DESIGN AGAINST CRIME RESEARCH CENTRE

University of the Arts London Central Saint Martins

The Bikeoff Initiative:
Cycle Theft versus Socially Responsive Innovation

Lorraine Gamman and Marcus Willcocks

1. Why Design Against Crime?

2. Introducing Bikeoff
... and the problem of cycle crime

3. Case Study Response:
Holborn Gateway Cycle Parking Project

4. Next Steps

1. Why Design Against Crime?

'Things' as well as people cause problems. DAC builds on the theory of Situational Crime Prevention (SCP) which considers **'opportunities'** (linked to objects/ environments and services as well as users and abusers) to be the 'root causes' of crime.

Design out criminal opportunities and you can design out crime.

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

A widely-used and accepted international definition of sustainable development is:

'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'

Crime is a barrier to sustainable development as acknowledged by the United Nations and by most domestic governments.

Levels of crime are used as a 'sustainable development indicator'.

The impacts of crime are :

i. Economic

ii. Environmental

iii. Emotional

iv. Ecological

i. Economic

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

i. Economic

Estimated average costs of crimes against individuals and households in 2003/04 by crime type and by cost category.

Table 2.1: Estimated average costs of crimes against individuals and households in 2003/04 by crime type and by cost category

2003 prices

Offence category	Costs in anticipation of: Defensive Expenditure	Insurance Administration	Costs as a consequence of crime: Physical and Emotional Impact on Direct Victims	Value of Property Stolen	Property Damaged/ Destroyed	Property Recovered	Victim Services	Lost Output	Health Services	Criminal Justice System	Average Cost (£)
Violence against the person	1	1	5,472	-	-	-	9	1,648	1,347	1,928	10,407
Homicide	145	229	860,380	-	-	-	2,102	451,110	770	144,239	1,458,975
Wounding	1	1	4,554	-	-	-	7	1,166	1,348	1,775	8,852
Serious wounding	1	1	4,554	-	-	-	7	1,166	1,348	14,345	21,422
Other wounding	1	1	4,554	-	-	-	7	1,166	1,348	978	8,056
Sexual offences	3	5	22,754	-	-	-	32	4,430	516	3,298	31,438
Robbery	0	0	738	-	-	-	6	269	133	255	1,440
Burglary in a dwelling	0	21	£3046	-	12	- 19	16	1,0	£483	£2601	82
Theft	59	52	192	281	69	- 36	1	10	-	217	844
Theft - not vehicle	-	33	118	175	17	- 13	1	3	-	301	634
Theft of vehicle	546	370	800	2,367	349	- 542	1	47	-	199	4,138
Theft from vehicle	116	50	266	240	126	- 11	1	20	-	50	858
Attempted vehicle theft	65	21	194	-	154	-	1	11	-	65	510
Criminal damage	13	36	472	-	212	-	2	6	-	126	866

Physical Impact

Health Service

Criminal Justice System

Robbery

£3046

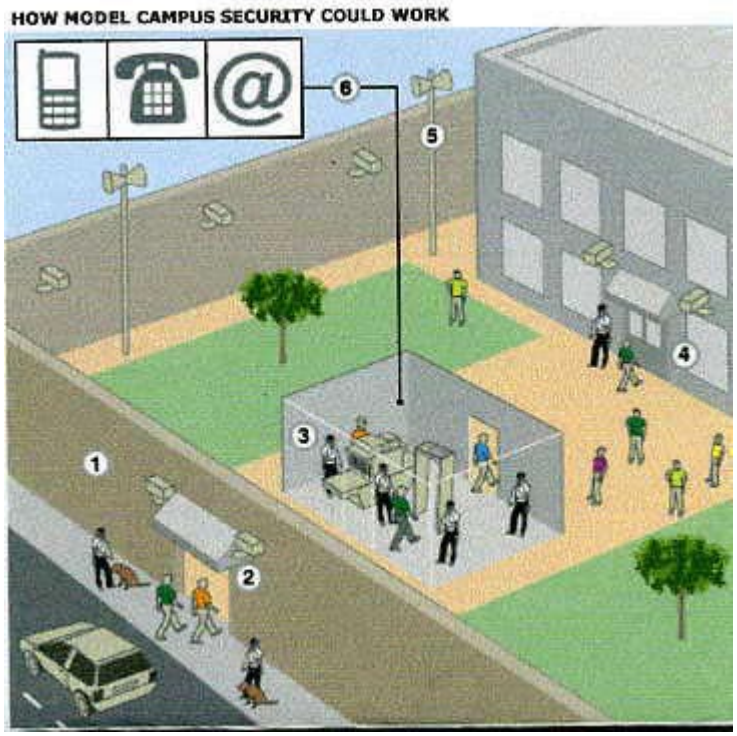
£483

£2601

http://www.homeoffice.gov.uk/rds/pdfs05/rdsolr3005.pdf

ii. 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.



ii. Environmental impact

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

iii. Ecological impact

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

About DAC Research Centre at UAL

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.

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

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.

2. Introducing the Bikeoff Initiative

2. What is Bikeoff?

- Bikeoff is the DAC research strand addressing bicycle theft.
- Investigates how the design and provision of cycling related objects and environments can reduce the incidence of bicycle theft.
- Researches, creates and tests design solutions to aimed at reducing cycle theft.
- Identifies and disseminates best theft reduction practice to stakeholders and duty holders; providers, specifiers and designers of cycle products and environments and the crime prevention community.

2. Why Bikeoff? Cycle use

Cycle theft is one of the greatest detractors from bike usage and from the benefits that cycling has to offer:

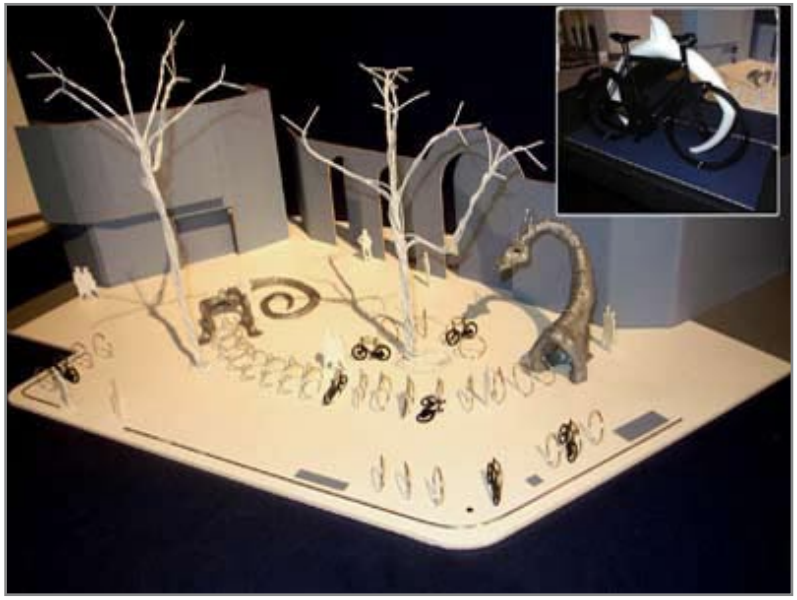
- Quick
  (journeys under 8 km/ 5 miles)
- Healthy
  (obesity/heart disease)
- Affordable
  (inclusive)
- Non-polluting
  (Zero CO2 emissions)
- Low-Hazzard
  (less threat than motor vehicles)
- Low-consumption
- Quiet

Exhibitions - Reinventing the Bike Shed, London Bridge, 2006

Seminars - Reinventing the Bike Shed, London Bridge, 2006

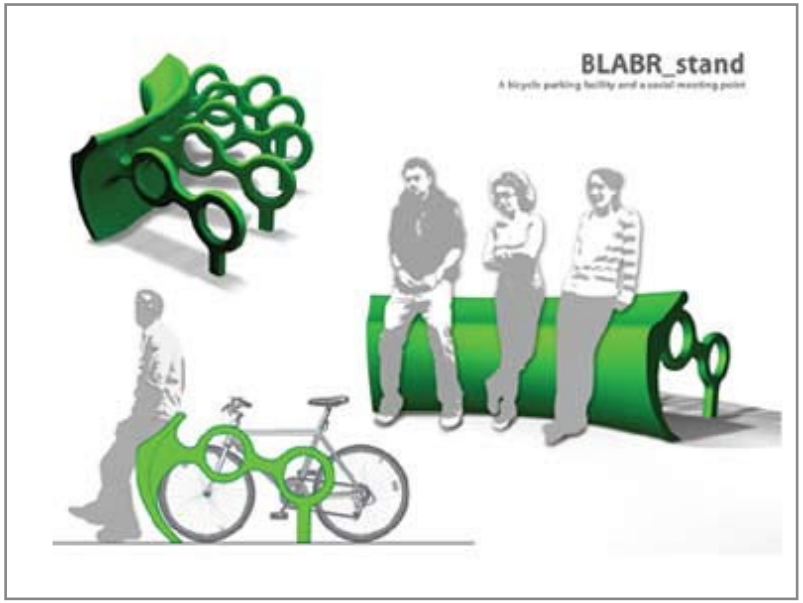
Implementation:

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



Implementation:

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



Implementation

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

Puma Bike

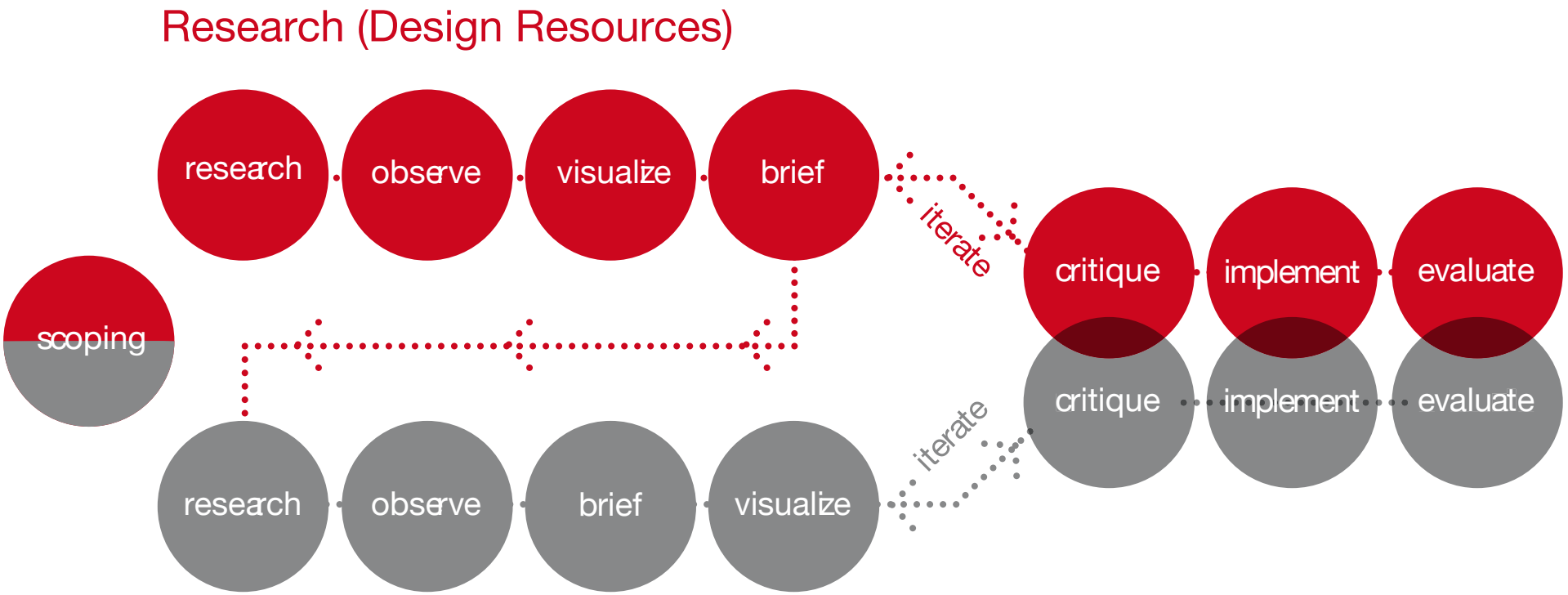
Bikeoff Stands






2. Bikeoff: Innovation versus Bike Theft

The Design Against Crime research process



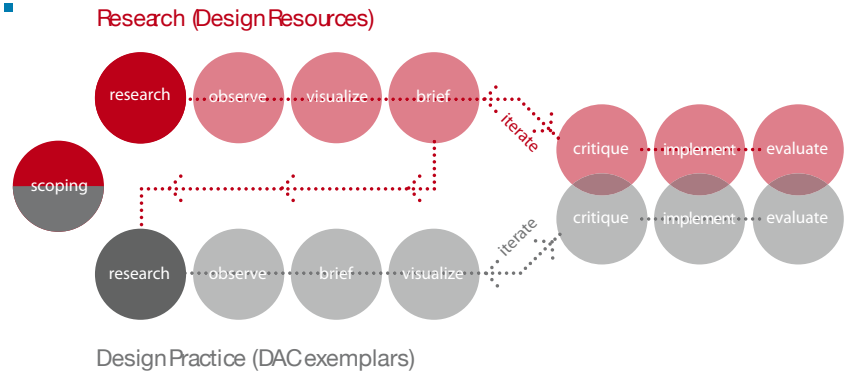
2.1 The problem of Cycle Crime.

*In UK, 439,000 incidents of bike theft just under 1 bike stolen every minute (British Crime Survey).

*In 2004-5, London, 80,000 bikes stolen; of which less that 5% returned to owners (Transport for London).

*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.



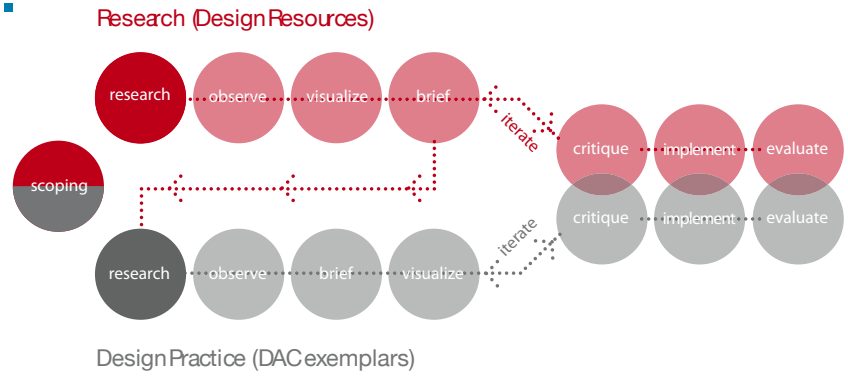
2.1 The problem of Cycle Crime.

*__In Spain__, cycle theft statistics are not formally recorded by police - as we understand?

*Cycle theft has been growing in Barcelona and 1 in every 4 cyclists have had their bike stolen at least once (BACC/ Amics de La Bici).

*More and more cyclists in Spain insist on the need to use two or even three locks even on low-cost bikes.

*Fear of personal cycle theft has been part of the reason for the success of the Bicing scheme (Treehugger).



2.1 The Problem of Cycle Crime

* In London and Barcelona, many cycle stands host abandoned, **broken bikes** attached, which act as a **negative influence** for promotion of the bicycle and of the city.

* Internationally, **bike owners more likely to have their cycle stolen** than car owners or motorcycle owners, their vehicle. (International Crime Victim Survey, 2000)

Cycles stolen (4.7%)
Motorbikes stolen (1.9%)
Cars Stolen (1.2%)

2.1 The Problem of Cycle Crime

What impact does all this cycle theft have on cycle use?

*17 % of cyclists experience bicycle theft. Of these, 24% stop cycling and 66% cycle less often (DTR/TRL 1996).

*Bicycle theft is the greatest detractor from cycle use after concerns over road safety.

*Bicycle theft and bicycle vandalism may affect overall fear of crime in localised areas of a city.

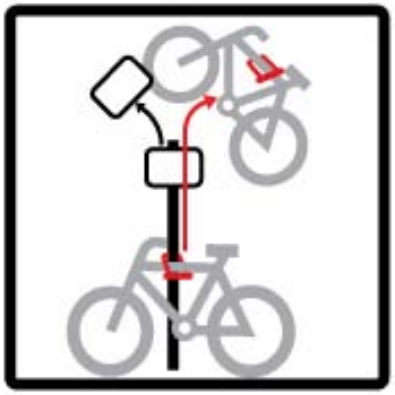
To maintain growth in cycle use and for sustainable crime prevention we must address cycle theft.

Research: Behavioural research - Theft perpetrator techniques

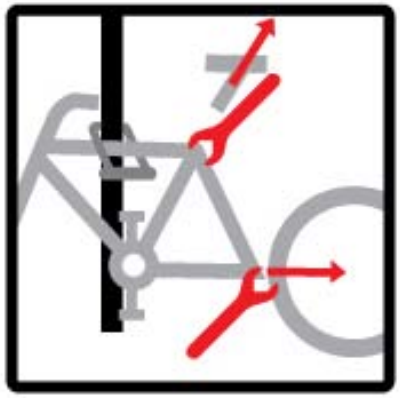
Levering

Cutting

Picking



Lifting

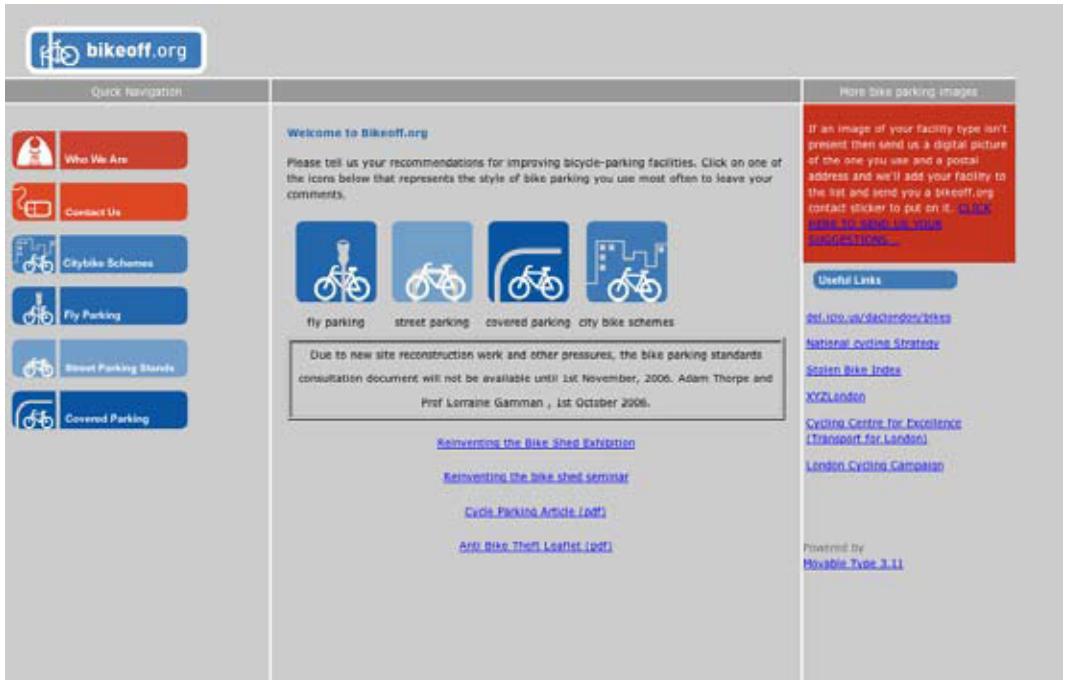


Unbolting

Striking

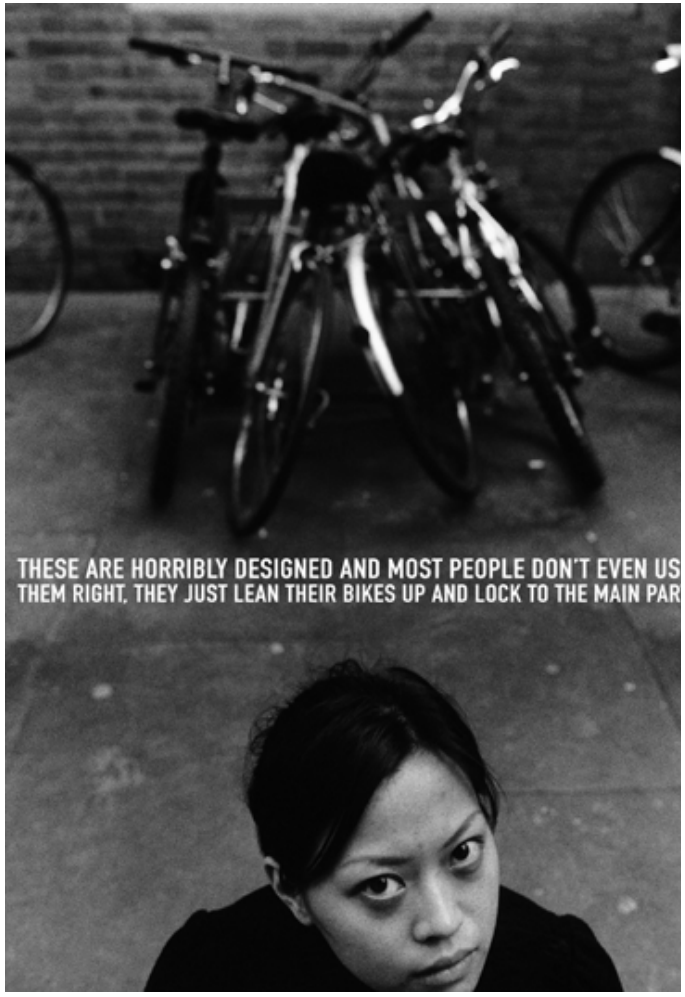
Research: Community consultation

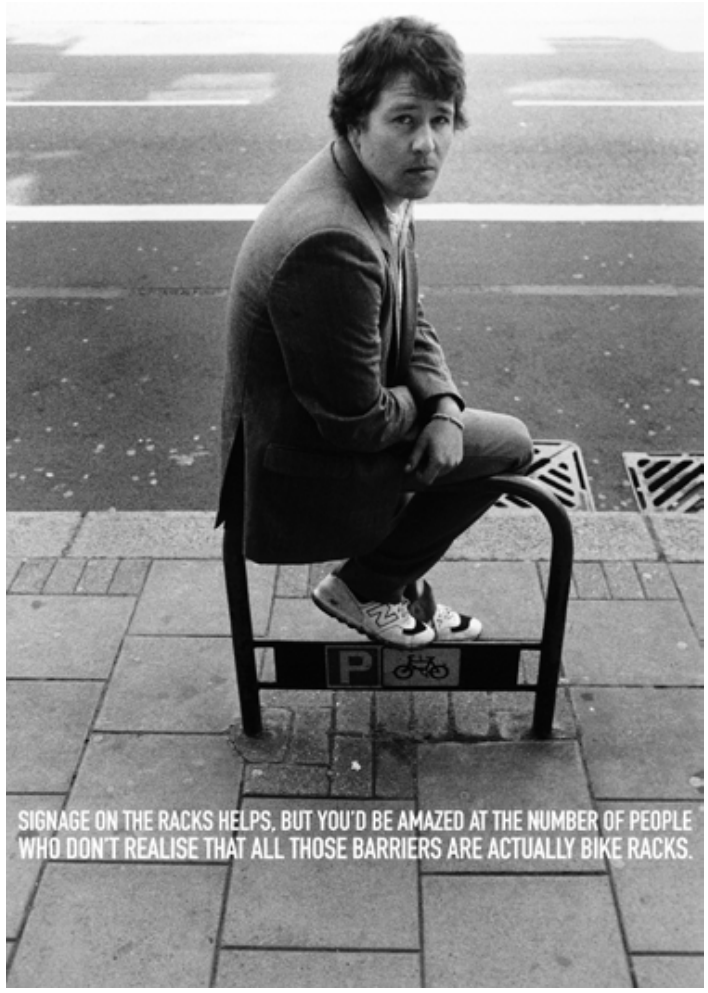
Bikeoff Weblog



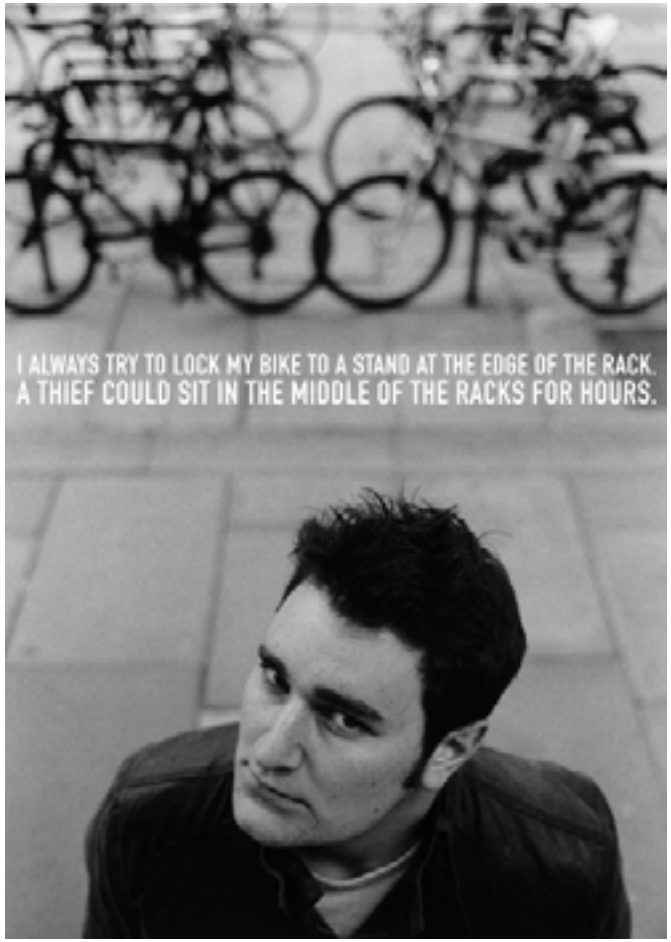
Research: Community consultation

Bikeoff Weblog

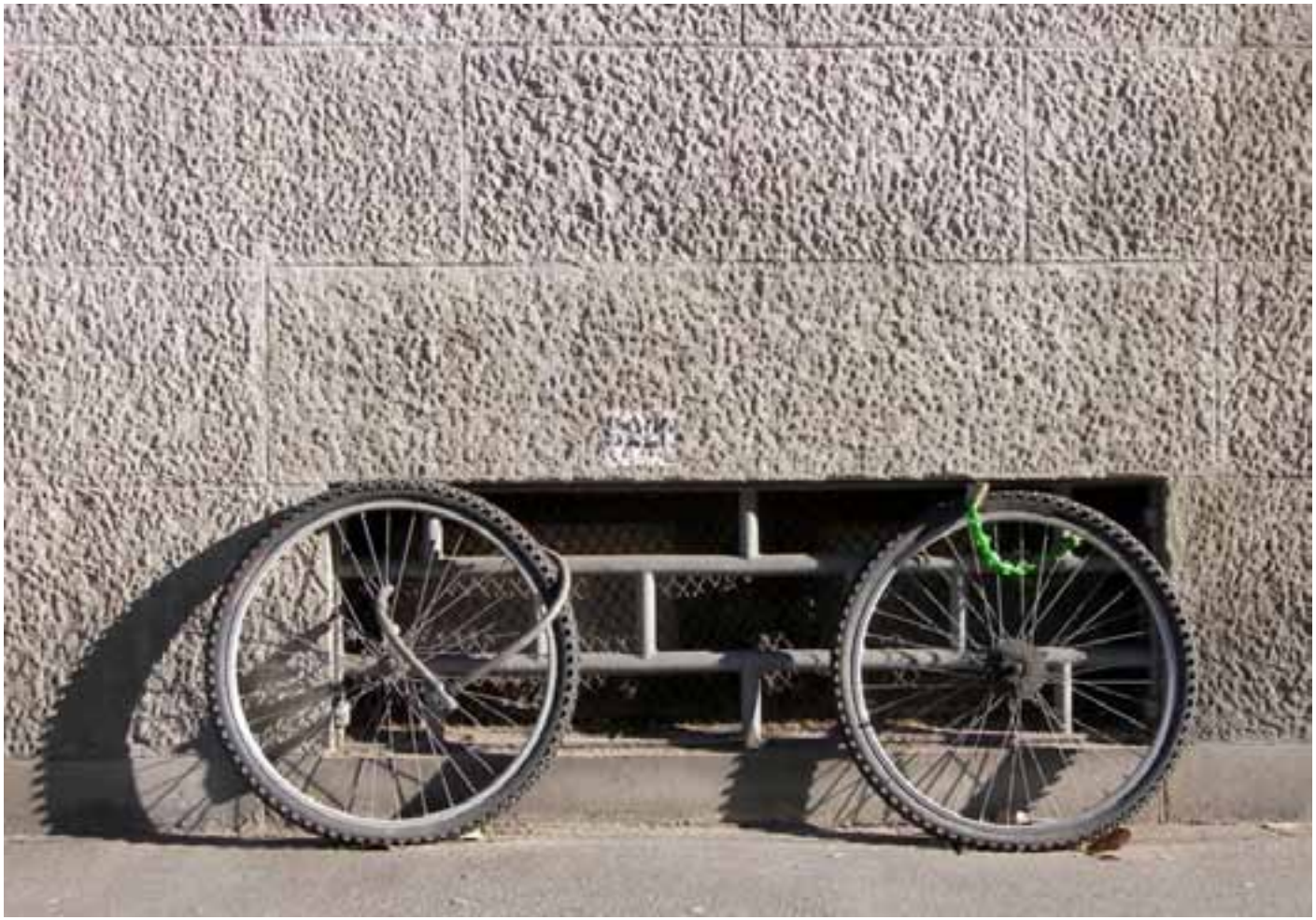




Research: Community consultation
Bikeoff Weblog



Cycle theft Responses



Cycle theft Responses: Introduction

Factors contributing to the security of a parked bicycle;

Effective responses require understanding of situational factors, including:

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

Responses: Education and publicity

Research suggests that for crimes such as burglary, publicising crime prevention activity can have an impact over and abvoce the activity itself.

publicising crime

Responses: Evaluation (or lack of it!)

To identify best practice and support effective targeting of resources evaluation is essential.

To date few interventions have been evaluated.

3. Response Case Study:
Holborn Gateway Cycle Parking Project

3. Case study. Holborn Gateway Project (2006-7).

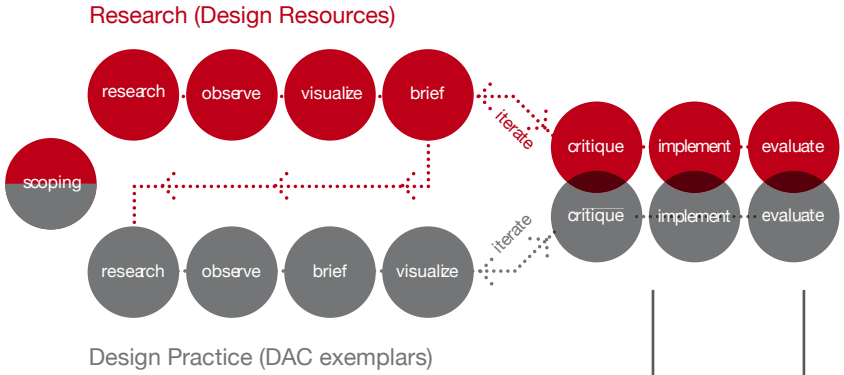
3.1 Research and observation

3.2 Analysis and brief definition

3.3 Design and prototyping

3.4 Implementing and testing

3.5 Evaluation



Camden

METROPOLITAN POLICE
Working together for a safer London

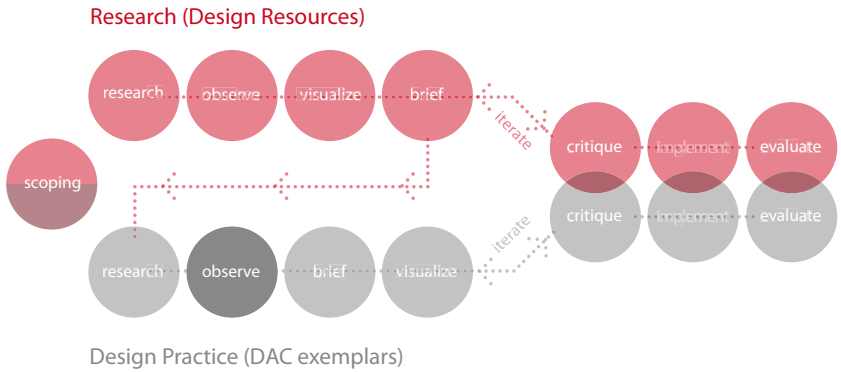
Transport for London

bikeoff.org

DESIGN AGAINST CRIME

JDI

3.1 Research and observation:
Qualitative.



Parking practice in Holborn Gateway study area

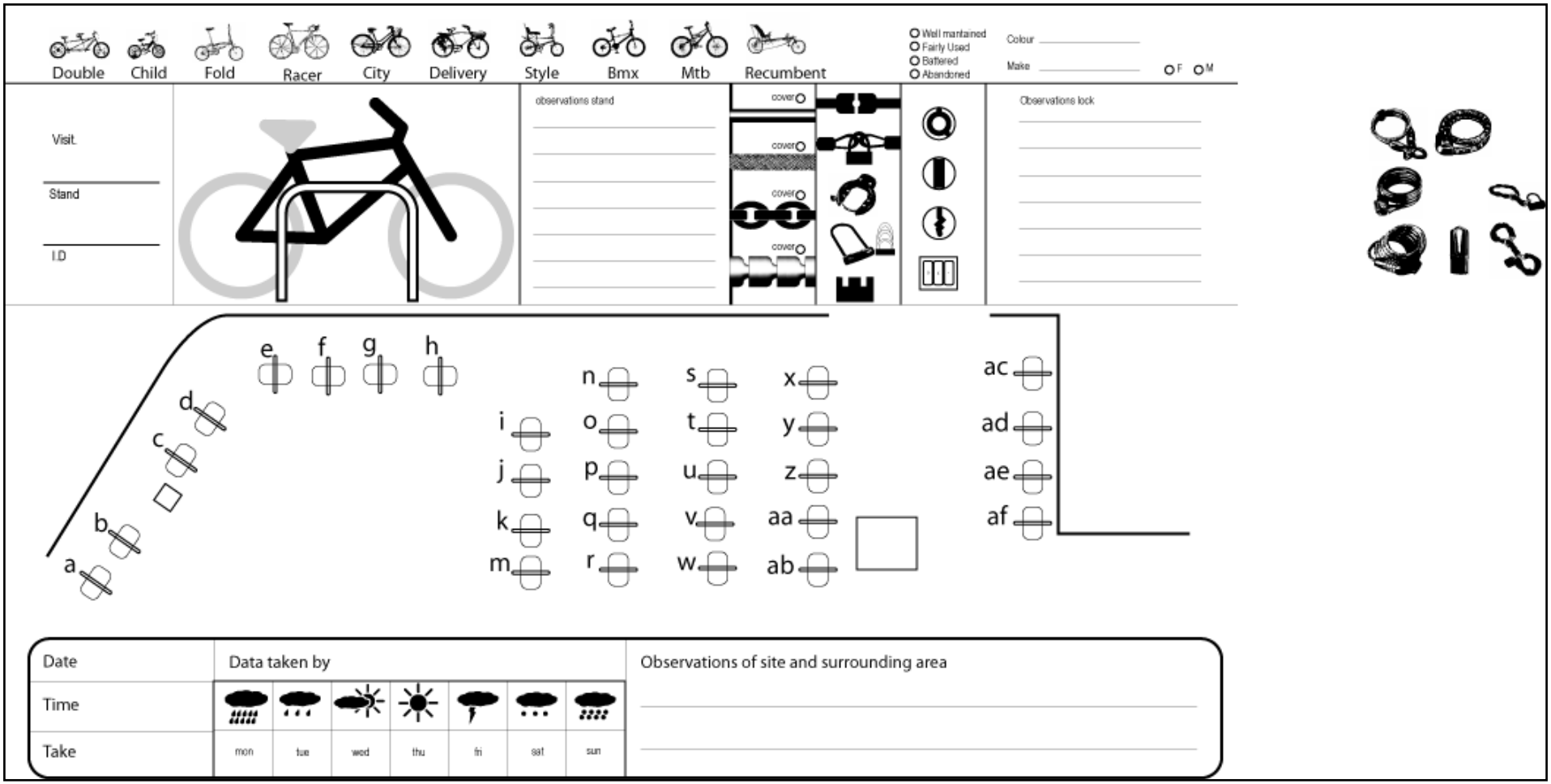







3.1 Research and observation:
Quantitative.

8500 observations of ‘locking’ events noting situational context.



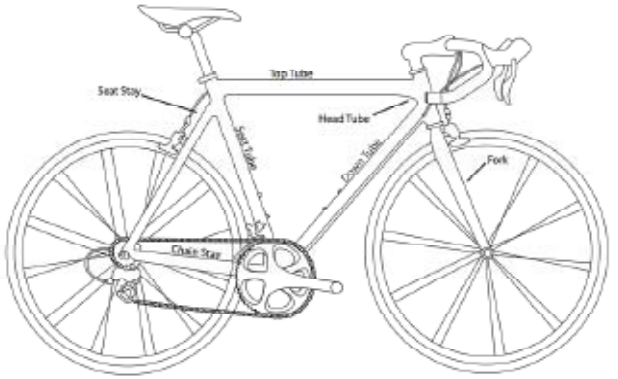
Observation: Findings : Bikes

* 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.



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

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.

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.

Observation: Findings: Locking practice

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

3.2 Analysis and Brief Definition

From the visual fieldwork we rated locking practice a good, ok or bad.

3.2 Analysis and Brief Definition

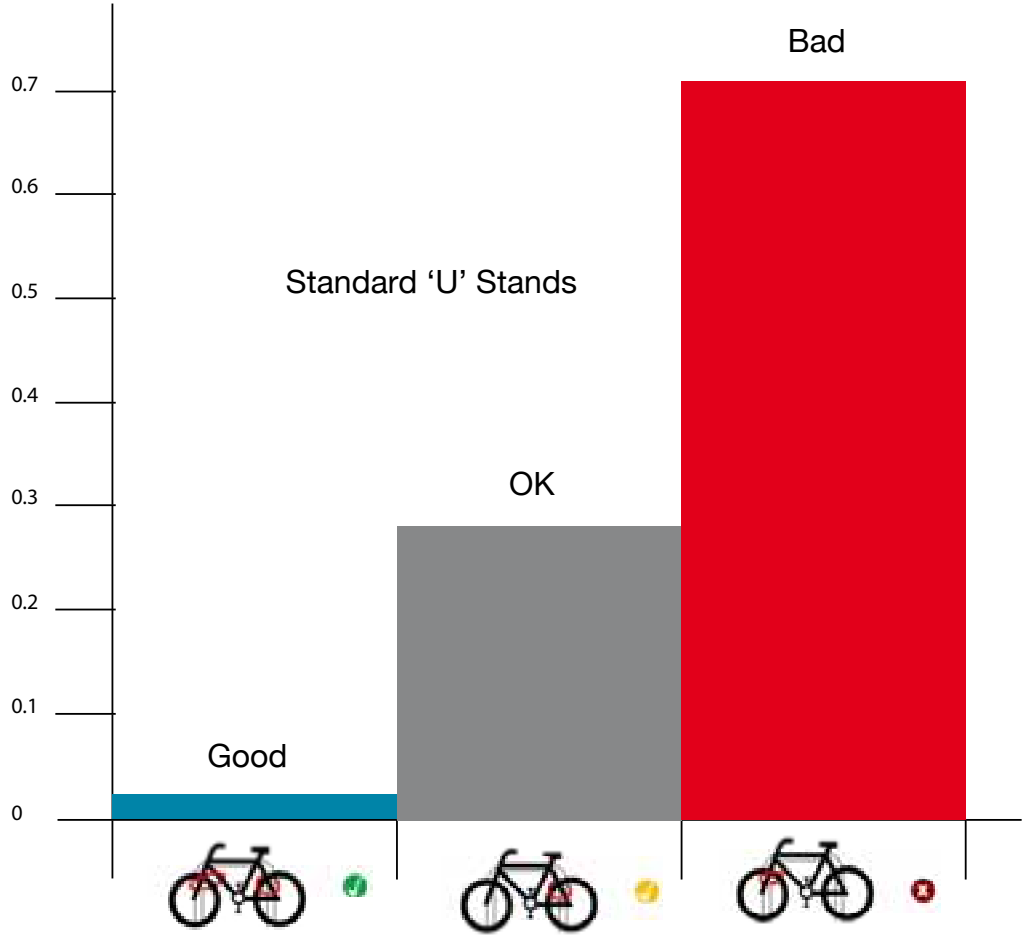
Findings from Observation: Locking practice

180 possible locking methods :

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

Findings: Locking practice

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

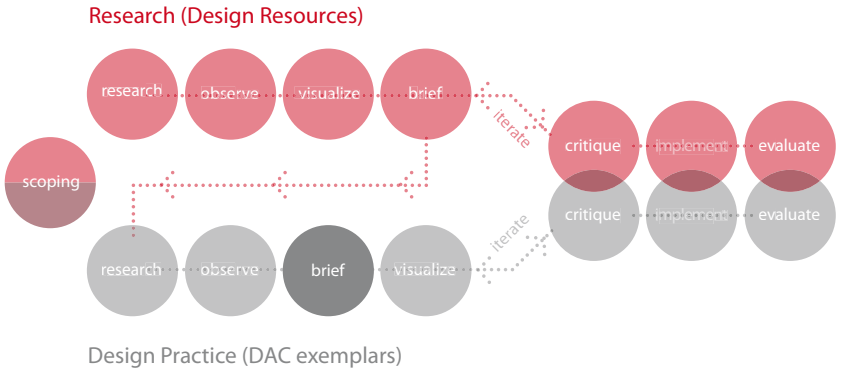


Factors contributing to the security of a parked bicycle:

* 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).

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

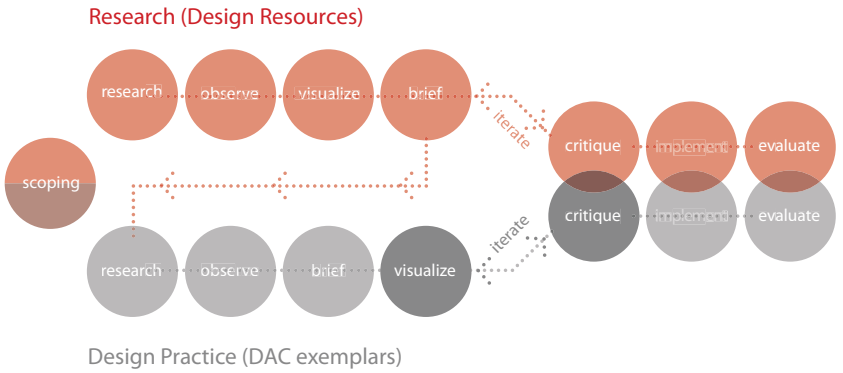
ii) Cycle parking furniture: designing more secure user-friendly cycle parking furniture that promotes secure parking practice.

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.

i) Information Environment:

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



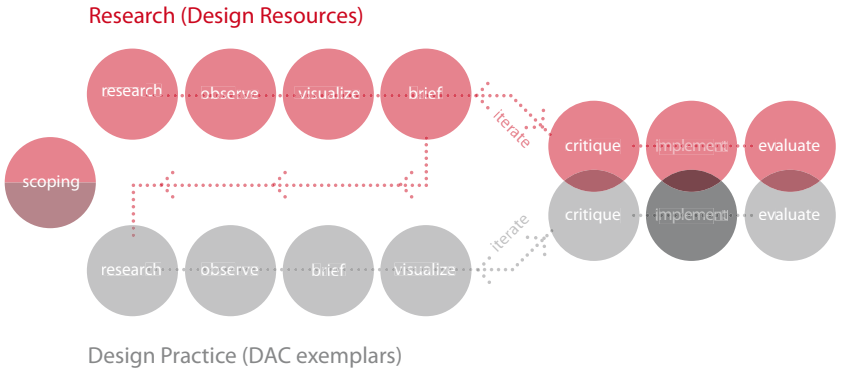
Information Environment - Targeted messaging/signage

Integrate signage with furniture and target messaging. Evaluate with Police, Street Management and Cycling groups. Whisper not shout.

3.4 Implementation and Testing

Information Environment

* 5 sites, 1 control.
* all sites observed and locking-practices recorded before intervention (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.

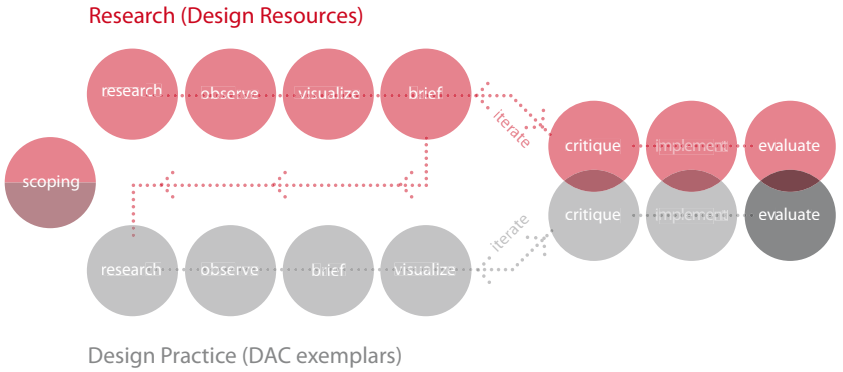


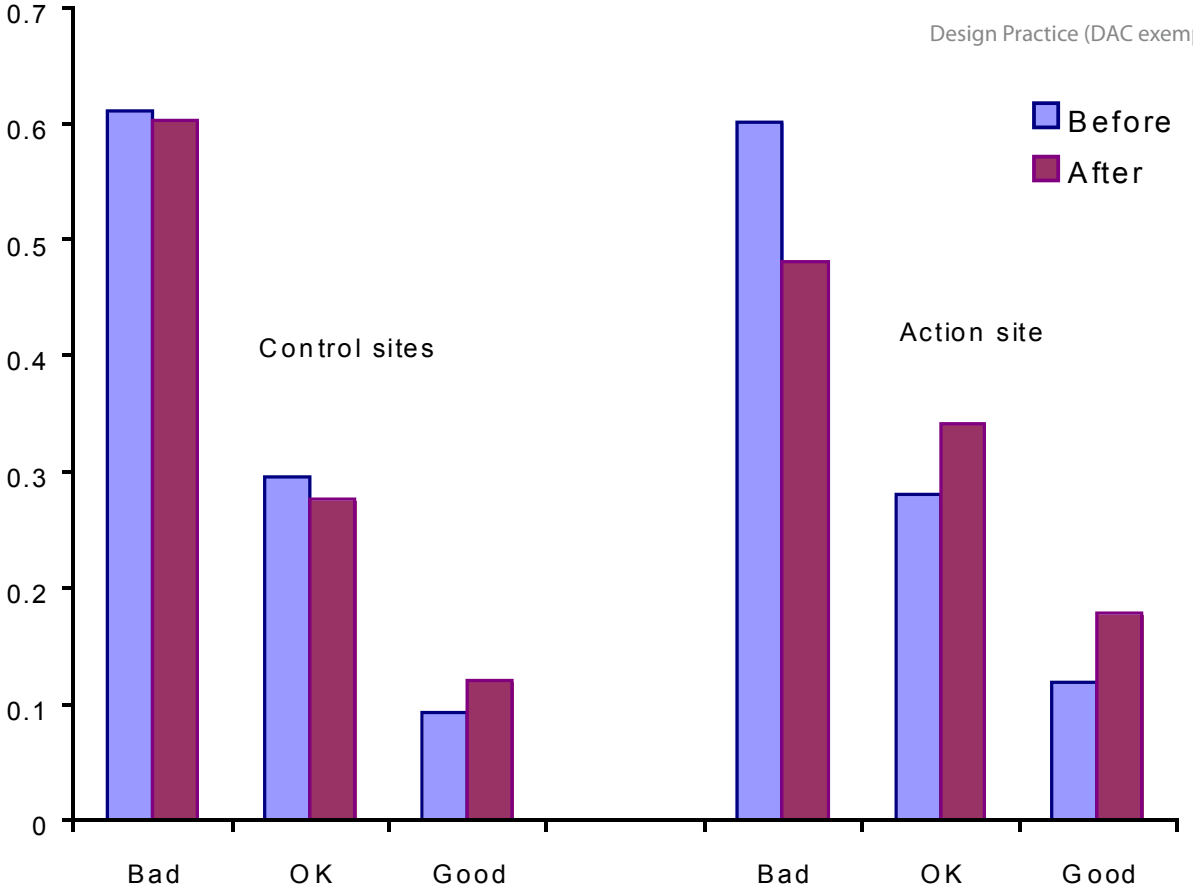
3.5 Evaluation

Information environment intervention evaluation

3.5 Evaluation

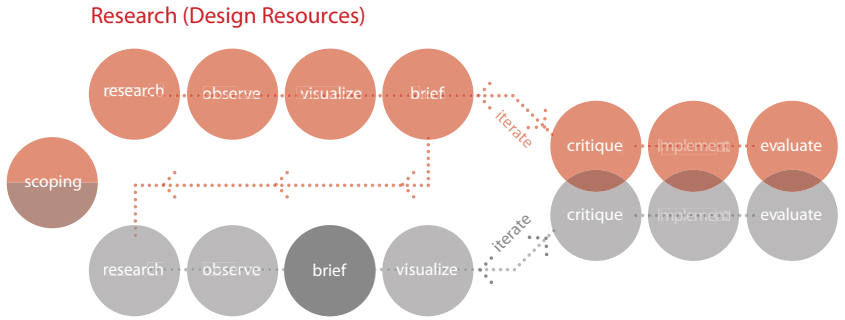
Information Environment





ii) Cycle Parking Furniture

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



Design Practice (DAC exemplars)

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

Cycle parking furniture

M stand

M stand straight

Cycle parking furniture

Offset M stand

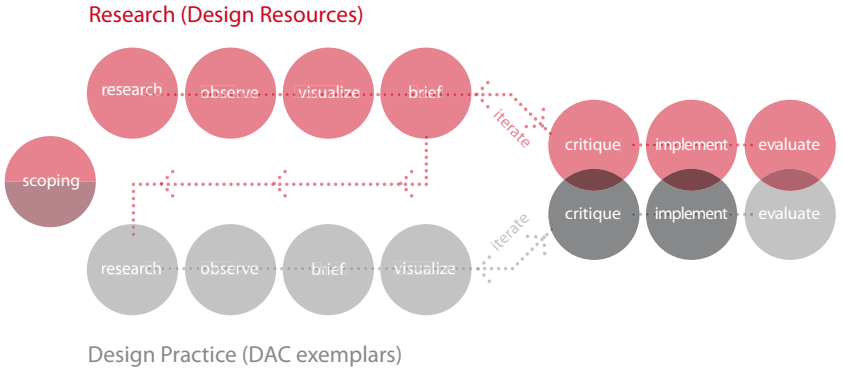
Pagoda stand

Cycle parking furniture

FW enclosure stand

Chain stand

3.4 Implementation and Testing:
Cycle parking furniture



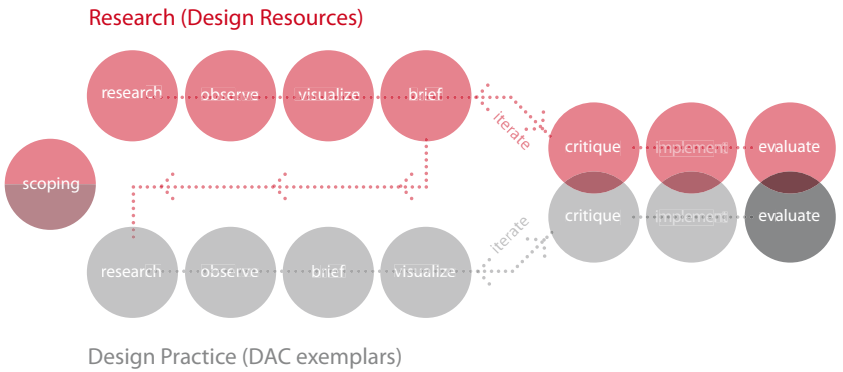
* 6 new stand designs introduced on site
* 2 Sheffield stands selected as control stands
* all stands observed for 3 months
* control stands compared with new stand designs
* new stand designs will also be compared to locking practices observed in previous 8400+ observations

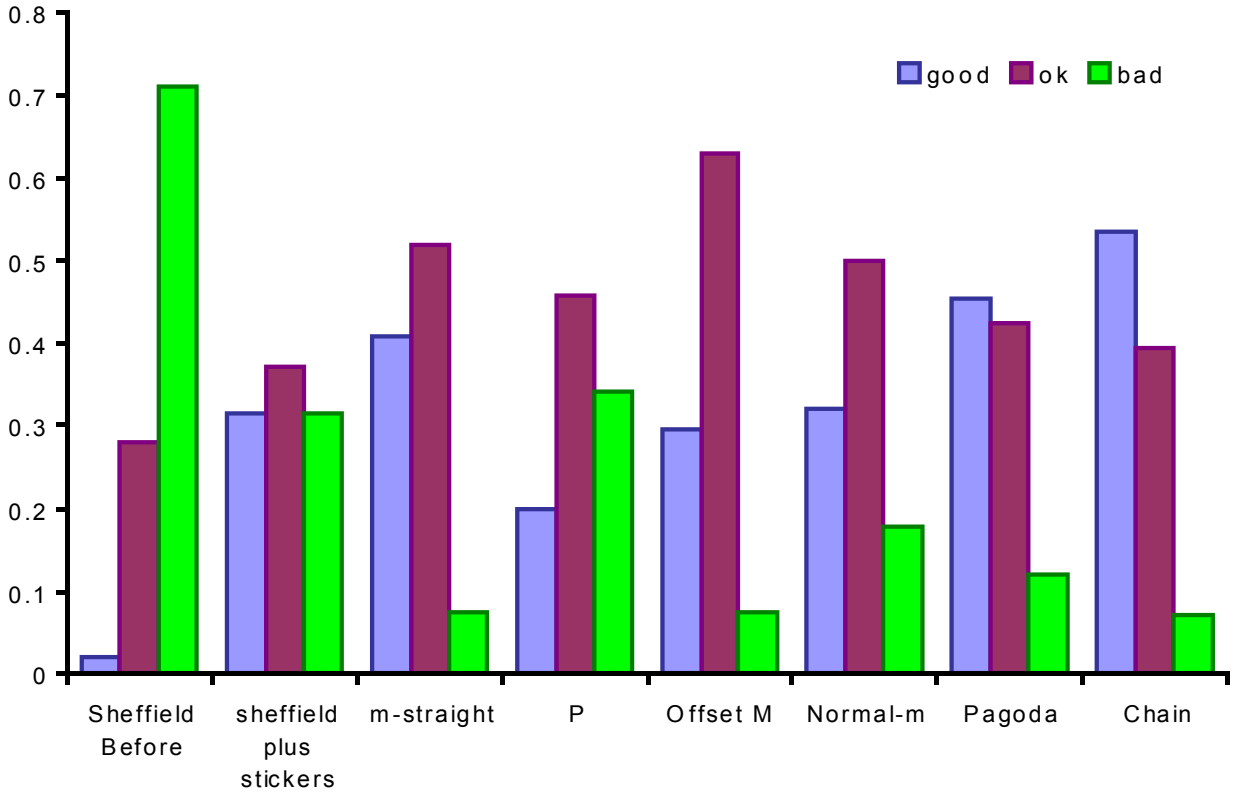
3.5 Evaluation

Cycle Parking Furniture Intervention Evaluation

3.5 Evaluation:

Cycle parking furniture

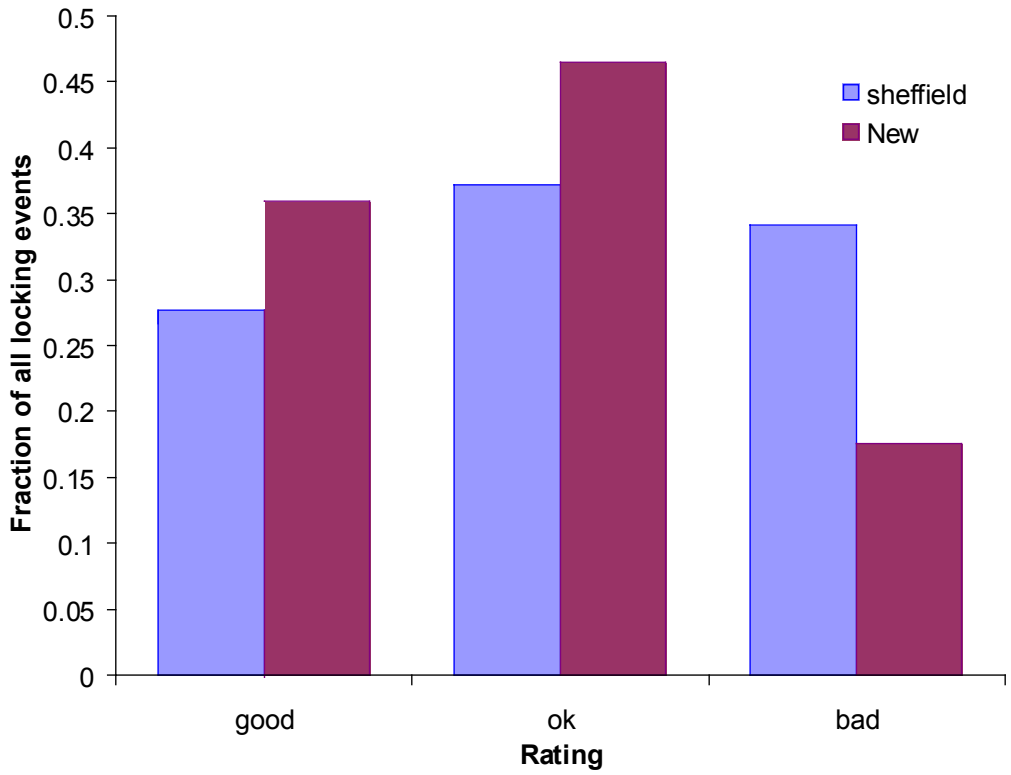




3.5 Evaluation:

Holborn Gateway cycle parking furniture intervention.

Overview – snapshot post implementation



3.5 Evaluation

Preliminary findings:

*Stickers improve locking practice

*The new designs improve locking practice
- Compared to Sheffield stands with and without stickers

*Largest changes were for ok and bad locking practice
- One lock users (over 80% of cyclists)

4. Next Steps: collaborate and create

In 2007 the UK Government set up The DesignTechnology Alliance, the Home Office press release stated:

"Crime has a social impact, so it must be considered in the same way that impact on the environment or health and safety risks for customers are considered. We must maximise the influence good design can have in the fight against crime."

Next Steps: collaborate and create

Ongoing projects:

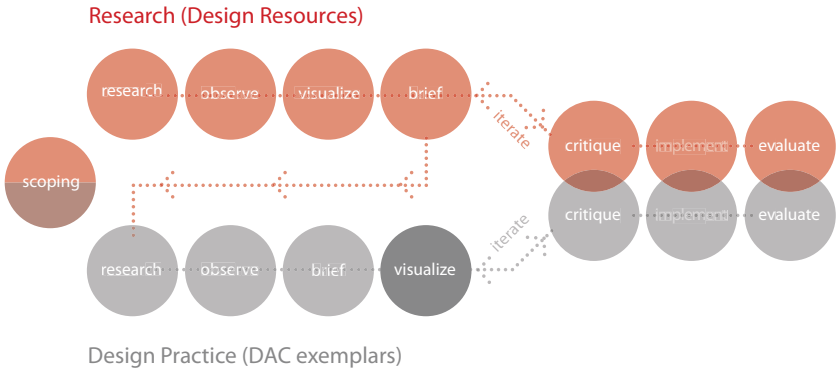
- **Brighton & Hove cycle theft reduction project;** evaluating interventions in different context).
- **Bikeoff2 Design for 21st Century project;** multi-stakeholder consultation on standards and guidelines for secure cycle parking environments, creation of design resources to equip practitioners with the knowledge to design against bike theft.

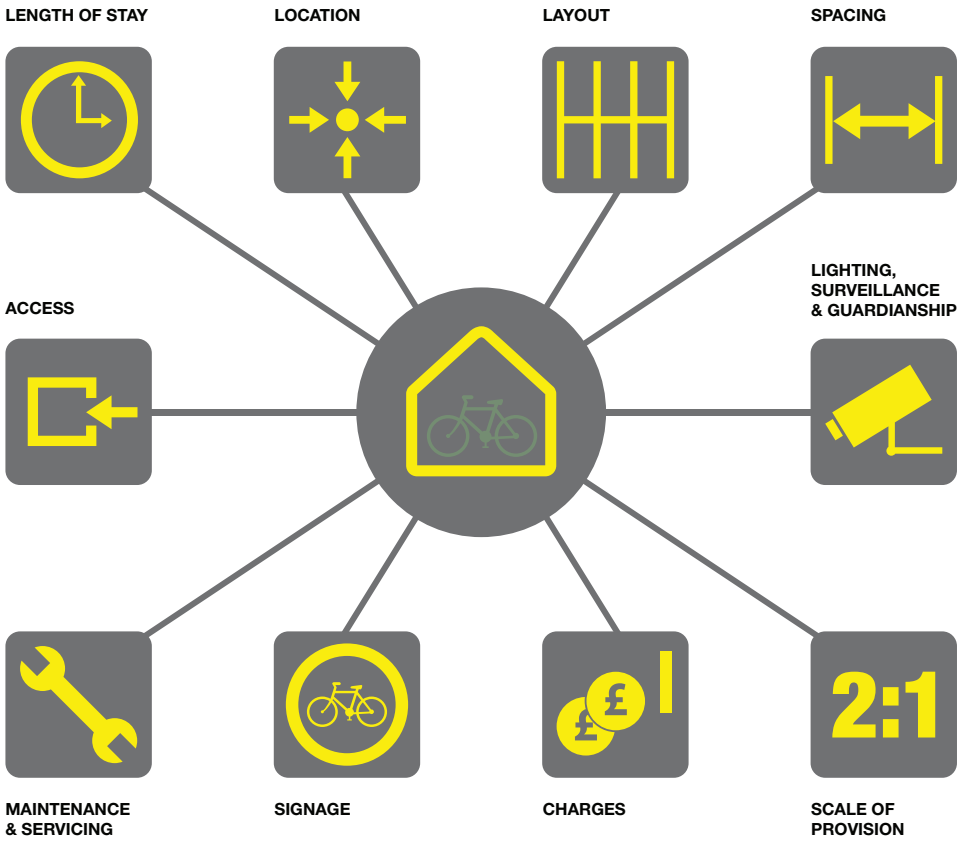
Tools available:

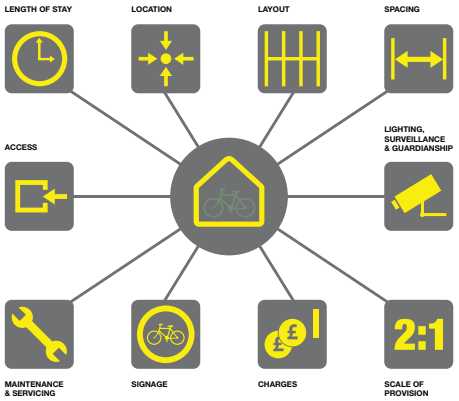
- Stickers
- Leaflets
- Stands (Broxap Ltd)
- Case studies and research summaries
- **Bikeoff Design Resource (Autumn 2008)**

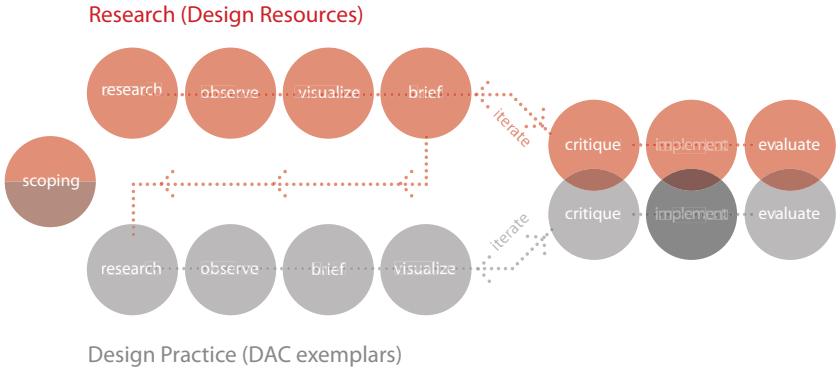
Next Steps:

Sample project; Bikeoff Cycle-Parking Design Guidelines









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).

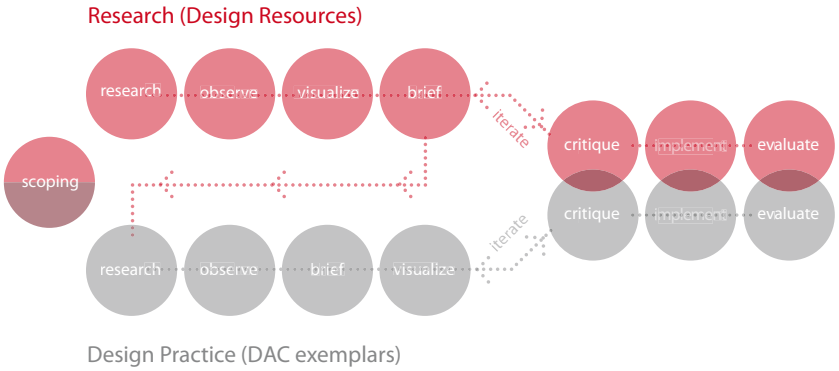
ii) MA Industrial Design Project - Holborn Unlocked - Unlocking the potential of cycle parking infrastructure to regenerate public space.

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

Next steps

* New collaborations and consultations for a socially-responsive approach to re-search and innovation.

* Partners in Spain?



THANK YOU

www.bikeoff.org www.designagainstcrime.com

bikeoff.org DESIGN AGAINST CRIME JDI Camden Transport for London