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Bike Off! Tracking the Design Terrains of Cycle Parking: Reviewing Use, Misuse and Abuse

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Bike theft needs to be urgently addressed, since it is a deterrent to cycle use as an integral part of an urban transport solution. This paper uses visual research to place bicycle parking within the streetscape in the context of 'crime prevention through environmental design'. It looks at a number of cycle-parking case studies (featuring both established and emergent schemes) located in the UK and elsewhere in Europe, and offers observations on the design, the functionality and, ultimately, the effectiveness of these diverse cycle-parking provisions.

Key Words: Cycle crime; bike theft; bike parking; sustainable transport

The facts about cycling today

On Sunday 20th June 2004, some 27,000 people set out on the annual pedal from city to sea that is the London-to-Brighton bike ride.[2] The number who returned bikeless—having 'secured' their bicycle on the promenade and gone for refreshment—is as yet unrecorded. But we would lay long odds that at least one person lost a bike on the seafront that day, and for many of the others it is simply a matter of time. These are the depressing findings of the Transport Research Laboratory: 17 per cent of cyclists have suffered bike theft in the last three years; of these, 24 per cent no longer cycle at all, and 66 per cent cycle less often because of the risk of theft (Department of the Environment, Transport and the Regions, 1997). Bicycle theft[3] is often referred to as 'petty crime',[4] although the problem is far from 'petty'[5] when considered in social, environmental and economic contexts (Baslev, 1992). Home Office figures have suggested that the cost to the nation, including loss of property and other financial and non-financial losses, is in the region of £250 million per year (Repolge, 1984). We consider this an underestimate, given recent increases in cycle usage and in the value of the stolen bikes.

Bike theft continues to be a problem in London, the UK and internationally (Baslev, 1992). It could be argued that the reduction of bicycle theft by traditional law-enforcement means is 'unsustainable' in terms of police resources (Bryan-Brown and Savill, 1997). It is not surprising, therefore, that one UK survey found that 25 per cent of bicycle thefts were not reported to the police, and that only one in 17 of the bicycles reported stolen was subsequently recovered (Department of Transport, 1996). British and Scottish Crime Survey estimates reveal that 172,000 cyclists are 'lost' each year in the UK because of bicycle theft—one in five stolen bikes is not replaced.

Theft, or concern about theft, is a primary inhibitor of bicycle usage and uptake (Office of the Deputy Prime Minister, 2003; Department of Transport, 1998; Evans, 1997). Deterrents to pedal cycle usage directly restrict achievement of sustainable development objectives in relation to

transport and to improving the quality of the urban environment (Department of the Environment, Transport and the Regions, 1998). Cycling provides accessible and economic transportation, as well as physical exercise which impacts positively on health. Cycling is thought to help to reduce the risk of obesity, an issue of particular significance to children. While the incidence of child obesity has risen over recent years, cycling by young people has been in decline. Significantly, the number of people aged 16–19 who own a bicycle is considerably higher than the number who actually use them (Department of the Environment, Transport and the Regions, 1998). Reasons for their non-use include the problems of leaving and securing bikes 'en route' and at destinations. Evidence suggests that more people would cycle at least to the underground or train station, as they do in Japan, if they believed that their bike would still be there when they returned (Department of the Environment, Transport and the Regions, 1997).

As an ecologically and economically sustainable transport option, in the context of increasing road congestion in cities, cycling has recently been pushed up the agenda of many government-linked policies; political pressure groups concur with plans to increase usage. The UK government has ambitious regional and national targets massively to increase the numbers of cyclists. The Sustainable Development Strategy for 1998 stated: 'New technologies and cleaner cars will be part of the solution, but new approaches to travel, living and working will also be needed.' (Department of the Environment, Transport and the Regions, 1998:3.22.) Some authorities have put great emphasis on implementing and improving cycle access, cycle lanes and pathways. For example, Transport for London has made this one of its main priorities. Ken Livingstone, Mayor of London, has stated that 'the overall aim is a trebling of cycle use with a forecast target of an 80% increase in cycling by 2010' (Transport for London, 2004). The UK National Cycling Strategy is more bullish still: its target is to increase by some 300 per cent, before 2013, the number of trips made on bicycles (Department for Transport, 1996).

These targets indicate that cyclists are to become increasingly significant, within the next seven years, in terms of impact on the built urban environment. Cycling provision, however, is not easily retrofitted into existing metropolitan road and highway infrastructure, or into systems where frequent bike use had not been anticipated, and cycle-lane provision is clearly expensive to deliver. In addition to provisions addressing ease and safety of transit, for bike usage to flourish cycle *parking provision*, and its security, must be effectively conceptualised and efficiently integrated into the built environment. As a known deterrent to cycling and as a form of street crime, bike theft must be acknowledged as a serious problem, and addressed through intelligently designed and implemented cycle-parking provision and other schemes.[6] Police in the UK have not yet published any new strategies related to preventing bike theft. Although responses to interviewers recorded in the British Crime Survey show a decrease in such thefts between 2001/02 and 2002/03 of seven per cent, London Metropolitan Police statistics for April and May 2003 show year-on-year increases of 8.5 and 12.5 per cent respectively.[7] While we accept that BCS statistics are regarded as more reliable than police recording methods, which have been found to be 'inconsistent' by Home Office researchers, we believe that changes in the public's willingness to report crime has been the most significant factor in this perceived reduction, which contradicts anecdotal evidence. Whilst our investigations concur with previous research in this area, in identifying bike theft in other European countries just as inimical to increased cycle usage as it is in UK, the reporting and recording protocols deployed within the International Crime Victim Surveys (ICVS)[8] impede statistical comparisons between European countries. The ICVS report for 2000, while naming 'bicycle theft' specifically, categorises its incidence within the categories of '11 crimes', 'household crimes' or 'property crimes', and gives no specific figures to allow direct comparisons with the crime of bike theft (Alvazzi del Frate and Van Kesteren, 2000). If we

assume that the latter crime is evenly distributed amongst those grouped into such larger categories, we can say with confidence that it is an international problem; but it is not possible to identify international variation. Additionally, it is impossible to tell, from incidence data alone, the contexts, cultural or physical, of the crimes without addressing the specific locations. It is a central understanding of this project that an understanding of the context of crime is essential for data to be significant for 'crime prevention through environmental design' (CPTED) strategies.

The majority of our research sample in London who had their bikes stolen (and who had no insurance cover) did not bother to report it. Many were not first-time victims of bike theft, and their previous experience of reporting had proved ineffective in terms of recovery, so the time-consuming process of reporting seemed to them rather pointless.

Environmental design can and should help

The London Cycling Action Plan suggests that there is currently a strong case against cycling in London; it suggests that the city's environment is not conducive to cycling, and that lack of safety on the roads, bike theft and insufficient information for cyclists are all impediments (Transport for London, 2004) Given the expected increase in cycle use in cities, the built environment needs to accommodate the shift in demands on the use of public space. In the UK there is now an opportunity to build in (ie anticipate), rather than retrofit (ie follow) appropriate environmental interventions linked to cycling, with measures designed to anticipate public responses (including criminal responses). It is possible that our planners and architects, and even police crime prevention design advisors, do not regard the problem of bike theft as one that can be, at least partly, designed out. Total eradication of bike crime is unlikely; nevertheless it is not an inevitable fact of urban life, but a problem amplified by poor design, as regards security of bikes, parking provision and streetscapes. In this instance the question is one of environmental complicity. The question should not be what impact crime has on the environment, but rather what impact the environment has on crime.

The Design Against Crime (DAC) Research Initiative at Central Saint Martins College of Art and Design (CSM), regularly consults practitioners, designers and policy formers—people whose work and efforts shape the future of the urban fabric and of transport. While cycle usage is acknowledged and sometimes valued, it is clear to us that some issues regarding cycle parking and theft are not yet part of the common knowledge of stakeholders. For example, research has shown that for parking to be used effectively a bicycle rack should be situated within 50 metres of the destination it is intended to serve (Department of the Environment, Transport and the Regions, 1997). Our case studies show this knowledge to be disregarded in some current practice (see Case Study Box 2, Walthamstow). Similarly unaddressed are considerations of natural surveillance. Natural surveillance is important to cyclists, who want a safe environment in which to deposit and reclaim their bikes**,** and is also a deterrent to thieves, who are usually less active if they think they could be seen and caught. A benchmark provision in Berlin suggests that natural surveillance can be designed-in, in a way that reduces the need for fortress aesthetics.

Top down and bottom up?

The impact of transport on the built environment is obvious: roads, railway tracks, footpaths, waterways and much more have for centuries defined the very shapes and spaces within which we have been able to construct our towns and cities. Yet when we compare planned architectural

designs for metropolitan buildings or public spaces against specifications of 'road' and 'street furniture' (such as traffic lights, speed cameras or signposts), we can quickly see the differences in intent and impact between the top-down approach of planned provision and the bottom-up approach linked to ad-hoc retrofit provision (an approach also linked to user-centred design methods). While planned provision is, according to contemporary protocol, deemed inappropriate without the inclusion and consultation of stakeholders and users, *adhoc* provision is rarely afforded such an approach; and this can lead to inhospitable, unsightly and ineffective design. Nonetheless, it is a consequence of funding methods and indeed of social evolution that the streetscape is formed in use, and at times retrofitted, rather than wholly realised within a grand plan.

Evolution is the variable that provides solutions to many environmental equations. As creators of streetscape, all we can be certain of is that we may miss something out, or that the pace of social change will be greater than that of budget allocation or of the implementation of suitably evolved streetscapes and facilities. Thus, it is necessary to anticipate a requirement to add to and alter planned provision. Additionally, it is the designer's responsibility when such a retrofit is required to make it work from a functional and aesthetic perspective. From a crime-prevention viewpoint it is also necessary to gain a detailed picture of the configuration of the immediate causes of cycle thefts. A framework developed by Paul Ekblom, 'the conjunction of criminal opportunity', considers 11 of these immediate causes. Paraphrased, they describe a willing, ready and equipped offender encountering or seeking an attractive, accessible and vulnerable target (the bicycle) in a conducive environment, in the absence of people who can prevent the crime and/or in the presence of those who might promote it (ranging from negligent owners and uncaring managers of locations to criminal 'fences') (Ekblom, 2001). Such an analysis suggests that crime prevention advisors (CPAs) and designers should fully explore 'diagnosis space' and review specific questions about crime problems and their causes and consequences, as well as stakeholder issues; only then should they identify appropriate interventions in those causes. This examination of the context of the problem and the context of the proposed provision is something that is lacking in many functionalist approaches to streetscape provision. Few of these designed interventions provide security that is intelligent, flexible and aesthetically fitting. This lack of contextual analysis leads to provision that is 'unfit for purpose'. 'Fly-parking', discussed below, demonstrates the manner in which unfit provision is ignored in favour of *adhoc* solutions conceived by users.

What is fly-parking?

'Fly-parking' is a term coined for DAC by Adam Thorpe to describe the securing of bicycles to street furniture not intended for that purpose, ie railings, lamp-posts, parking meters, benches, street signs and so on. It demarcates the user desires of cyclists as regards parking provision in a similar fashion to the way 'desire lines'—footpaths worn in grass by people avoiding the planned routes and taking shortcuts—demarcate the way people wish to move through their environment.

Fly-parking reflects the major appeal of urban cycling—the opportunity to experience liberty and convenience of free movement through congested cities, ease of access to destinations, and most notably optimum proximity to destinations.

Fly-parking is a consequence of user demand for proximity to destination. This is exemplified by the fly-parking area that has established itself outside the Jewish Museum in Berlin (Figure 1.01).

Figure 1.01. Fly-parking, Berlin

In instances of fly-parking all security provision rests with the cyclist, as the furniture to which the bike is secured is not designed or located to assist this usage. However, the locational freedom granted by fly-parking does allow the security-aware cyclist to take advantage of natural surveillance opportunities. When the cyclist is not conscious of the security issues concerning location, in theft 'hotspots' the shortcomings of relying solely on the security provided by a cyclist's lock are reflected in the numerous images generated within our research of broken locks on posts (Case study 1). Thus, relying on a single robust element to provide security rather than an integrated secure system of lock and stand, is somewhat like relying on one powerful antibiotic to destroy disease-producing micro-organisms. In both instances this approach is effective only until the thief/micro-organism adapts to 'crack it'.

It is also notable that in New York, where parking provision was found to be most absent, lock specifications were found to be fairly robust (for instance, Kryptonite's 'New York' range of locks). London is observably more similar to New York than to our European counterparts in this regard, with a high incidence of fly-parking and increasingly high specifications for locks.

DAC at CSM has identified the scale of fly-parking as a significant indicator that current cycle parking provision is mismatched to user requirements, that it is 'failing' or 'lacking'. It appears that when parking provision seeks to change user habits without offering significant benefits in terms of increased security or convenience, then it is unlikely to be utilised. In this context fly-parking provides a user control that may act as a primary benchmark to be compared and contrasted with the planned provision featured in the case studies. What fly-parking tells us is that many designed cycle-parking provisions fail to work because (a) their location does not fully anticipate the desire of cyclists to park near their intended destinations, and (b) they fail to address cyclists' desire to park their bikes where maximum security can be achieved through natural surveillance (the bike being observed by others). The proliferation of fly-parking demonstrates that the cyclist will not accept having these desires thwarted. Inappropriate provisions, parking facilities located well away from destinations and where there is no natural surveillance, offer greater convenience to the criminal than to the cyclist.

In addressing cycle theft, planned changes in the streetscape will at times demand a change in user habits. However, under these circumstances we need to make the sort of interventions itemised by Ekblom (2001), while building on existing patterns of use and abuse that reward user adaptability. Positive discrimination is necessary in terms of the location, and thus the convenience, of cycle-parking provision if urban cycling is to be promoted.

Seeing is believing: visual research methodology of design against (bike) crime

We believe that the research evidence we have cited in this paper presents compelling evidence of the need for designers and practitioners to do something about bicycle crime. Visual evidence of fly-parking provides a clear message about many user requirements for parking, ie a convenient location, and one that is very visible to passers-by. It is our thesis that in order effectively to reduce cycle theft a joined-up-design approach to understanding and anticipating the impact on crime of environmental complicity needs to be considered. The answer will assist in defining the incidence and extent of environmental complicity in crime. To illustrate this point—to show as well as tell why theft occurs—we offer a number of case studies on cycle parking provisions, in the context of their use, misuse and potential abuse.[9]

The case studies that follow address key benchmarks in the most common categories of cycle-parking provision currently in use and in emergent alternative solutions, namely free-standing street furniture, electronically secured bike-parking, and city bike schemes. Within these categories, we have not made further distinctions between risks associated with schemes that protect private bikes and those associated with schemes that provide public bikes for private use; suffice it to say that where public schemes are provided, there is always the added security benefit of the private property being protected, in that cyclists can leave their own bike at home. To aid consideration of what makes for 'appropriate' secure cycle-parking provision, our observations and recommendations are listed within each case study. (Except where stated, all photos © 2004, Marcus Willcocks, DAC at CSM).

Figure 1.02. Graffiti, Berlin

Case study 1. Free-standing street furniture: Berlin, Bruges, London, New York

Figure 1.1. Powder-coated tubular steel 'Sheffield'-type hoop stands, London

Figure 1.2. Galvanised steel hoop stands, Berlin

These stands have a durable finish and are as inexpensive as powder-coated options like those in Figure 1.1. The modular spiral configuration is space-efficient, and makes a positive aesthetic intervention into the surrounding environment.

Figure 1.3. 'Pedalo' stands, Bruges

Figure 1.4. Galvanised steel hoop stands, New York

Fig 1.3. The rubber frame grip protects the frame from damage, and also provides extra flexibility of fit for different frame types. The minimalist design optimises space and materials.

Fig 1.4. The most common cycle-parking provided in New York: hoop stands with additional U-section.

Figure 1.5. 'Sekura Byk' stands, London

Figure 1.6. U-section hoop stand, New York

Fig 1.5. These stands, at Tottenham Hale station, show evidence of misuse.

Fig 1.6. This stand has been subject to abuse, possibly owing to its specification being unsuitable for its particular location and to the misapplication of the cable and D-lock. The cable lock has been secured to the bike, the D-lock to the stand, and the two locks to each other; thus the security of the bike is only as robust as the weakest lock (in this instance the cable lock, which has been severed).

Free-standing cycle-parking is the most commonly deployed provision, and is installed within the streetscape specifically for cyclists to secure their bikes. National and international variations exist, including those in London, Berlin, Bruges and New York (shown). Such stands have a user value, but are crime-prone when implemented under inappropriate environmental conditions, ie when the immediate causes of criminal events ('the conjunction of criminal opportunity' described in Ekblom, 2001) are present but not attended to (see Figure 1.5). Appropriate provision for this type of cycle-parking should include:

- compatibility with local frame, wheel and lock designs to enable bikes to be secured effectively;
- awareness of the facility's visual impact within the local environment and of how its public perception and understanding will affect its use;
- awareness of, and incompatibility with, thieves' methods of operation, eg the provision of lock covers, and the elimination of any potential for rotating the bike frame against the lock and the stand;
- construction materials which are durable and sympathetic to bikes, avoiding damage to paintwork and to the stands themselves;
- minimal cost of materials, manufacture, installation and maintenance, in order to maximise the scale of cycle-parking provision afforded by budgets;
- ease of use: fly-parking observations identify a user group that rates convenience over security, and to accommodate this expanding group the design provision should seek to provide both convenience and security;
- optimisation of space: designs should accommodate a large number of bikes per cubic metre—vertical storage and a circular configuration have been advocated;[10]
- adaptive compatibility: facilities should anticipate requirements for subsequent adaptation and evolution to counter developments in use and misuse, and the adaptive criminal.

Figure 1.7. Cycle-parking stand, London

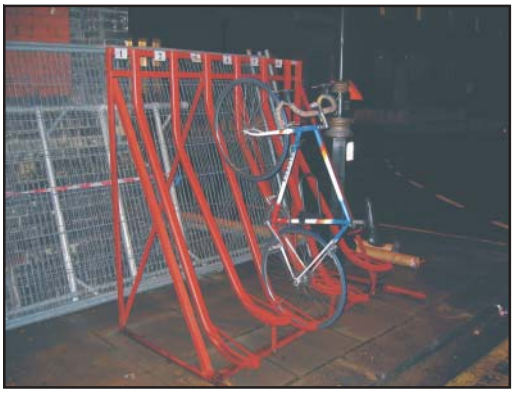


Figure 1.8. Stainless steel box-section hoop-style stands, Berlin

Fig 1.7 © 2004 Andrew Huntington, for DAC at CSM. This provision (in Kensington) is unsightly and ineffective, offering little opportunity to lock more than one wheel.

Fig 1.8. These striking stands are installed in a regenerated area of the city. Their visual appeal allows for prominent positioning in areas of high natural surveillance. The design could have been improved by a change of angle to the front upright, allowing the front wheel to be secured.

Figures 1.9–1.12. Custom-made parking stands, Berlin

Figures 1.9–1.12 © 2004 Magda Willi, for DAC at CSM. These are provided by local shops and bars. While offering only short-stay security, the 'real' security of bikes is good, due to high natural surveillance and the ability of cyclists to park very near their destination. The stands provide a good benchmark for retail venues rewarding cyclists, while also adding characterful 'sculpture' to the streetscape.

While all the stands shown above leave responsibility for security firmly with the cyclist, there are several ways in which the context of the provision can reduce the likelihood of bike theft including:

- *Location*. Cycle-parking facilities should be located as close as possible to the destination they serve, in order to ensure that they are used, rather than ignored in favour of fly-parking. Natural surveillance should be considered and utilised in order to minimise the potential for undisturbed abuse or theft of bikes/locks. A consideration of lines of sight from within destinations frequented by users and from waiting areas is useful in ensuring natural surveillance. 'Assumed' surveillance, situating the facility close to security-staffed sites such as ticket offices and venue entrances, enables it to be kept in view by security staff servicing the destination. Similarly, parking provision can be located where there is existing CCTV surveillance.

- *Maintenance*. Bike 'carcasses' and broken locks should be cut off and removed to avoid a 'broken window' effect that may both deter users and simultaneously signal 'insecurity here' to passing offenders.

- *Signage and information*. Potential users must be made aware of the facility. Additionally, signage should inform users of security considerations; just as car-parking is qualified by signage as regards hours of use, short-stay, long-stay and so on, cycle parking should communicate the hours during which natural surveillance is effective and the facility thus more secure.

- *Proprietorial provision*. Those facilities provided by establishments for their patrons appear to benefit greatly from the natural surveillance afforded by proximity to the venue, and from the affinity of staff and patrons with cyclists and the security of their bikes. To promote natural surveillance, it may be appropriate for public subsidies to co-fund such provisions, in a similar fashion to the deployment and promotion of CCTV. Compatibility of aesthetic and function often appears improved by proprietorial provision.

Case study 2. Electronically secured cycle-parking, Ghent, Belgium

An electronic bike storage system that restricts access to a shelter by using swipe cards has been developed and is in use in Belgium. The system was designed by Park & Locking Systems (PLS), and is licensed in the UK by Sekura Byk,[11] who manufacture, distribute and support the system. Swipe cards are sold to users, who use them to access and gain allocation of one of the locking rack bays.

The PLS system was originally designed with 'insert'-type cards, but has been altered to utilise 'proximity' card reader systems. One of the weaknesses of the first type is susceptibility to sabotage from chewing gum, etc.

Strengths and weaknesses of the PLS system
PC Ian Gray, a Crime Prevention Design Advisor (CPDA) working for the Metropolitan Police in Islington, London, visited Ghent to evaluate the scheme. He felt it looked promising: it is low-cost and seemed well designed. He noted that the suburban mainline railway station where the system is located seemed to have less bike theft than Islington, and he felt the scheme was best suited to users with time to spare at the interchange between modes of transport and whose bikes have few vulnerable accessories.

Figure 2.1. PLS electronic parking system

Figure 2.2. PLS card reader

The 'Bike Shed', pioneered by Gina Harkell at Waltham Forest Council, was opened in November 2003. It can accommodate up to 35 cycles. It is a very attractive and ecologically sound design intervention—its structure is built from recycled railway track, and the flooring from reclaimed sleepers. The Bike Shed at Walthamstow is an important benchmark in UK cycle-parking provision. Unlike the many new design proposals which fail to surmount financial and bureaucratic hurdles, it has been seen through to implementation and is now available for use.

Strengths and weaknesses of the Bike Shed
Evaluation has revealed user issues regarding electronic cycle parking systems like that used in the Bike Shed. The system seems to be dependent on the avoidance of 'misuse', ie it cannot accommodate users who insert their cards incorrectly, and total system failure follows abuse by

people trying to steal bikes. In the context of a public facility this misuse and abuse is inevitable, and the system may require servicing and maintenance beyond what is realistic, given current staffing levels at London transport interchanges.

During four visits to the site, between November 2003 and June 2004, the facility appeared underused. There were never more than six cycles parked in the Bike Shed, while up to 25 were fly-parked along the railings leading in to the main station entrance 50 metres away, on the other side of the track.

Figure 2.3. The Bike Shed at Walthamstow Station, London

Figure 2.4. The Bike Shed: interior

© 2004 Eric Childs (supplied by kind permission of PC Ian Gray)

Figures 2.5 and 2.6. 'Racks' in the Bike Shed

Figure 2.5 shows parking which uses the intended method of locking ('use'), and Figure 2.6 unanticipated methods ('misuse')

Figures 2.7 and 2.8. Cycles fly-parked near the Bike Shed

Many cycles are fly-parked on the opposite side of the station to the Bike Shed, nearer the most popular entrance/exit.

Problems that have emerged at Walthamstow suggest that impediments to the use of electronic systems include the following:

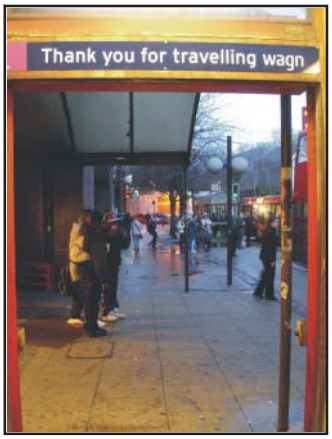
- *Location*. If the facility is too far from the point of interchange, most cyclists will continue to fly-park in closer proximity to it.
- *Technological teething-problems*. The access system is sensitive, has malfunctioned at times and may deter use.
- *Incompatibility*. The locking 'racks' provided do not fit many of the types of frame popular in the UK, and there is no facility to lock wheels or seats.
- *Inadequate visual communication*. Graphics explaining how the card and electronic lock system are meant to be used are essential; without them misuse is inevitable.
- *Inadequate staffing*. In Walthamstow responsibility for running and maintaining the system remains with Waltham Forest Council, and the proximity cards are issued from the mini-cab office adjacent to the Bike Shed, not from the station. This is not an ideal solution.
- *Charges*. Bike parking needs to be cheap or free; while the cost to cyclists using the Bike Shed is 30p per day (reduced from 50p), this may still be more than most potential users are willing to pay.

The bike-parking provision at Walthamstow is of high aesthetic value, but should have been the subject of more contextual research. The differences between context of use in Ghent (a suburban railway station used by primarily blue-collar workers in an industrial area) and Walthamstow (a variety of users, many white-collar workers, in a city location) were not fully taken into account. However, the Bike Shed is an experiment that is still being tested. Problems are now being resolved and, despite the 'troublesome trade-offs' between simplicity and security mentioned above, it provides a valuable benchmark from which practitioners can learn about the possibilities for cycle-parking.

Figures 2.9 and 2.10. Recent cycle-parking options at Finsbury Park station, London

Finsbury Park is in urgent need of an improved cycle-parking facility, given the shortage of existing racks and the current levels of crime. When parked there, many bikes are damaged or stripped of parts, if not stolen. This does little to encourage people to cycle to the station and link with other modes of transport. Plans are now being implemented to install a large secure facility to provide parking for more than 100 bikes, to be completed in early 2005. At present the plans have some similarity with the Bike Shed, although the Finsbury Park design team has tried to address the problems encountered in Walthamstow.

Figure 2.11. Existing lines of sight towards the site of the new cycle park from Finsbury Park station entrance.



Strengths and weaknesses of the Finsbury Park scheme

The proposed site for cycle-parking at Finsbury Park station intends to offer a transport interchange in Station Place. The designated location is currently over 70 metres from the Underground tube station, but new building works, we are informed by TfL, will mean in future 'that the distance will measure just over 55 metres' and therefore be compatible with research recommendations. Sustrans, for example, have specified that:

> The siting of the cycle storage/parking is absolutely critical to its success. It must be located as close as possible to the main entrance of the destination … or it will not be used. Ideally the location should be one that is constantly under surveillance by the general public … and is well lit. This reduces the opportunity for vandalism/theft and inspires confidence to cycle to that destination. Bike parking should not be hidden away behind buildings or tucked away in the corner of a car park as this removes any convenience over driving a car and allows thieves to work out of view. (2004:1)

When designing the new Finsbury Park facility TfL have made great efforts to learn lessons from the teething problems of cycle provision at Walthamstow. They have bought similar technology from Sekura Byk, but have also increased signage and support for the Finsbury Park site, in an experiment to offer the best available secure cycle parking. TFL have also tried to create a sympathetic surrounding environment to the cycle park; they point out that the pods created for the use of bus staff on changeover shifts 'will be located only 20m from the cycle park'. People 'flow' will be increased because of this, and natural surveillance by passers-by may help to promote feelings of safety for cyclists.

Bike parks should never be hidden away unobserved, because theft, vandalism and/or robbery are always possible. The Finsbury Park team, given the difficult problems of the location, have sought to offer cycle-parking provision that is not as close to the station entrance as we would have hoped, but near enough to offer a potentially workable solution. Ideal bike-parking, in our opinion, would be directly opposite the station (in fact nearer the spot where the pods for bus staff are to be located).

We look forward to seeing how users of the Finsbury Park cycle provision fare in terms of crime, and also to reviewing whether or not our initial reservations about the distance between the station entrance and the cycle park have been invalidated by positive user experience.

Case study 3. New 'city bike' schemes, Germany and London

Figure 3.1. The 'Call-a-Bike' scheme, Berlin

Figures 3.2 and 3.3. Parked DB bikes

Figure 3.4. OY Bikes, London

Figure 3.5. OY Bikes parking interface, London

The 'Call-a-Bike' scheme,[12] run by the German transport provider Die Bahn (DB), is in use across four cities: Berlin, Frankfurt, Cologne and Munich. It is essentially a public bike system, with a registration fee of €5.00 and a minimal hire charge of €0.06 per minute (maximum €15.00 per day) as a contribution to costs. It is based on specially designed bikes, which are visibly

distinct from any commercially available model and are well branded with the DB identity. The frame design is unisex. Their unique appearance makes them unmistakable, and their origins thus difficult for thieves to disguise. All the components are non-compatible with other bikes; accordingly, it is unlikely that there will be an application or resale market for components, or therefore that theft of the bikes or components will take place.

The bikes are left parked near road junctions throughout the city. There is a 'mid-tech' solution for securing and releasing the bikes which ensures that users can easily pick them up and drop them off on the street. Once registered, users can telephone the number printed on the side of any bike and read out the unique number printed on the digital box (to identify the bike). They are then given a pin code to type in, which releases the in-built lock. The hire period is then timed and the user's account debited for as long as the bike is used. When cyclists want to drop the bike off they telephone again to be given a new number to tap in, which terminates the use for that journey.[13]

The bikes provide an inexpensive and flexible form of public transport, and once the system is mastered, users can usually cycle around the city for less cost than for a one-day travel pass. But given that the scheme is meant for tourists as well as local users, the system is complex and there is little visual information on how the bikes should be used. Some DB telephone attendants speak English or French, but understandably cannot give information on the system as clearly as they can in German.

In Hammersmith, London, a similar scheme has now been launched, called 'OY Bikes' (On-Your-Bike[14]).

The key difference between the DB and OY schemes is that the electronic locking system for OY bikes is located off-bike, being mounted onto existing Sheffield/hoop stands. This means lower unit costs for individual bikes, and allows the electronic unit to be shared between more than one. The disadvantage of the set-up, however, is that it is more vulnerable to criminal damage. Additionally, users but can only 'log off' when they park where there is one of these units, meaning they are charged continually for the time they have the bike. So for a user to collect a bike for their morning commute, park it near their work and then cycle it back to the 'base' (say) eight hours later would cost approximately £8 (in addition to a £10 registration fee). By contrast, the German DB bikes, with their built-in electronics, allow users to stop and start the 'charging timer' every time they nip in and out of shops, etc. We fear that the OY approach may make the scheme too expensive to persuade more commuters to switch from public transport, though developments in tracking technologies, including Wi-fi, Web, GPS and RFID, suggest the cost of future systems will decrease. Similarly, it is anticipated that future technologies will reduce the number of troublesome trade-offs for both public hire systems and personal ownership.

Both the German and London schemes provide a lateral and innovative deterrent to bike theft. It is encouraging to note that the OY Bike scheme builds on benchmark practice in Europe, while also responding to a detailed study undertaken by Worcester Polytechnic Institute. Additionally, the scheme offers customers an insurance option, which may prove an additional research benchmark to inform future projects. Further good practice is evident in the staged implementation, which should allow for user feedback to inform adaptation and evolution prior to further deployment.

It is necessary to consider the impact the scheme may have on existing cycle parking provisions. It is important that the electronic locking system utilised by OY Bike is not solely added to existing free provisions, but rather that new stands are installed to avoid displacing owner-riders. It will also be significant to note the incidence of vandalism to the 'city bikes'. Although the incompatibility of components (it is a concern that the OY Bike has less differentiation of components, thus exposing it to greater risk of component theft) and distinctive appearance of

the bikes reduces the risk of theft, the fact that they are permanently secured in the street with no guardian increases the risk of their being vandalised—an abstract example of crime displacement. Differences in use and abuse between the two schemes will provide further evidence of the role of cultural context in decisions on appropriate provision. It has already been noted anecdotally from a small group of potential OY Bike users that the styling of the bikes themselves, though popular in Europe, may not be appropriate for London.

Conclusion

DAC at CSM is a practice-based research initiative, and the ultimate aim of all our research into bike theft, both visual and non-visual, is to inform and inspire appropriate design responses. We believe that context is everything in design, and therefore it is fundamental to our research method that we understand and observe existing design provision across a range of design territories that relate to bicycle use before we visualise the design problems and questions. We believe that poorly thought-out attempts to design out crime produce negative benchmarks that will in the long term discredit DAC, and our focus on research is intended to avoid this. The first stage of our visual research reveals that there are several categories of usage, and therefore provision, each with its own requirements and trade-offs with respect to convenience and security. Thus when considering cycle-parking provision it is also essential to categorise the nature of the destination that the provision is to serve. It is necessary to identify the terms of use (who parks what, where, when and for how long) to inform appropriate provision, and also necessary to qualify research with user testing. Multiple usage sites will require multiple categories of provision. Most significantly, it is necessary to evaluate the environmental context of use, taking account of the following:

- location: less than 50 metres from the facility to the destination it is to serve;
- surveillance: natural surveillance is often most effective and appropriate;
- proprietorship: provision of some form of stewardship, either specific or assumed, to monitor and maintain the facility;
- signage and communication: to inform users about availability and correct usage of the facility;
- convenience: ease of access and use;
- local knowledge: the risk, incidence and circumstances of bike theft, thieves' methods of operating, and previous practice and its impact.

It is noted that the Strategic Rail Authority (SRA), a key policymaker in this area, states in its *Cycling Policy for Consultation* that the it has 'no fixed definition of security from theft or vandalism, which in any case will vary according to the risk at each location' (2004:17). However, the SRA is required under its Directions and Guidelines to encourage station operators to gain accreditation under the Secure Stations Scheme. For a cycle-parking facility to be considered 'secure', the SRA would expect that it exhibit at least one of the following characteristics:

- be located at a staffed station, and within the regular view of staff as they carry out their duties;
- be under regular observation by live-monitored CCTV;
- be under continuous observation by recorded CCTV;

- comprise cycle lockers, or a secure cycle compound or centre; or
- be part of a station accredited under the Secure Stations Scheme.

While this policy provides a benchmark of best practice, identifying the impact of context on provision and championing the need for secure parking provision and surveillance, it also identifies a requirement for further research in this area, to meet the needs of users better and to optimise security at a level appropriate to the nature of the provision. If cycling is to be such a key element in an optimised transport infrastructure, then it is about time we worked out how to keep hold of our bikes!

To achieve this aim, further papers from DAC at CSM has set up a user feedback site *www.bikeoff.org* that will visually review bike theft perpetrator techniques and bicycle design, with reference to the most commonly stolen bicycles as well as to the 'fitness for purpose' of existing lock provision.

Notes

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2 At *www.cycle-rides.co.uk/brighton.htm*, the website of the official organiser of the London-to-Brighton fund-raising event.

3 'Bicycle theft' is defined by the British Crime Survey (BCS) as 'Theft of pedal cycles'. This does not include every bicycle theft, as some may be stolen during the course of another offence (eg burglary where other items are stolen) and are therefore classified as such by the police and in the BCS. The BCS covers thefts of bicycles belonging to the respondent or any other member of the household.

4 Bicycle theft is categorised by some, along with other crimes, as 'petty theft', since it is not normally considered to cause any serious physical or emotional harm to victims.

5 Home Office figures in 1995 suggested that the total cost to the nation of cycle theft was then over £250 million, and information received informally from the Metropolitan Police in strategic boroughs (Camden, Islington, Westminster), in the context of increased cycle usage as a response to congestion charging, suggests that this figure has since risen massively.

6 A survey conducted by Challinger and Parker in Melbourne found that 29 per cent of victims said they would give up cycling, or had given it up, following the theft of their bicycle (Challinger and Parker, 1986). In another survey, in Maryland, USA, 20 per cent of respondents gave up cycling after becoming victims of theft.

7 Crime statistics for each of the London boroughs are publicly available at: *www.met.police.uk/crimestatistics/statbody.htm*.

8 At *www.unicri.it/icvs*.

9 When considering the actions of the user we refer to 'use' and 'misuse'. Misuse describes 'wrong' or 'adaptive' use of the object(s) concerned, while abuse of the object(s) defines criminal behaviour, as described by Ekblom (2004) as 'the Ms' of misdeeds.

10 See *www.xyz.london.com*

11 Sekura Byk, Norfolk, at *www.sekura-byk.co.uk/default.htm*.

12 See *www.bahn.de/konzern/holding/db_rent/dbag_01_cab_start.shtml*.

13 More details of the DB operating system can be found at *www.callabike.de/konzern/holding/db_rent/dbag_60_cab_engl.shtml*.

14 See *www.oybike.com*.

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