 7. *Visitors* only require a bike parking spot for a relatively short time from several minutes to a couple of hours. But these visitors hardly find space for their bikes as bikes of inhabitants or orphaned wrecks occupy all places.[11] Wild parking is the only option, which frustrates the *shopkeepers* and *local authorities*, e.g. in *Delft*, *The Hague*, *Groningen* and *Copenhagen*. Measurements and investments are necessary to reduce the nuisance of randomly parked bikes, offer adequate bike parking facilities and improve the quality of the Public Domain.

Another critical category of bike storage locations is the train stations (Image 2). According to Berenschot[12] "the growing amount of bikes in the Netherlands leads to overcrowded bike storages at train stations. This results in bulging bike racks, stacks of bikes blocking the entrances, bike theft and damage. Besides, this affects the quality of the station area negatively due to the cluttering of bikes and the inaccessibility of the bike parking."

In the Netherlands, the bike and the train are inseparable (Martens, 2007; Puello & Geurs, 2015; Rietveld, 2000). Almost half of the Dutch train travellers cycle to the station and that number has only increased in recent years. After arriving at the station more travellers are also choosing to make their way by bike.[13] This is very positive for both the environment and the traveller: The bike takes little room per user and is relatively cheap compared to other local modes such as bus and tram. In addition, the bicycle is an environmentally friendly means of transport and cycling is healthy. The bike is a very popular way to go to or from the station, mainly due to the flexibility that travellers experience: As a cyclist you decide after all *when* and *where* you ride and there is no dependence on

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