DESIGN AGAINST CRIME RESEARCH CENTRE

University of the Arts London Central Saint Martins

Design Against Crime (DAC) Research Centre

Design Against Crime as Socially Responsive Design for Public Space

Lorraine Gamman and Adam Thorpe

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1. Why Design Against Crime?

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Crime is a barrier to sustainable development as acknowledged by the UN and most domestic governments and impacts on public well being in the following ways:

i. Environmental
ii. Ecological
iii. Emotional
iv. Economic

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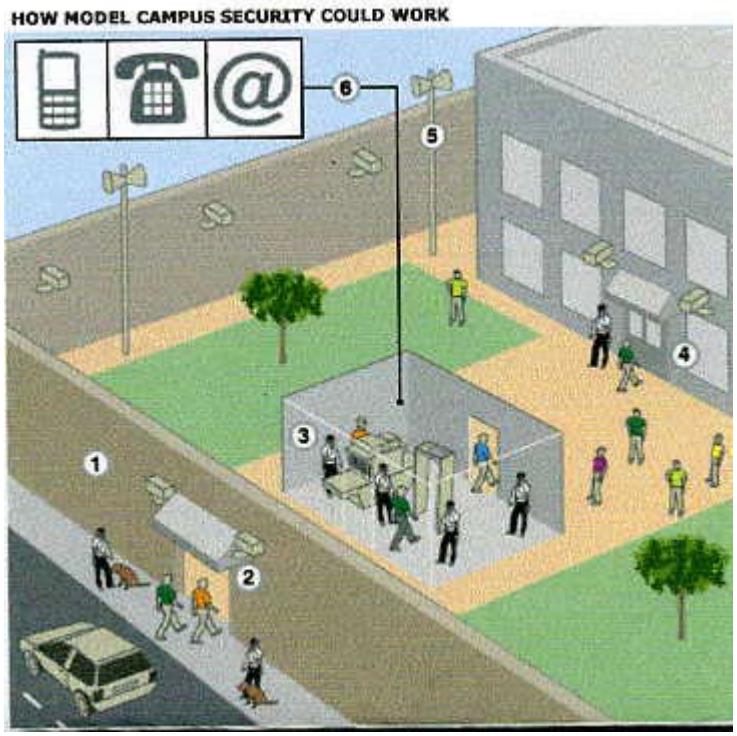
i. Environmental impact

Actual crime, as well as fear of it, can operate to determine the aesthetics of, and our interactions with, the environments we live in.



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i. Environmental impact

Vulnerability-led design responses, or too much emphasis on security can promote fear of crime (and each other) making people paranoid.

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ii. Ecological impact

Crime trends often follow consumer trends. Crime is a voracious form of planned obsolescence - it has the potential to rival fashion.

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iii. Emotional impact

Crime militates against well being. Prof. Layard (LSE) argues if we don't feel safe we are unlikely to feel happy despite economic prosperity.

Prof. R. Layard Lessons from a New Science, The Penguin Press, 2005

iv. Economic

Money spent on policing crime and dealing with the consequences of crime and vandalism could be better spent on essential infrastructure (health, education, transport and culture).

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2. About Us - DAC Research Centre at UAL

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DAC Research Centre at the University of the Arts London aims to

1. To reduce the incidence and adverse consequences of crime through design of products, services, communications and environments that are 'fit for the purpose' and contextually appropriate in all other respects;

2. To equip design practitioners with the cognitive and practical tools and resources to design out crime; and

3. To prove and promote the social and commercial benefits of designing out crime to manufacturing and service industries, as well at to local and national government, and society at large.

DAC DESIGN AGAINST CRIME RESEARCH CENTRE

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DAC's design and research process is:

*Socially responsive

*Multi-disciplinary and consultative

*Iterative and User and Abuser focused

*Practice-led

Socially Responsive.

We target crime problems that stand as a barrier to the progress of social and ethical agendas.
Our current focus is on bag theft (mobile property theft) that detracts from enjoyment of public spaces and public transport, and bike theft that detracts from cycle use.

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Multi-disciplinary.

We bring together researchers, designers, architects, planners, criminologists, engineers, manufacturers, anthropologists, the police and other stake holders to assess design tools and design proposals to ensure they are effective and appropriate.

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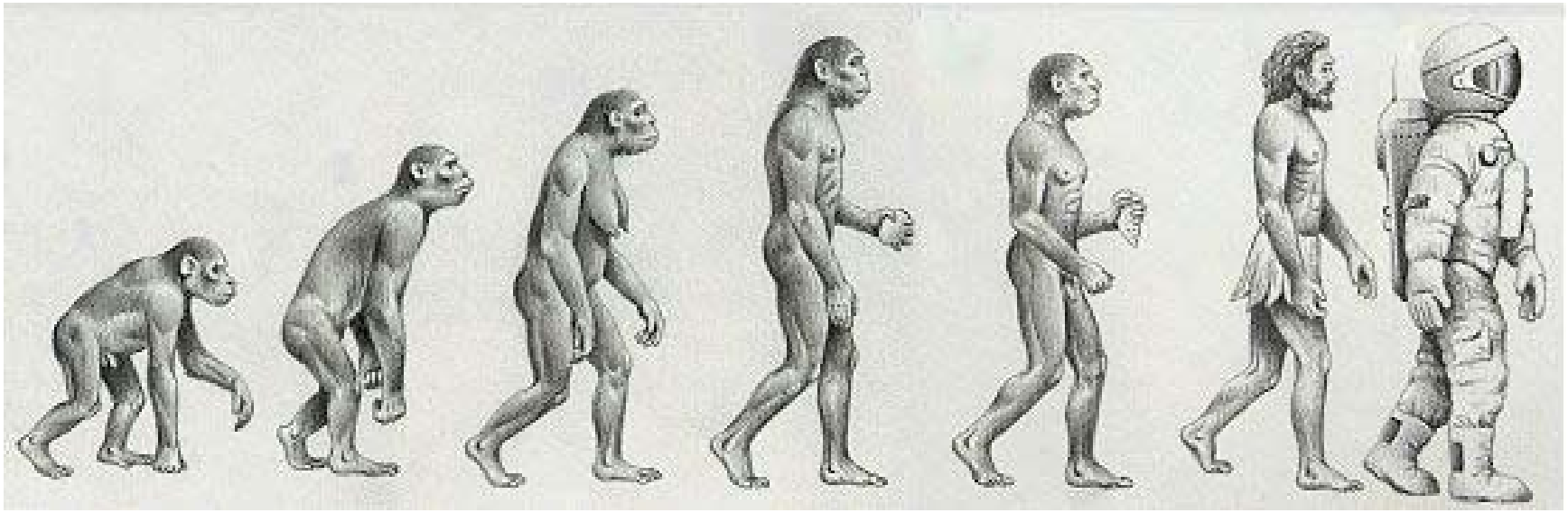
Iterative and User and Abuser focused.

The iterative process is linked to a user-centred design model. It is constantly re-evaluating and improving design thinking based on user feedback and expert advice. We extend this model to address mis-use and abuse to ensure designs keep pace with ‘adaptive criminals’.



Ekblom, Paul (1997). ‘Gearing up against Crime: a Dynamic Framework to Help Designers Keep up with the Adaptive Criminal in a Changing World’, International Journal of Risk, Security and Crime Prevention, October, Vol 2/4:249-265

Practice-led.

Our practice-led research visualizes its outputs.

We try to show as well as tell what designing against crime can deliver.

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2000 Design Museum Exhibition

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2001 Don’t Tempt Me: Milan

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2001 Don’t Tempt Me: Barcelona

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2002 Stop Thief: RIBA and Designers Block

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2003 Victoria, London

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2005-06 Safe Exhibition, MoMA, New York

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3. What is DAC's design and research methodology?

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Central to DAC's methodology is the idea of 'environmental complicity'.

The proposition that 'Places' and 'Things' (the 'built environment'), as well as 'People' cause problems.

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DAC draws upon the criminological discourses of Situational Crime Prevention (SCP) and Crime Prevention Through Environmental Design (CPTED). Both understand 'opportunities' to be the 'root causes' of crime (linked to objects/environments and services as well as users and abusers).

Design out criminal opportunities and you can design out crime.

Felson & Clarke 'Opportunity Theory', 1998, Rutgers University, New Jersey

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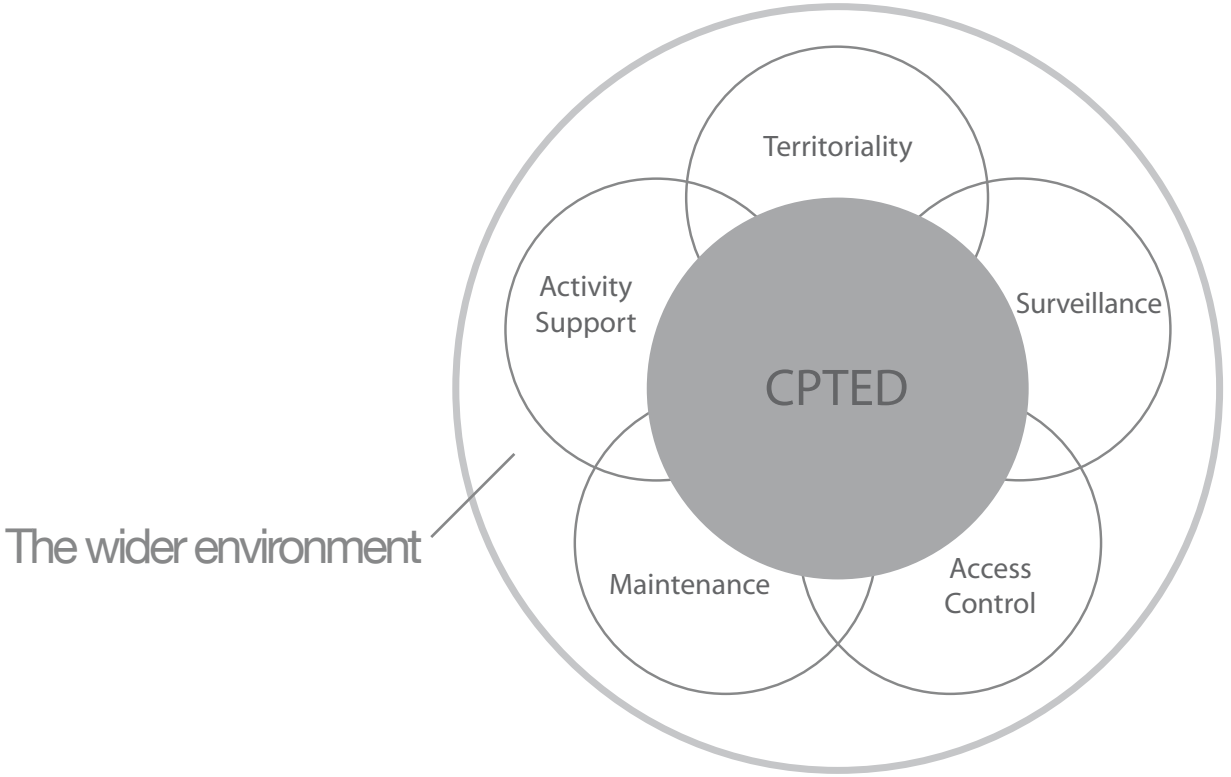
CPTED is a multi-disciplinary approach that relies upon the ability to influence offender decisions BEFORE criminal acts occur.

CPTED strategies aim to **increase the risk and effort** required to commit offences and **reduce the potential reward** to the offender.



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CPTED strategies: Territoriality: Defensible space

Soft or hard, overt or covert, boundaries create symbolic and physical markers to help control territory and manage spaces.

Oscar Newman 1972: Focused on housing and layout: *Defensible Space: Crime Prevention Through Urban Design.*

CPTED strategies: Surveillance: Natural / Electronic surveillance

Offenders may be deterred if they feel they can be seen as it increases their risk of being caught. Natural surveillance occurs by designing the placement of physical features, activities and people in such a way as to maximise visibility and foster positive social interaction. Electronic surveillance is only as effective as those that monitor and respond.

"Eyes on the street' discussed in Jacobs, Jane. (1961). The Death and Life of Great American Cities.

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CPTED strategies: Activity support

Popular activities are placed into the heart of empty public spaces to claim the space for legitimate users. This increases natural surveillance and the risk of detection of criminal and undesirable activities.

By putting the community back into public space, a sense of ownership and guardianship over the space will emerge.

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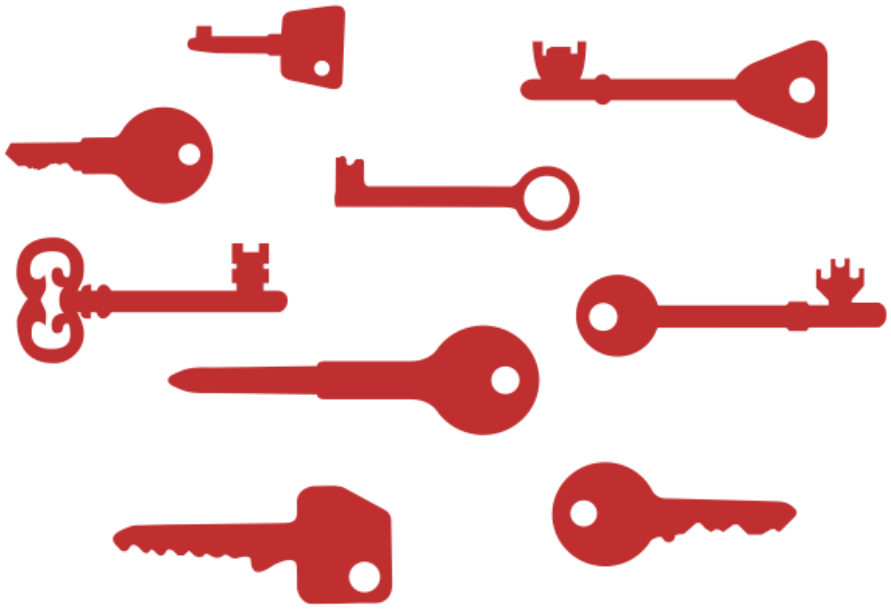
CPTED strategies: Access control

Control who goes in and out of spaces (physical access) to clearly define boundaries.

Placing entrances and exits, fencing, lighting and landscape, to limit access, controls the flow of people and provides a level of security without a overt security presence.



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CPTED strategies: Image & Maintenance: Broken Windows Syndrome
A poorly maintained and managed space informs abusers that risks associated with crime are low. Bad leads to worse. If legitimate users are deterred a 'Tipping Point' may be reached where abusers dominate the space.

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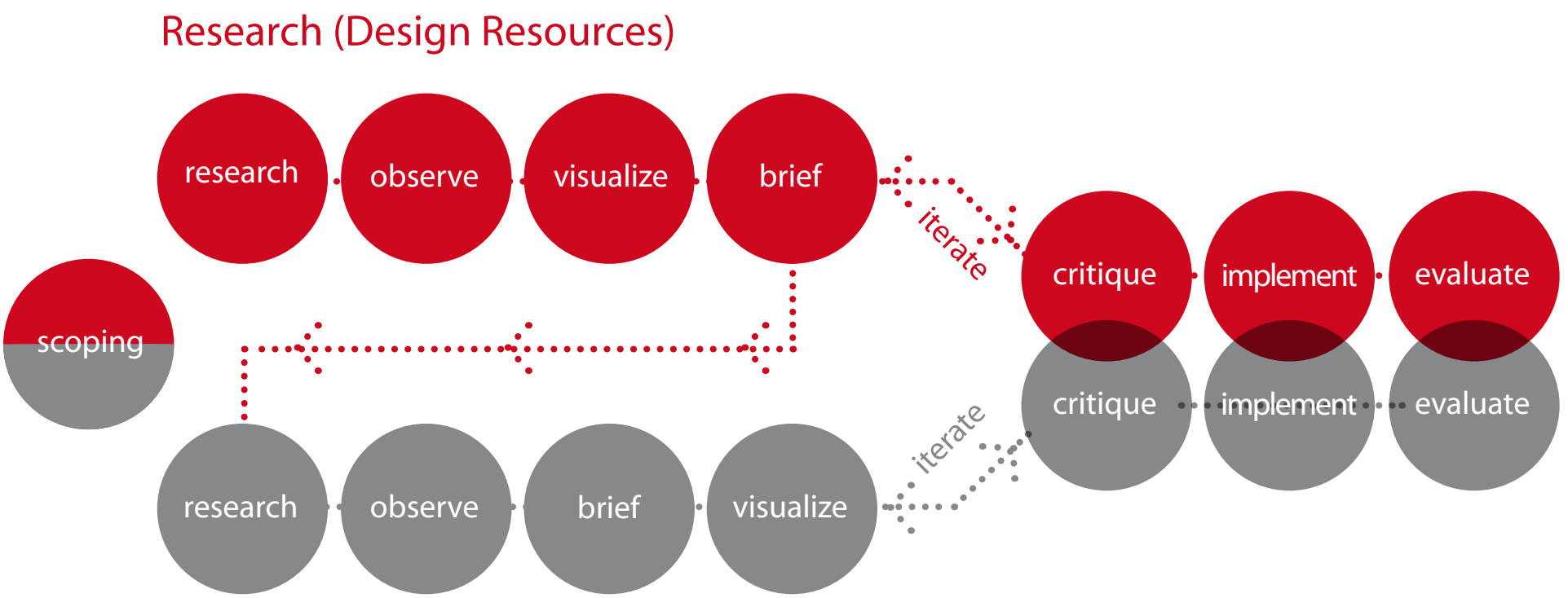
Our practice-led research process has 2 strands.
Each strand has 7 stages.



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4. Introducing Bikeoff Initiative

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BikeOff is the DAC research strand addressing bicycle theft and secure cycle parking provision.

BikeOff is investigating how designed and ad-hoc cycle parking solutions and environments are complicit with crime i.e. linked to misuse and abuse/theft of bicycles.

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Bikeoff 2 - Catalysing anti theft bike parking and information design for 21st century living

2 year Portfolio project – 4 project strands

1. Design standards and design methodologies
2. Design resources and design education via competition & exhibition
3. Tools for consultation and user evaluation
4. Secure cycle parking infrastructure exemplars

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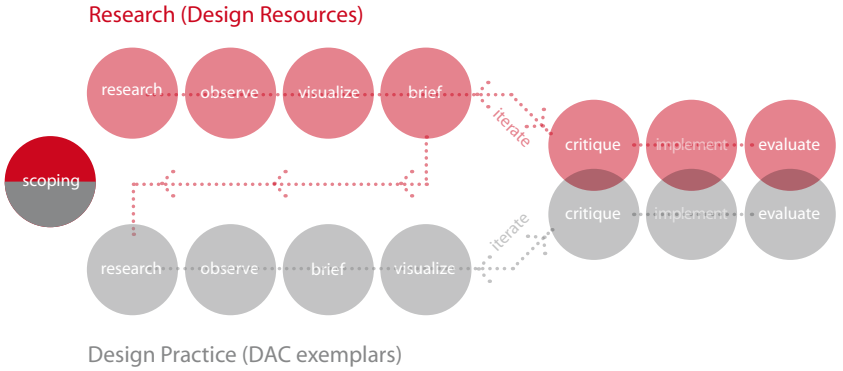
Scoping



The department for Transport, National Cycle Strategy (1996) aimed to increase cycle usage four fold by 2012.

London Mayors Office aiming for 80% increase by 2012 and 200% increase by 2020.

But, 17% of cyclists experience bicycle theft. Of these 24% stop cycling and 66% cycle less often.

Transport Research Laboratory 1997

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Scoping

Cycle theft seriously impedes cycle usage and the benefits that cycling has to offer the public:

*Quick (journeys under 5 miles)

*Healthy (obesity/heart disease)

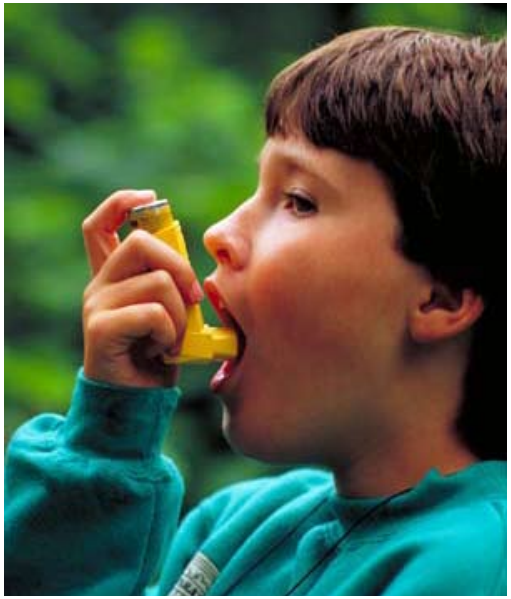
*Affordable (inclusive)

*Non-polluting (zero CO2 emissions)

Scoping

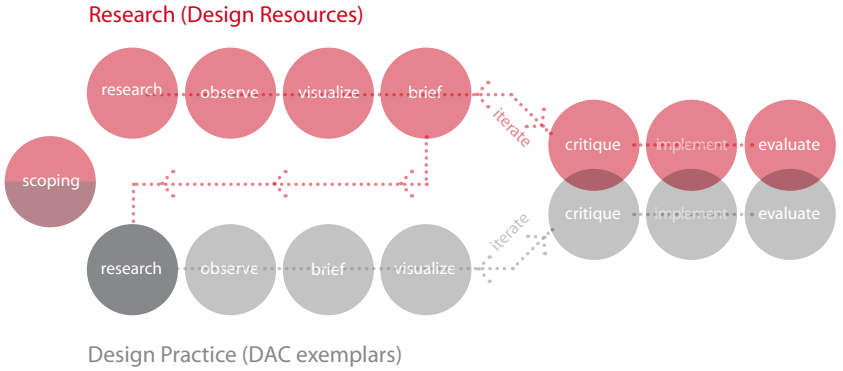
1600 premature deaths per year due to poor air quality.

Poor air quality in London attributed to the 11 million car journeys each day.



Mayor of London, 2006: Cleaning London's Air – The Mayors Air Quality Strategy, London: Greater London Authority

Research: Literature review



In UK, 439,000 incidents of bike theft according to BCS (just under 1 bike stolen every minute); this compares with 102,680 incidents reported to police.

In 2004-5, London, TfL estimates report 80,000 bikes stolen; of which less that 5% returned to owners.

Cycle theft is quoted as the second greatest deterrent to cycle use after road safety. Secure cycle parking is quoted as second greatest incentive after more bike lanes.

Research: Literature review

Not just a UK problem. Bike owners more likely to have their bikes stolen than car owners their car or motorcyclists their motorbike;

Bike stolen (4.7%)
Motorbike stolen (1.9%)
Car Stolen (1.2%)

International Crime Victim Survey (2000)

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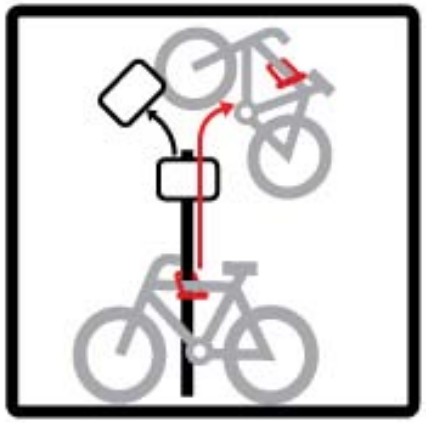
Research: Behavioural research

Theft perpetrator techniques

Lifting



Levering

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Research: Behavioural research

Theft perpetrator techniques

Striking

Cutting

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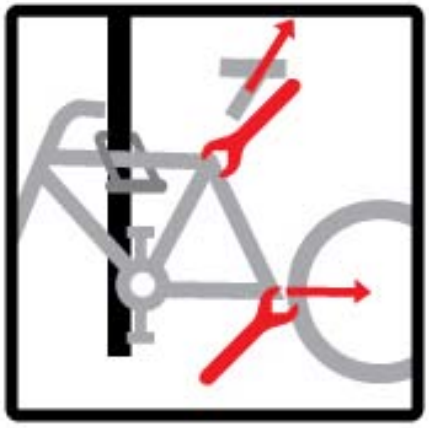
Research: Behavioural research

Theft perpetrator techniques

Unbolting



Picking

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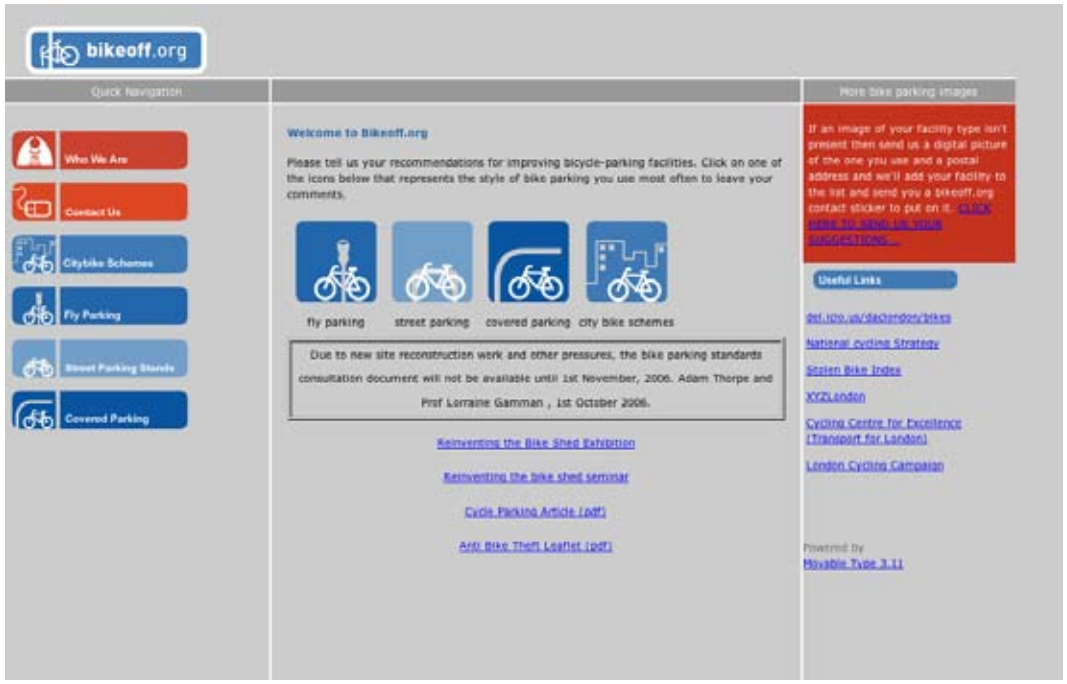
Research: Community consultation

Bikeoff Weblog



Research: Community consultation

Bikeoff Weblog

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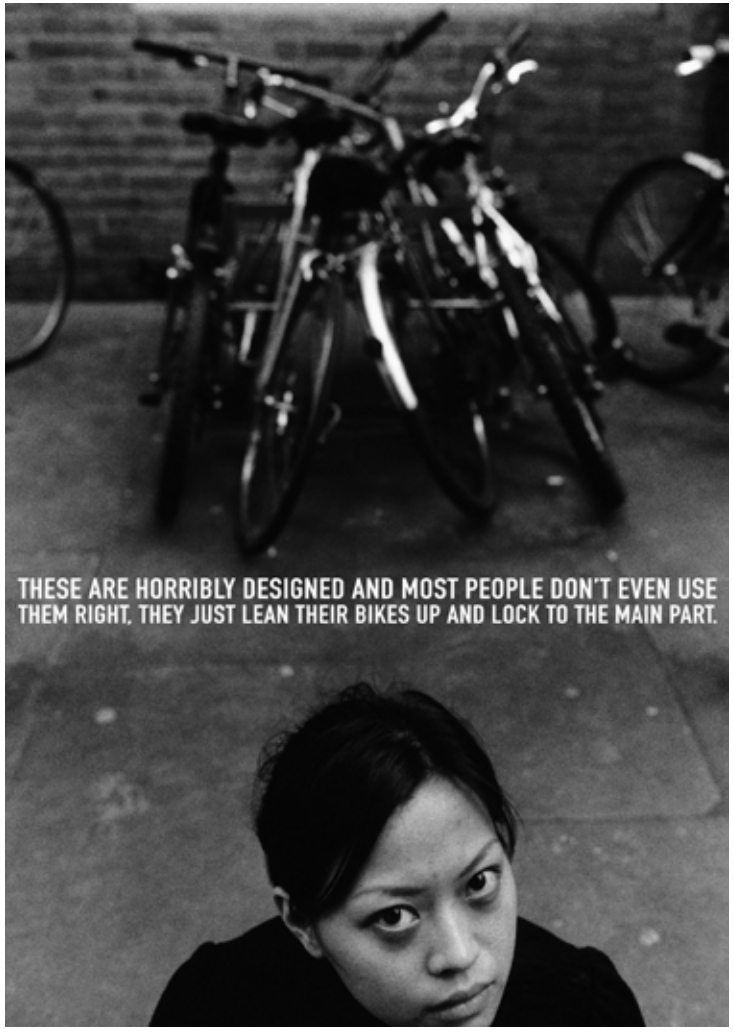
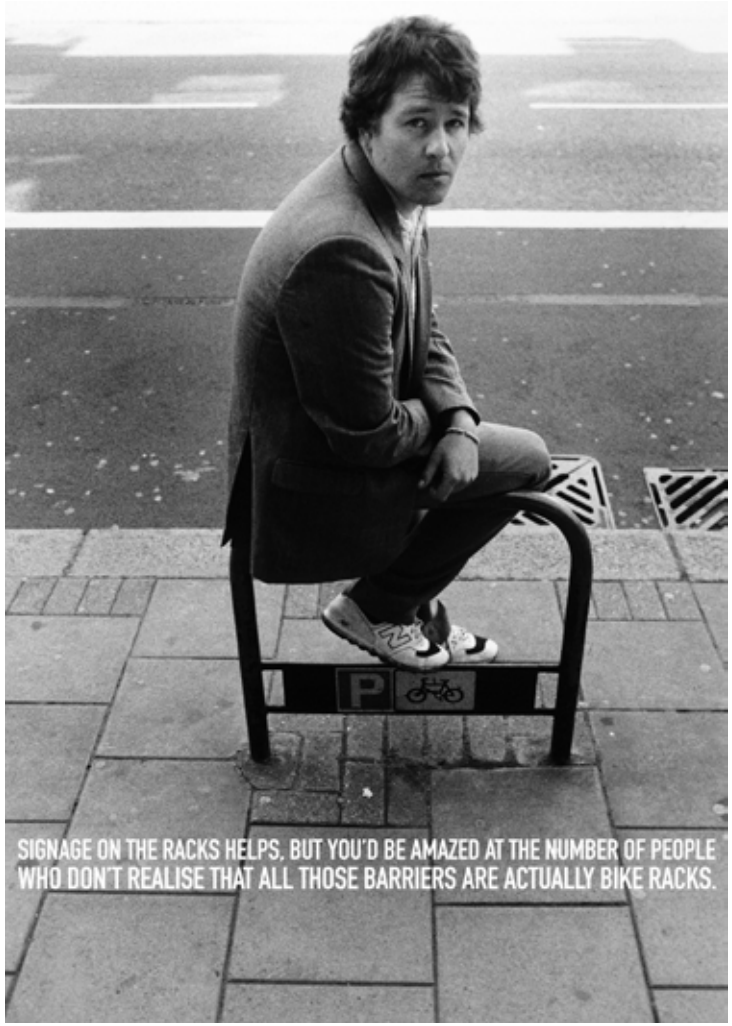
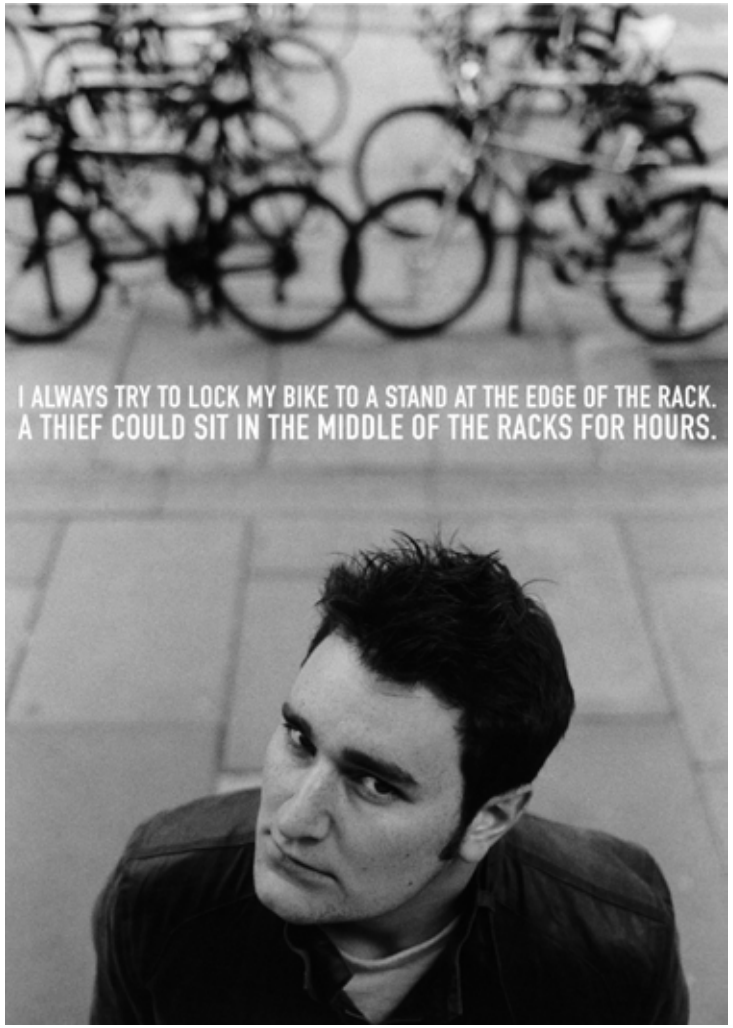




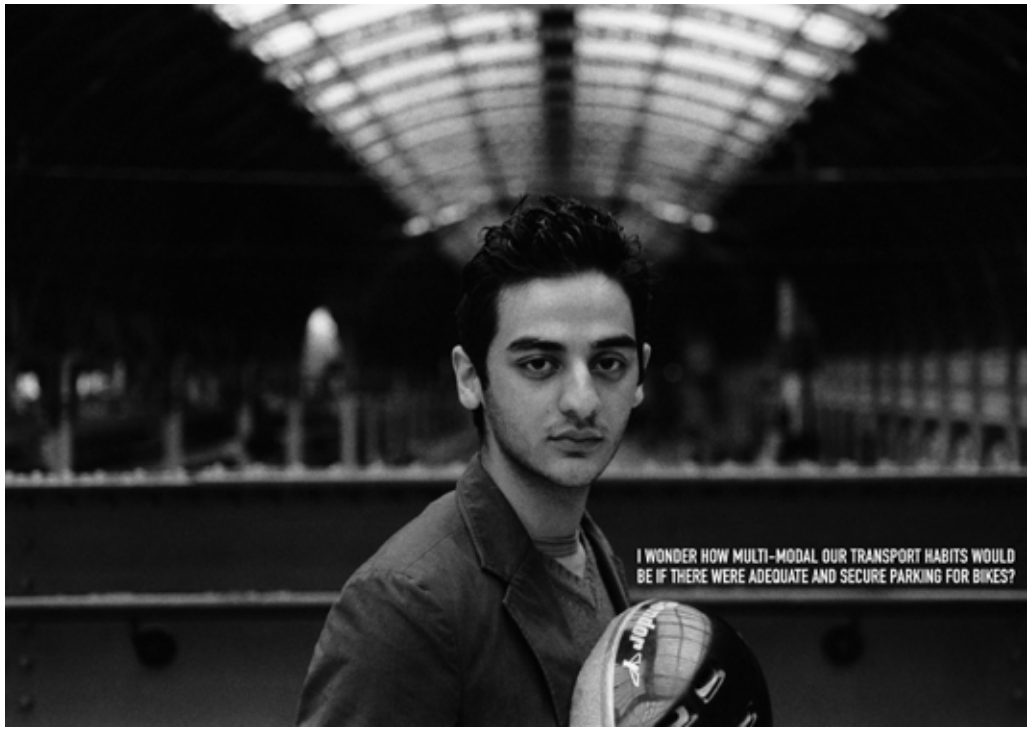
Research: Community consultation

Bikeoff Weblog

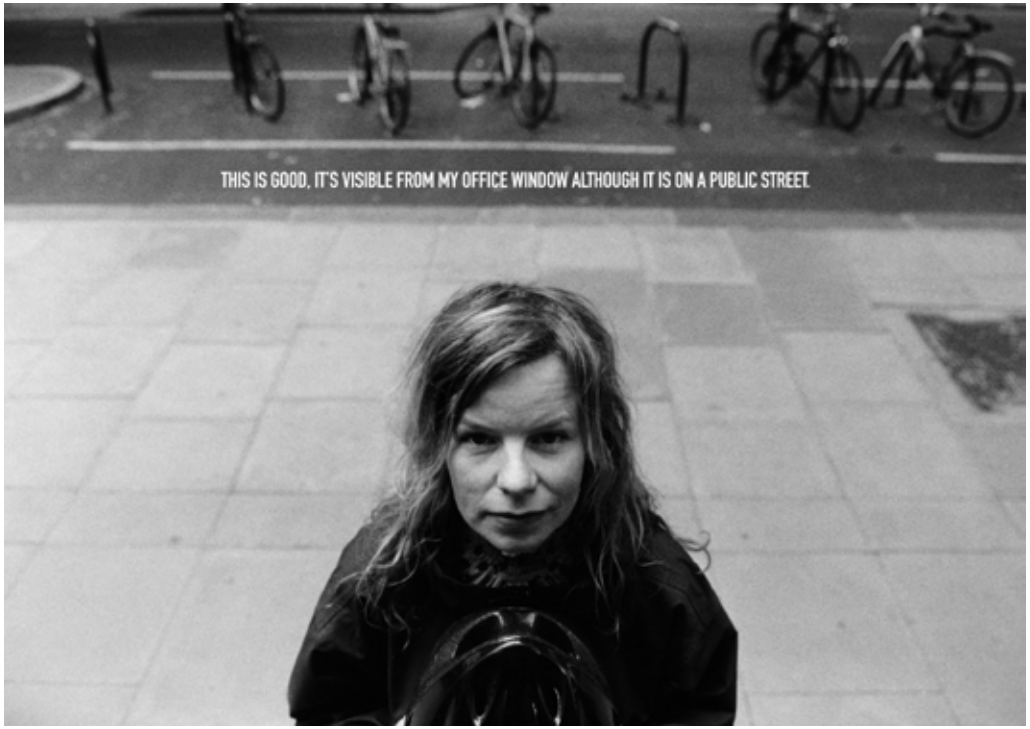


Research: Community consultation

Bikeoff Weblog



Research: Community consultation
Bikeoff Weblog



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Research: Visual Fieldwork

Using 2 locks to secure a diamond frame bike to a Sheffield stand there are 180 potential locking combinations.

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Research: Visual fieldwork

We rated locking practice a good, ok or bad.

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Research: Summary

Factors contributing to the security of a parked bicycle:

* Type of lock
* Locking practice
* Parking practice (fly parking)
* Parking furniture
* Parking environment

Effective responses require an understanding of the situational factors described above and the broader context of cycle theft in the operational area (environmental complicity).

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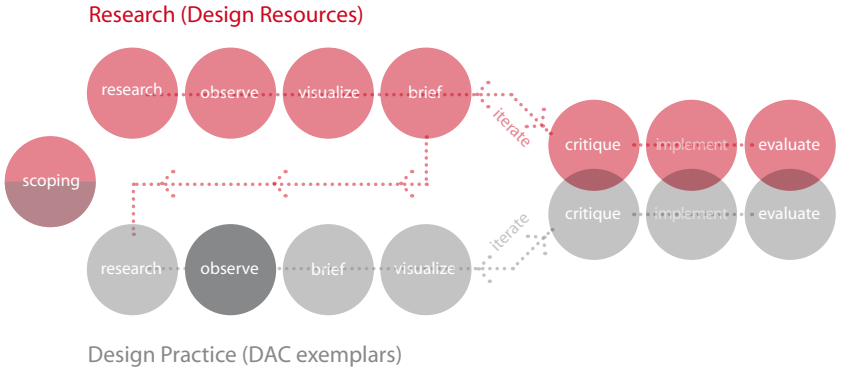
Observation:

Holborn Gateway Cycle Parking Project Research and Observation



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Observation: Qualitative

Parking practices in Holborn Gateway and surrounding area

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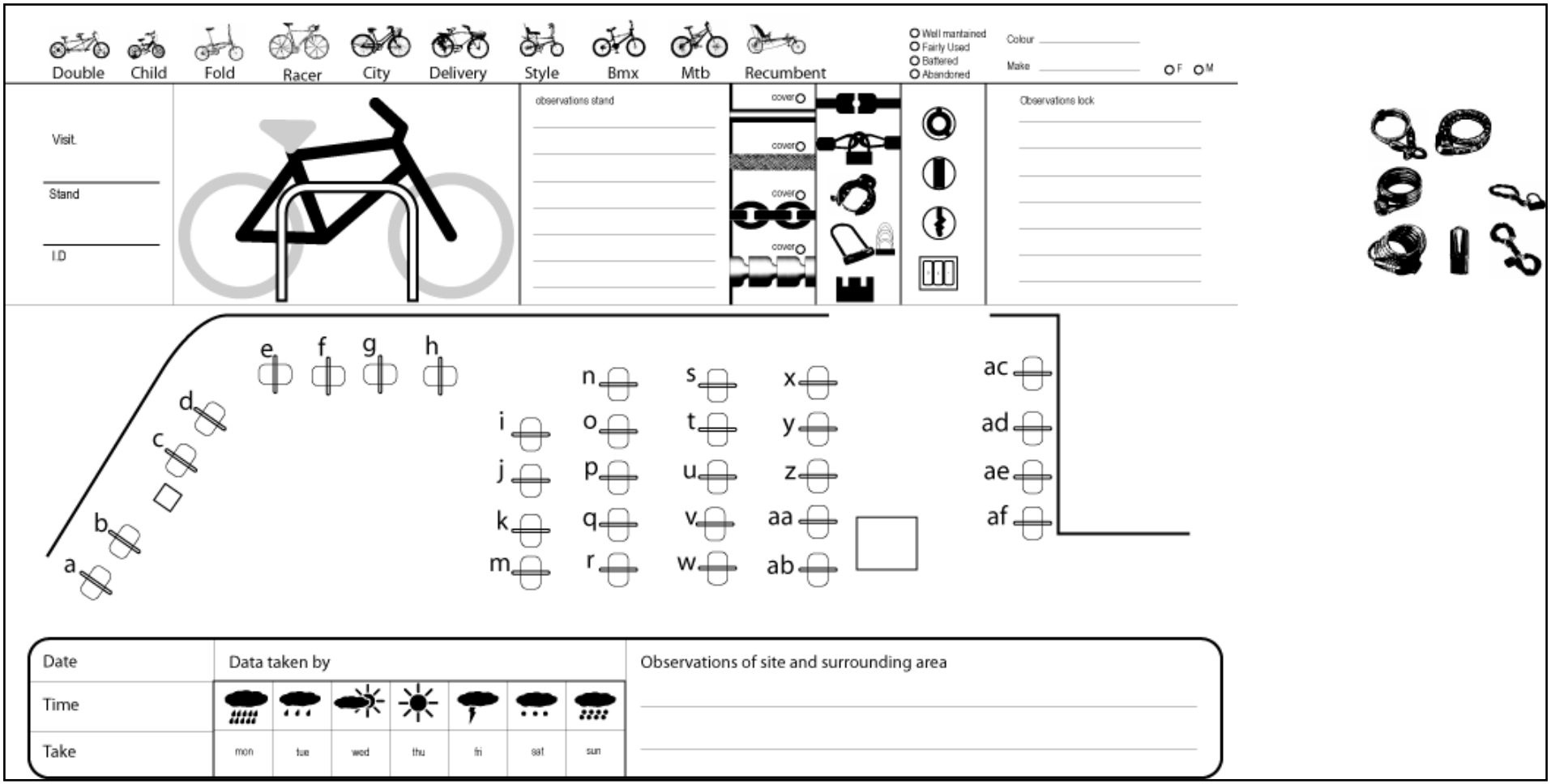
Observation: Quantitative

8500 observations of ‘locking’ events noting situational context.



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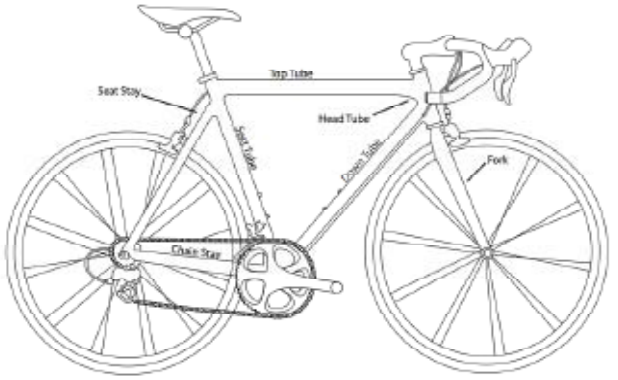
Observation: Findings : Bikes

* 75% of users have bikes of standard ‘diamond frame’ design - including top tube.

* 1/3 of cyclists we spoke to were new cyclists.

* majority use 2nd hand bike.

* 75% of new cyclists didn’t know the name or function of their bikes components.



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Observation: Findings: Locking practice

* 87% used 1 lock
* 12% used 2 locks
* 1% used 3 locks

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Observation: Findings: Locking practice

Of 180 possible locking methods :

* 72% use one of 7 methods
* 53% lock only 1 wheel
* 19% lock only the frame

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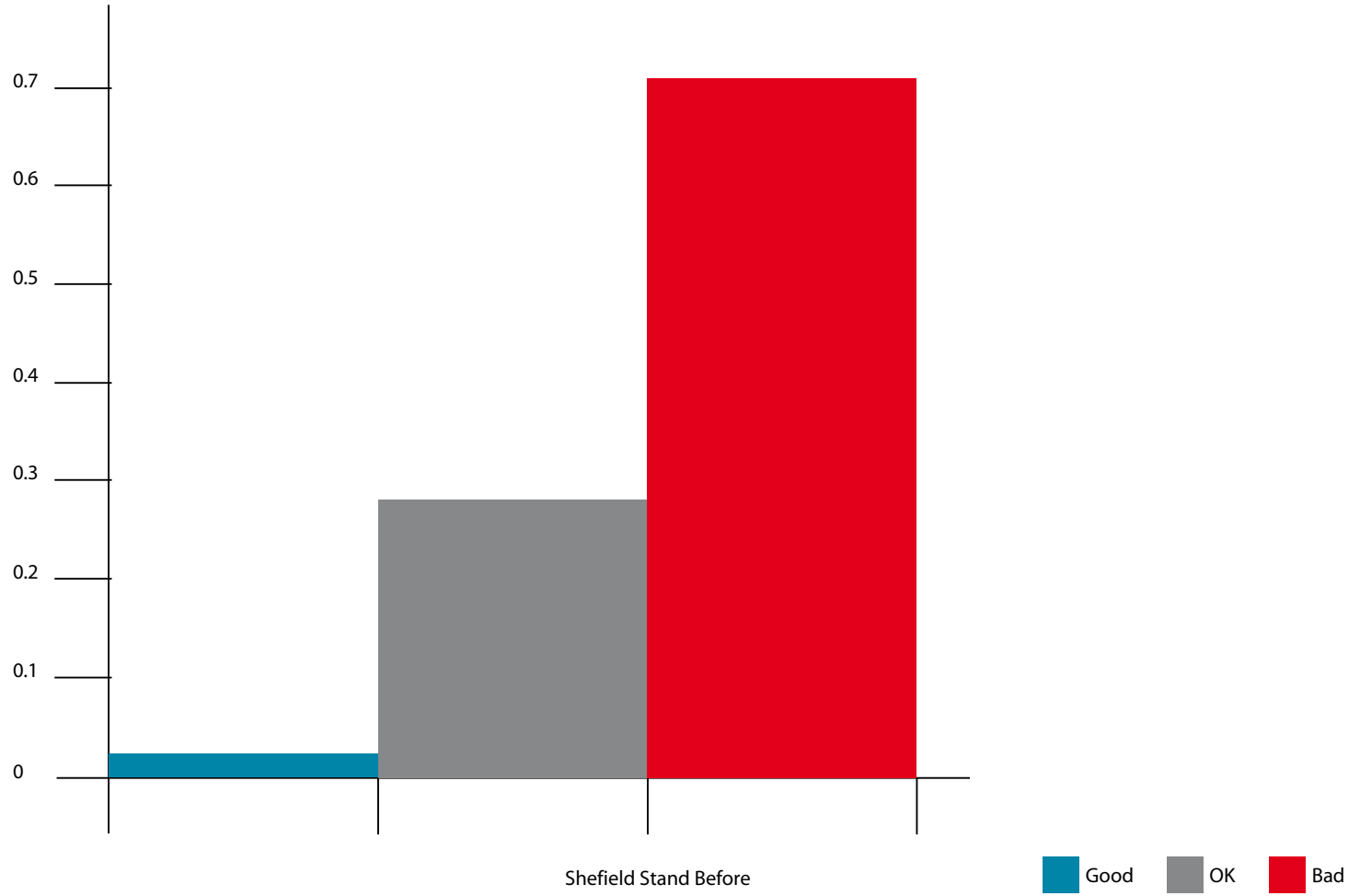
Observation: Findings: Locking practice

We found that the majority of site users locked their bikes INSECURELY



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Observation: Findings: Wider environment (CPTED Principles)

* Stands closest to the college were most popular.
* Location of objects within the site and lack of demarcation of boundaries lead pedestrians through the bike parking. This leads to user conflicts. Territoriality

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Observation: Findings: Wider environment (CPTED Principles)

* 11 bikes reported stolen; a further 7 thefts were known but not reported; Camden police suggest 60% of thefts go unreported; more than 1 bike stolen a week on average. None of the thefts were observed, prevented or recovered by CCTV. Surveillance

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Observation: Findings: Wider environment (CPTED Principles)

* The site is busy, unwelcoming and poorly lit with high pedestrian flows at peak times - becoming empty at night. Activity support by way of place-making may increase dwell time of legitimate users leading to natural surveillance and guardianship.

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Observation: Findings: Wider environment (CPTED Principles)

* The site is enclosed on 3 sides by roads. Access to site is determined in relation to road traffic and road safety. Little regard is given to access requirements of other site users - particularly bikes. Access control.

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Observation: Findings: Wider environment (CPTED Principles)

* Stands adjacent to abandoned bikes are least popular amongst users, even when located closest to destination served - 'broken bike' effect - **Image & Maintenance.**

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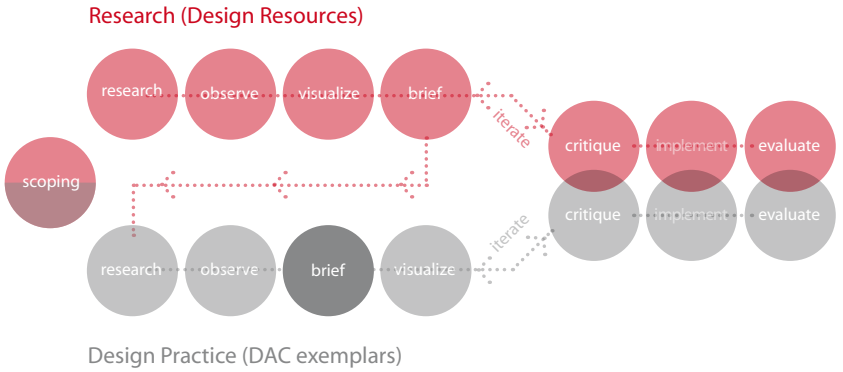
Brief

We applied the research to inform briefs in the following areas:



i) Information Environment: methods of communicating security issues and user best practice to cyclists and other users of the space

ii) Cycle parking furniture: designing more secure user-friendly cycle parking furniture that promotes secure parking practice.

iii) Surveillance and Guardianship: schemes that will help cyclists look after their own bikes and/or work with existing services to do so.

iv) Lighting and Site Improvement: the design of more user-friendly, abuser unfriendly sites for cycle parking.

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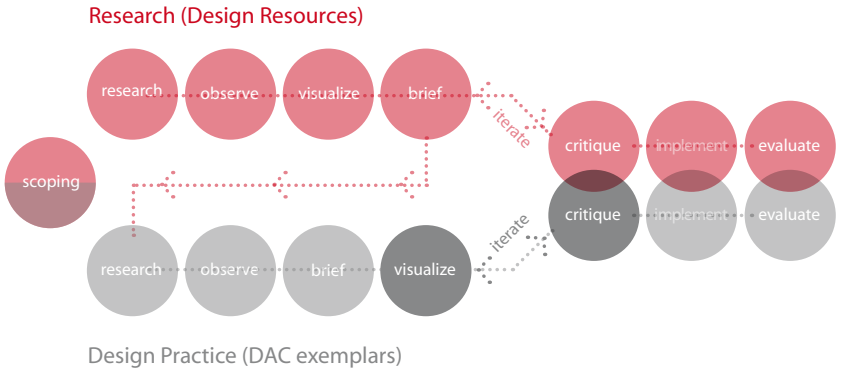
i) Information environment intervention

Visualise / Critique

Information Environment:

Communicate security issues and user best practice to cyclists whilst avoiding visual clutter.



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Visualise/Critique: Information Environment

Communicate security issues and user best practice to cyclists whilst avoiding visual clutter. Integrate signage with furniture and target messaging. Critique with Police, Street Management and Cycling groups. Whisper not shout.

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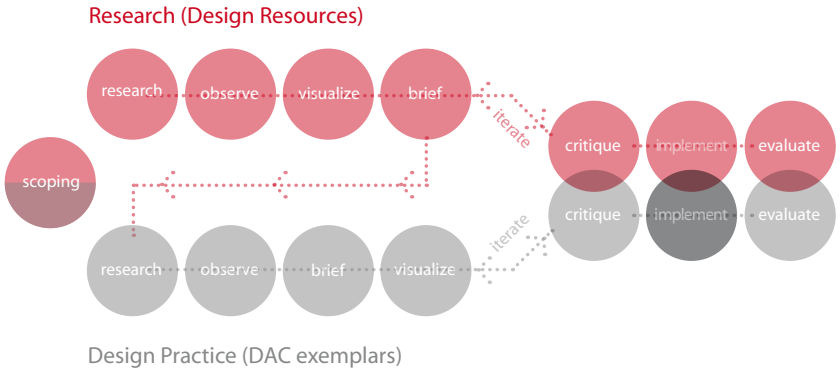
Implement: Information Environment

* 5 sites, 1 control.
* all sites observed before intervention and locking practices recorded (4 weeks).
* stickers introduced to 4 sites.
* all sites observed after intervention and locking practices recorded (4 weeks).
* all sites observed 2 months after intervention to see if any recorded effect changed over time.



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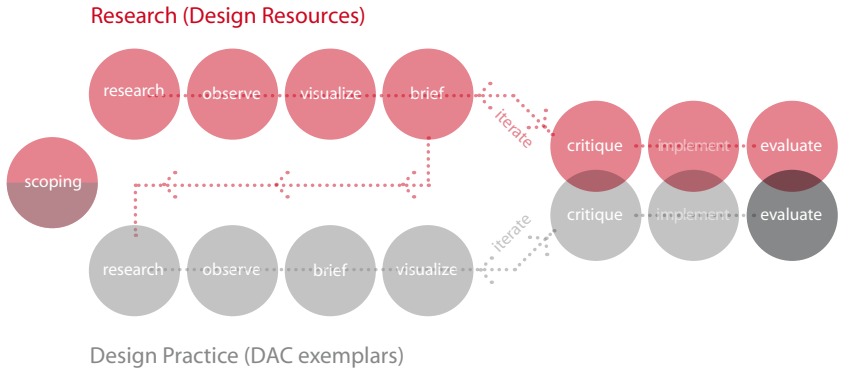
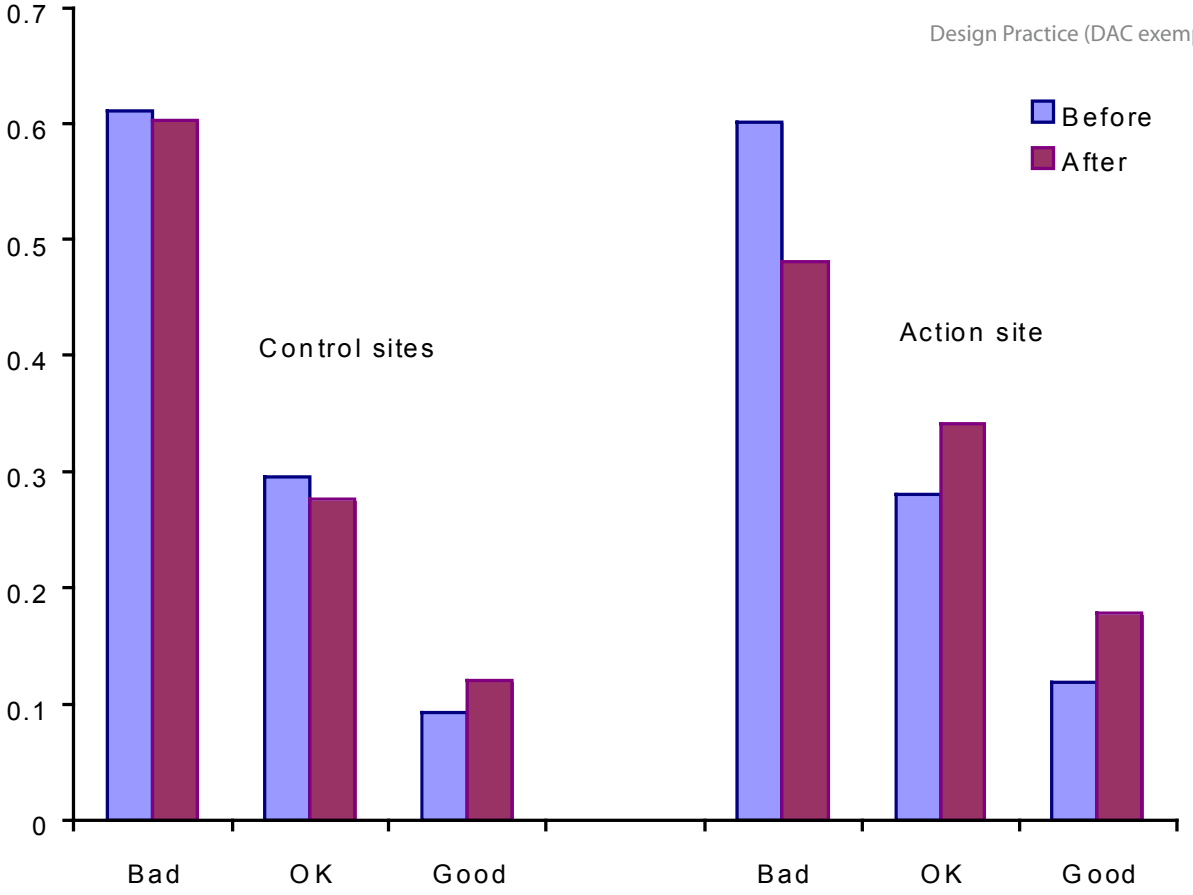
Evaluate: Information Environment





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ii) Cycle parking furniture intervention

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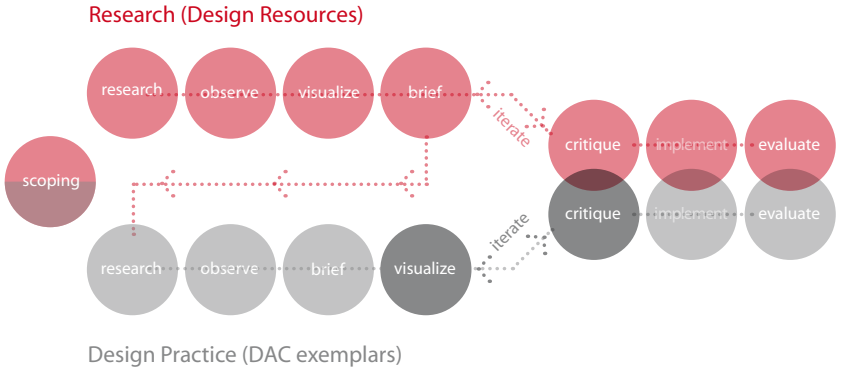
Visualise/Critique: Cycle parking furniture

Design of more secure user-friendly cycle parking furniture that improves security of cyclist locking practice.

Short stay (0-2 hrs)
Medium stay (2-6 hrs)



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Visualise / Critique: Cycle parking furniture

Bikeoff research indicates a requirement for stand design to address:

* Reducing opportunity for insecure locking practice
* Support bike from falling and front wheel from falling to side
* Increase security of ‘1 lock’ users

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Visualise/Critique: Cycle parking furniture

Working with advisory panel and industrial partner Broxap Ltd we created prototype stands.

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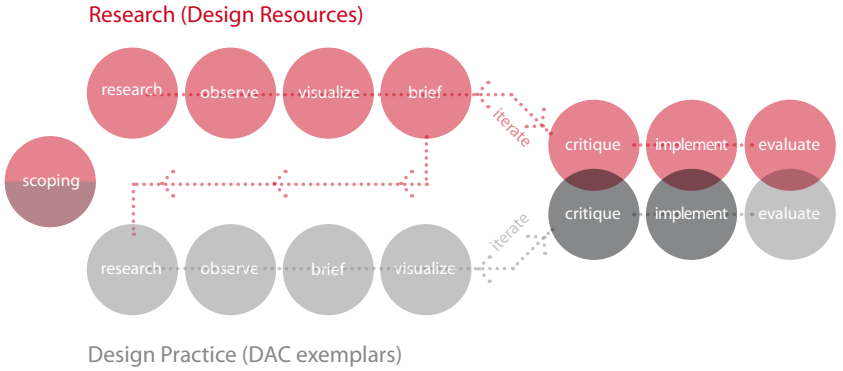
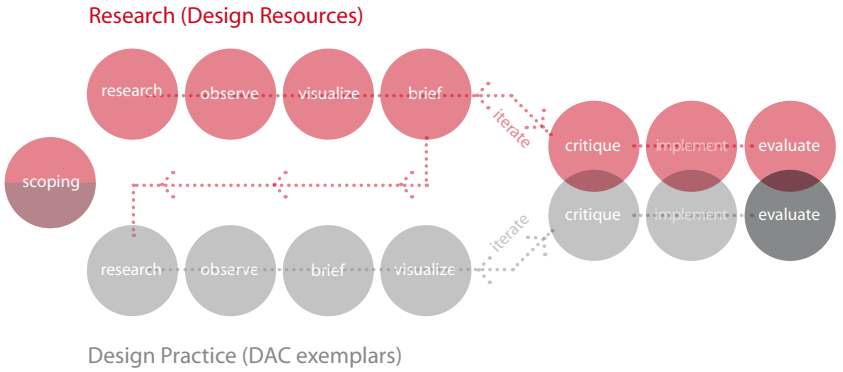
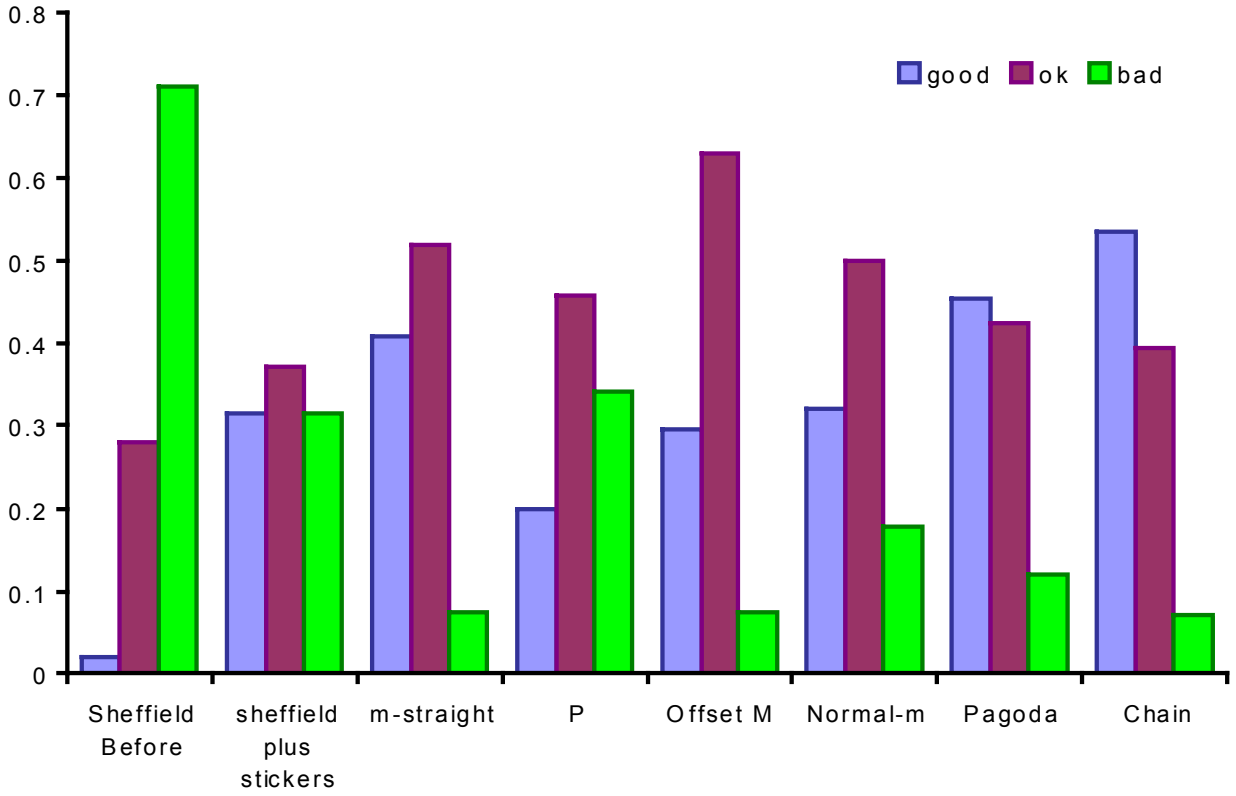
Implement: Cycle parking furniture

* 6 new stand designs introduced on site
* 2 Sheffield stands selected as control stands
* all stands observed for 3 months
* control stands compared with new stand designs
* new stand designs will also be compared to locking practices observed in previous 8400+ observations



Evaluate: Cycle parking furniture





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iii) Surveillance and Guardianship intervention

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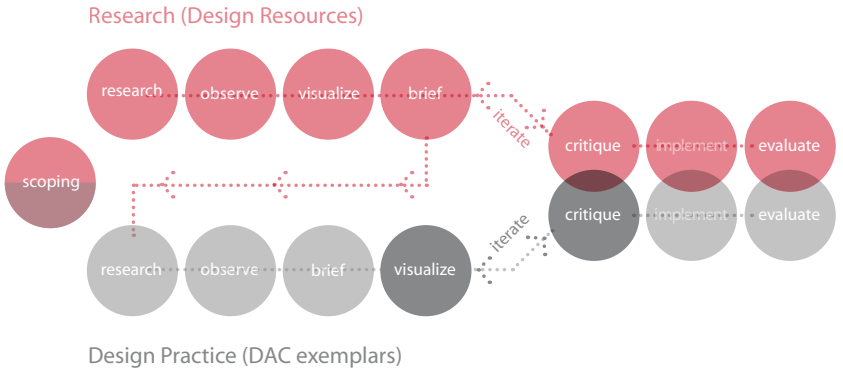
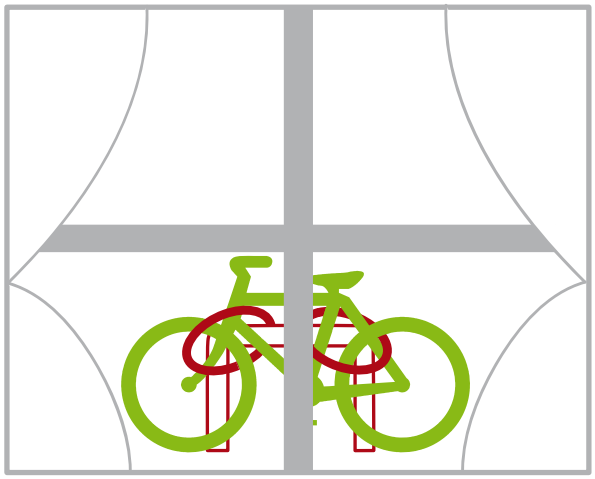
Visualise/Critique: Surveillance and Guardianship



Schemes that will help cyclists look after their own bikes and/or work with existing services to do so. The bikeoff weblog and site observations have shown that users do not put their trust in CCTV. Need to inform, empower and motivate Guardians.

Little Brother : Bosch

* Self surveillance
* System mgmt – registered users
* Triggers and alerts
* Response – physical/sensory?



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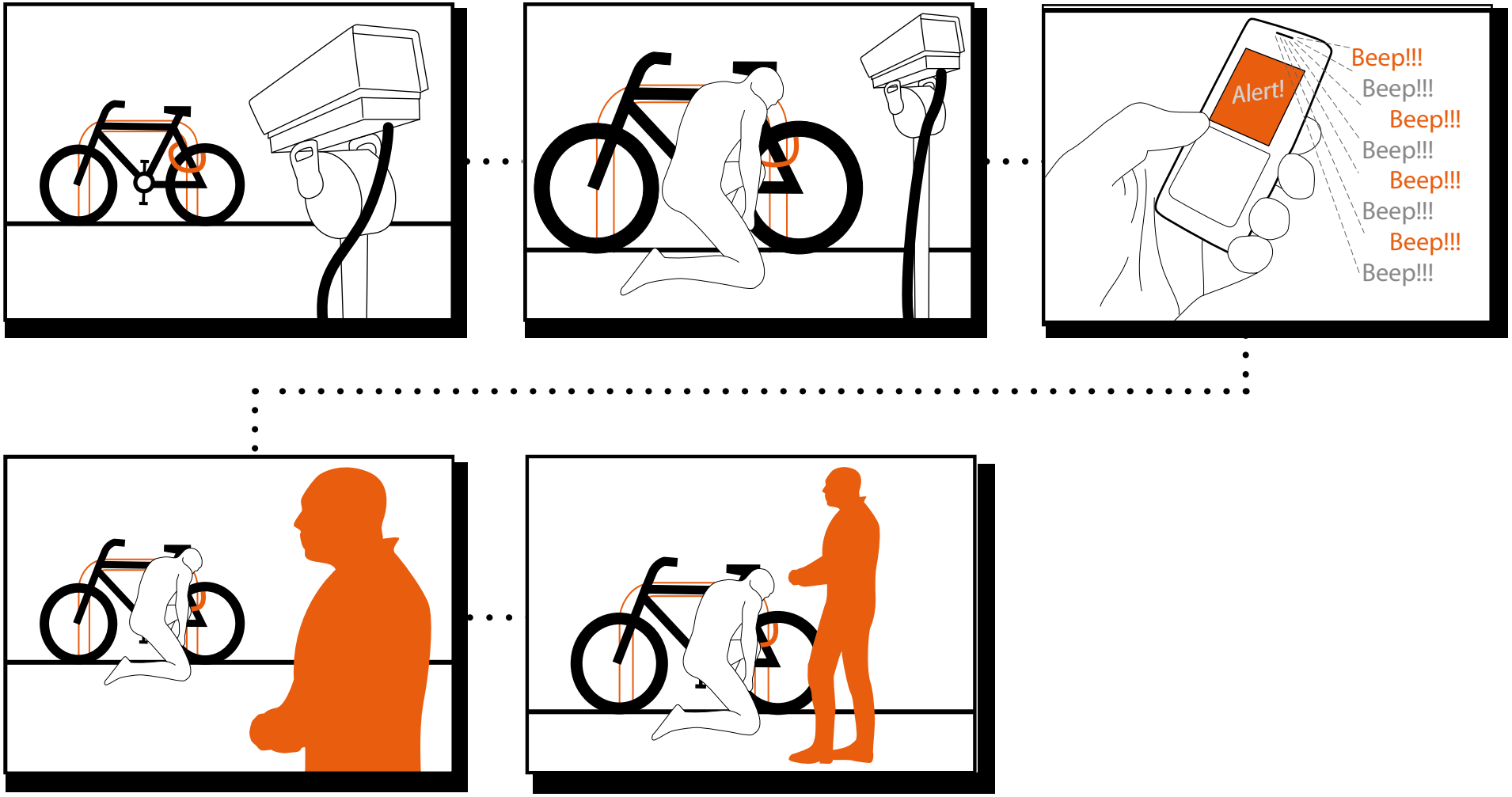
Visualise / Critique : Little Brother



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iv) Lighting and site improvement intervention

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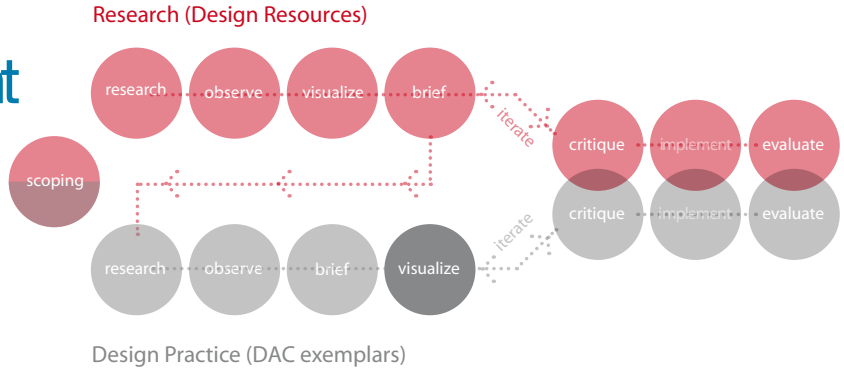
Visualise: Lighting and Site Improvement

The design of more user-friendly, abuser unfriendly sites for cycle parking.

* Pedestrian flows (phoneboxes)
* Cyclist access – conflicts?
* Site lines
* Lighting
* Site mgmt and maintenance – 'broken bike effect'
* 'Place making' – Holborn gateway
* Other users – college users/ office workers/ tourists/visitors
* Way-finding



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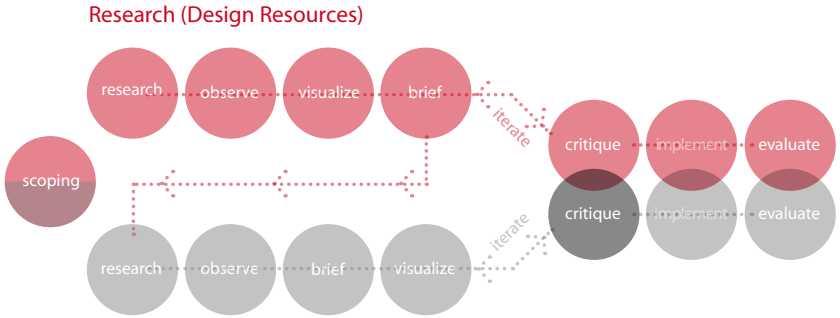
Critique: Stakeholder Consultation

Critique lighting and site improvement stakeholder consultation.



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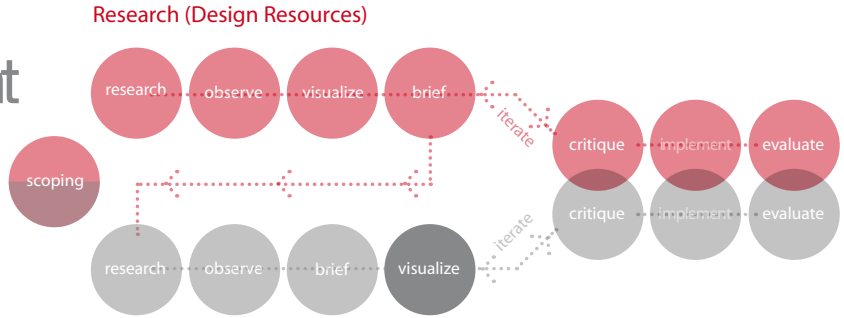
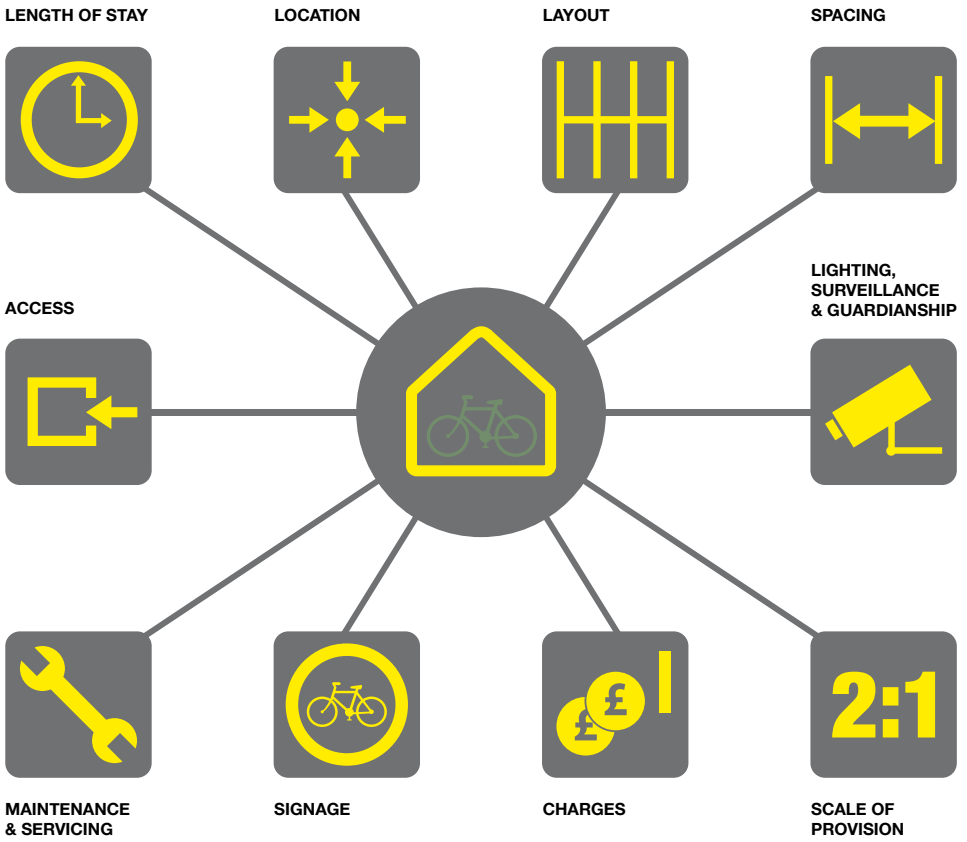
Visualise: Lighting and Site Improvement



Bikeoff guidelines

Design Practice (DAC exemplars)



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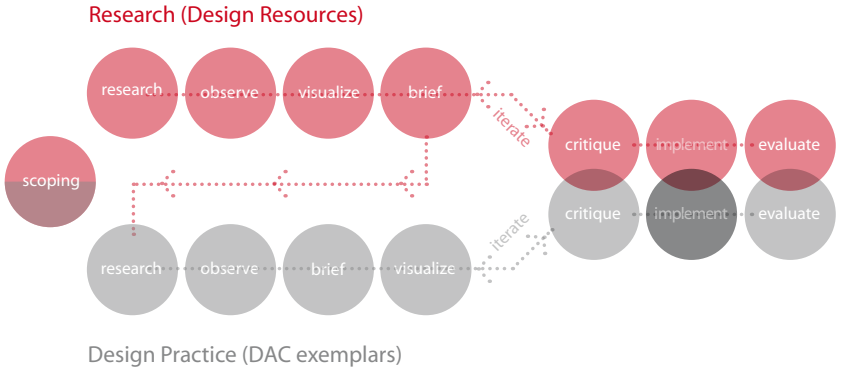
Implementation: Lighting and Site Improvement



The bikeoff guidelines are implemented in 3 ways:

i) Design of Holborn Gateway on-street and off-street cycle parking facilities in 2008 and Kings Cross development in 2012 (consulting to Stanton Williams Architects).

ii) MA Industrial Design Project - Holborn Unlocked - Unlocking the potential of cycle parking infrastructure to regenerate public space.

iii) Guidelines applied to best practice exemplars to post-rationalise efficacy of tool for design guidance.

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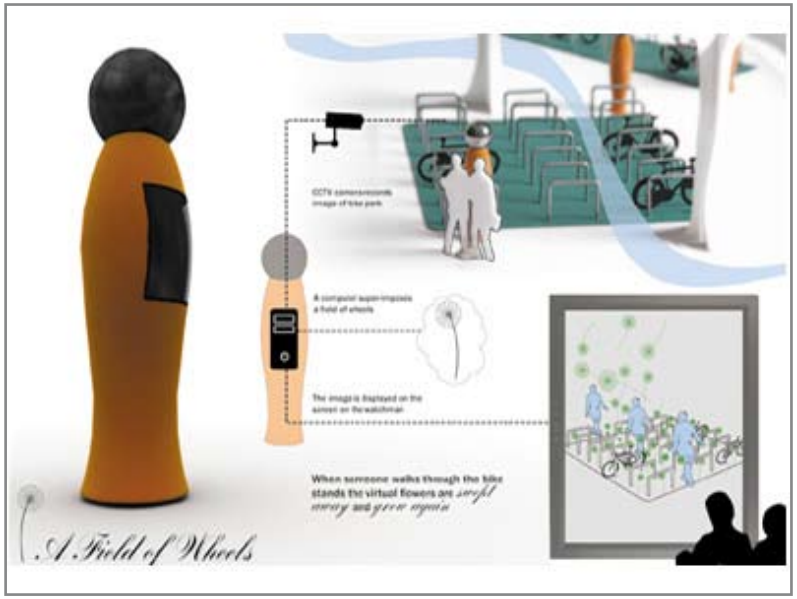
Implementation:

ii) MA Industrial Design Project - Holborn Unlocked - Unlocking the potential of cycle parking infrastructure to regenerate public space.



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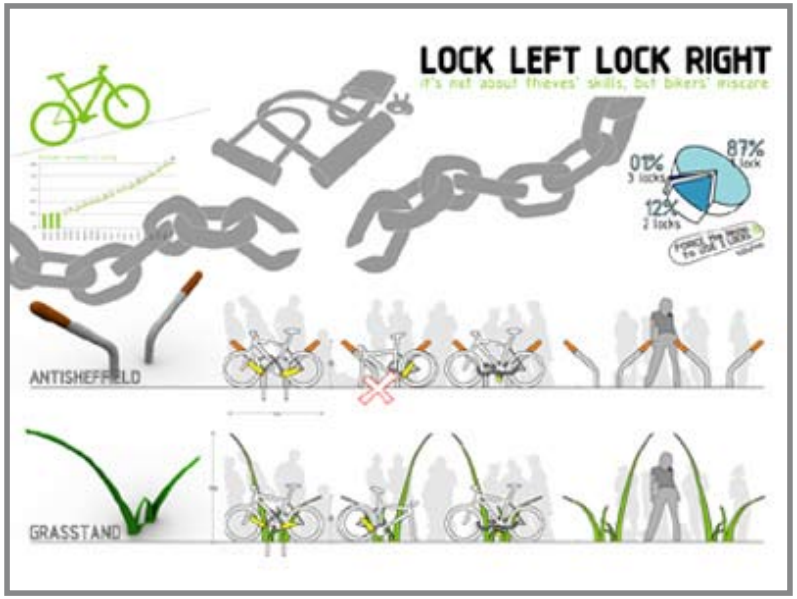

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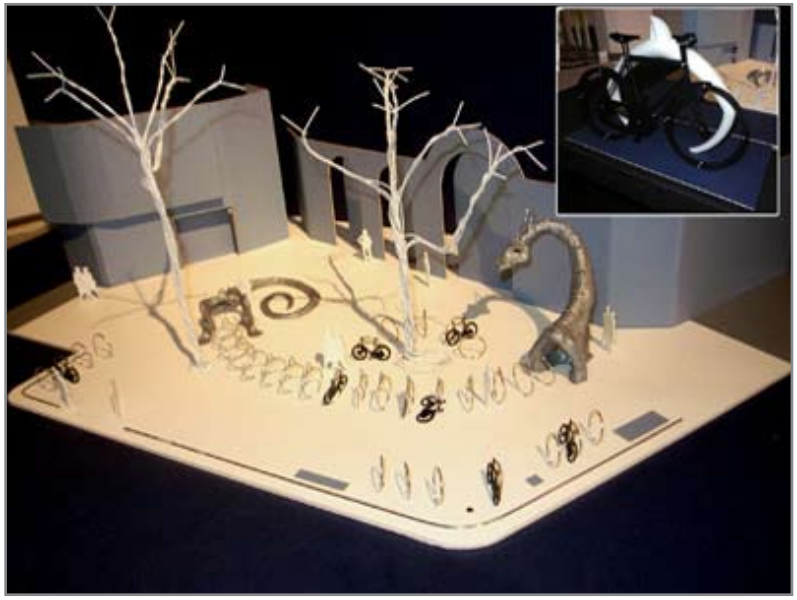

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Implementation:

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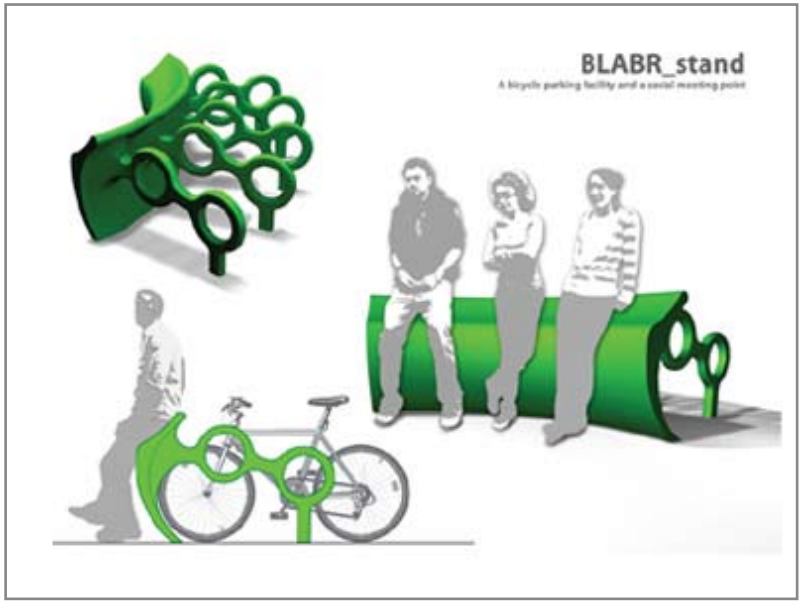

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Implementation

ii) MA Industrial Design Project - Holborn Unlocked - Unlocking the potential of cycle parking infrastructure to regenerate public space.

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Implementation :

iii) Guidelines applied to Zutphen case study. Population 35,000. 1.5 hours from Amsterdam by train. Bicycle modal transport share 60%.

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Implementation

iii) Zutphen Case Study : Location

Bike park is located outside Zutphen train station (within 10 meters), adjacent to bus stops, and below a public square. The bike park is accessible to cycle lanes to the left, right and centre.

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Implementation

iii) Zutphen Case Study : Length of stay

The facility is open and attended 05.30 to 01.30 daily.
Users can stay up to a maximum of 4 weeks.

Charges: Free of charge
Scale: 2900 cycles (3000 capacity).

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Implementation

iii) Zutphen Case Study : Access

Macro – Cycle lanes to enter the facility.

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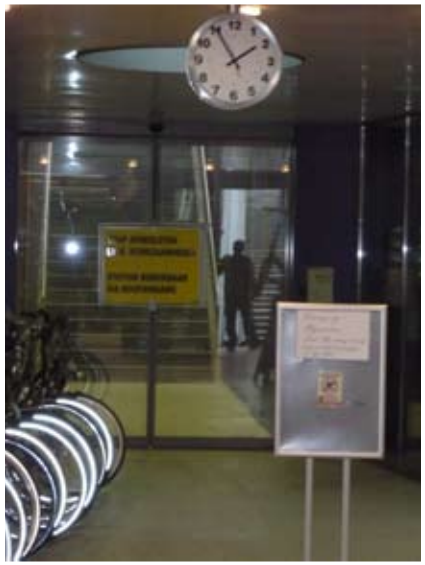
Implementation

iii) Zutphen Case Study : Access

Mezo – 2 way stair and gully. Stair to station concourse.



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Implementation

iii) Zutphen Case Study : Access

Micro – Controlled: Swipe card and turnstile (no tail-gating).

Open: Overlooked by security and bike shop.

Security versus ease of use.

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Implementation

iii) Zutphen Case Study : Furniture

2-tier (or 'double-decker'). Compatible with generic dutch bike design. Bike secured in position using the integrated lock - difficult to manoeuvre off the stands when parked.

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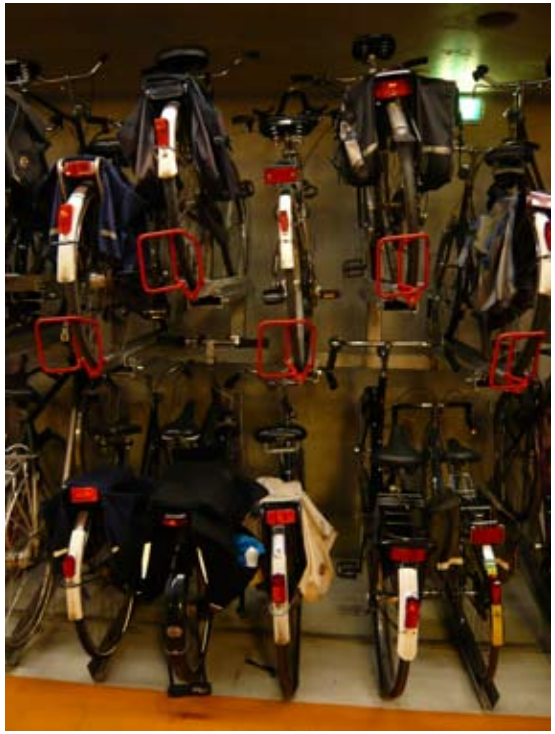
Implementation

iii) Zutphen Case Study : Layout/ Spacing

Clear sight lines. Rows separated by circulation isles 2 meters wide. Allows natural light to enter space. Positioned alternately high and low to maximise density (400mm apart).



Implementation

iii) Zutphen Case Study : Signage

Macro: Signed from cycleway illustrates guarded, covered facility.

Mezo: Opening hours and access instructions.

Micro: Numbered isles, CCTV and parking rules.

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Implementation

iii) Zutphen Case Study : Lighting

Brightly and evenly lit by overhead lighting. Designed so as to maximise the amount of natural light entering the underground space.

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Implementation

iii) Zutphen Case Study : Surveillance and Guardianship

Electronic: Monitored CCTV located at 2 meter intervals throughout
Natural: Staffed 20 hours a day.

Shop and parking attendants - Activity support.

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Implementation

iii) Zutphen Case Study : Maintenance and servicing

Ongoing daily by on-site staff – no faulty lighting or abandoned bikes.

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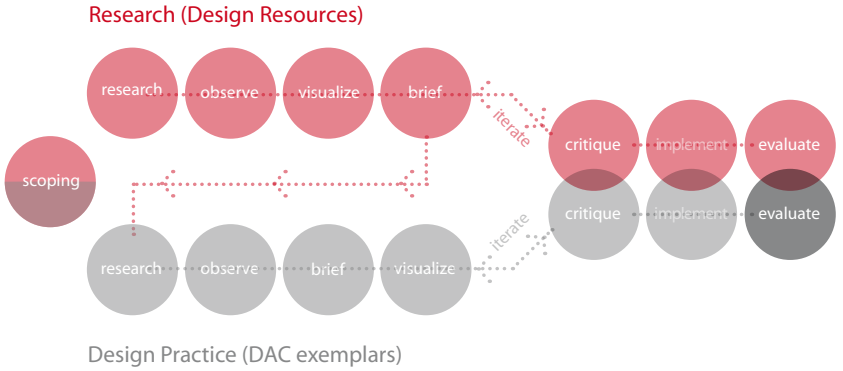
Implementation

iii) Zutphen Case Study : Summary

1. Zutphen design applies risk, effort and reward in relation to users and abusers.
2. Utilises CPTED principles: Territoriality, Surveillance, Image and Maintenance, Activity support, Access control to good effect.
3. Creates sense of ownership and civic pride through investment in design and permanent staffing.
4. Supports modal increase for bicycles - 3000 spaces already too few!
5. Multi-stakeholder delivery – Municipality and private rail company enables ambitious plans to be realised.

Evaluation

Bikeoff design guidelines



i) Guidelines provide structure to ensure design is 'fit for purpose', promoting use and deterring abuse whilst allowing for diverse application according to user need, design inspiration and context - Central Saint Martins College of Art and Design, MA Industrial Design outputs.

ii) Zutphen case study illustrates the manner in which all elements of this exemplary design are accommodated within the guidelines.

iii) When apllied to Zutphen the guidelines expose their value as a critical design tool. (e.g. identify shortcomings relating to Universality of furniture, inclusive access, room for expansion).

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Evaluation

Bikeoff design guidelines

Uptake of guidelines by stakeholders indicates their value:

* Informing Transport for London secure cycle parking guidance.
* Providing starting point for Secured By Design Standard for secure cycle parking.
* Contirbuted to Home Office Eco-homes standard.
* Contributed to Commons Transport Select Committee Inquiry into the British Government's Rail White Paper.
* Contributed to counter terrorism design debate i.e. mediating between sustainability and security in relation to bike parking in public spaces perceived to be threatened by terrorism.
* Contributed to Home Office Design and Technology Alliance thinking in regard to identifying bikes as 'hot products'.

Conclusion: The problems with CPTED

There are five primary barriers to the international adoption of CPTED - even though it is already informing initiatives like The Project For Publicspace in America (ww.pps.org), and DOCA in Australia and Europe (www.e-doca.net).

1. Lack of education.
2. Resistance to change by significant stakeholders.
3. Costs of retrofit implementation is expensive, and politically difficult.
4. Not a panacea - should not displace other ways of reducing offender behaviour – drug rehabilitation programmes for example.
5. Insensitive implementation causes problems e.g. Defensability V Mixed Use/ Banning all graffiti – rather than banning tagging.

Conclusion:

We believe that secure design doesn't have to look criminal - that a thing of beauty is a joy forever and that designers can design against crime to promote social capital.

Design against crime, as socially responsive design, responds to social issues in pursuit of social change.

It is design that seeks to accommodate multiple stakeholders and mediate between competing user requirements.

It is design that descriminates in response to context, that puts users first and militates against abuse.

Next steps:

1. Stickers being implemented across London
2. Stands being implemented in several London Boroughs and outside London (Brighton & Hove)
3. Guidelines being consulted upon online (wiki) to gain full concensus and differentiate for different Contexts (residential/ off street/ on street) - maybe you'd like to join in?

   www.bikeoff.org
   adam@vexed.co.uk
4. All findings being visulaised for design resource.

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Questions:

* Is crime detracting from achievement of social objectives in Sao Paulo?

* Are you considering crime prevention in design for public space?

* How are you responding to this issue?

* Can you show us how you are addressing it?