

Open Innovation: Design-Led Research for the 21st Century (Designagainstcrime.com/Bikeoff.org)

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and Adam Thorpe


**"Creativity and Innovation in Groups" Seminar,
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Design Against Crime Research Centre



Arts & Humanities
Research Council

The Grippa research programme, mainly funded by AHRC, is a collaboration between the Design Against Crime Research Centre, Central Saint Martins College of Art & Design, University of the Arts London, and the UCL Jill Dando Institute of Security and Crime Science. Papers and other materials from the programme are at www.grippaclip.com and wider practical and research material on preventing bag theft at www.inthebag.org.uk



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1. Introducing Design Against Crime Research Centre at UAL



1. Our Aims

1. To reduce the incidence and adverse consequences of crime through design of products, services, communications and environments that are 'fit for purpose' and contextually appropriate.
2. To equip design practitioners with the cognitive and practical tools and resources to design out crime.
3. To prove and promote the social and commercial benefits of designing out crime to manufacturing and service industries, as well as to local and national government, and society at large.
4. To address environmental complicity with crime in the built environment and to improve well being.

2. Philosophy

‘Things’ as well as people cause problems.

DAC draws upon design thinking (is the problem really “the” problem?); also 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.
But, how and why you do this is the crux.

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

2. Why DAC is Socially Responsive Design

We target crime problems that stand as a barrier to the progress of social and ethical agendas.

National / Regional / Local - “Context is everything”.

Our current focus has been on **bag theft** (mobile property theft) that detracts from enjoyment of public spaces/public transport, and **bike theft** that detracts from cycle use. Our socially responsive design focus is currently looking at furniture, graffiti and shoplifting.



3. DAC Drivers

- Economic
- Ecological
- Emotional
- Environmental



3. DAC Drivers: Economic impact

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).

<http://homeoffice.gov.uk/rds/pdfs05/rdsolr3005.pdf>

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

Costs in 2003 prices

Offence category	Costs in anticipation of			Costs as a consequence of crime					Costs in		Average Cost (£)
	Defensive Expenditure	Insurance Administration	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	
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	188	-	-	-	6	269	102	255	1,440
Burglary in a dwelling	0	21	£3046	9	12	- 19	16	1,0	£483	£2601	£82
Theft	221	177	545	548	187	- 22	11	-	-	-	268
Theft - not vehicle	59	52	192	281	69	- 36	1	10	-	217	844
Theft of vehicle	-	33	118	175	17	- 13	1	3	-	301	634
Theft from vehicle	546	370	800	2,367	349	- 542	1	47	-	199	4,138
Attempted vehicle theft	116	50	266	240	126	- 11	1	20	-	50	858
Criminal damage	65	21	194	-	154	-	1	11	-	65	510
	13	36	472	-	212	-	2	6	-	126	866

Physical Impact

Health Service

Criminal Justice System

Robbery

£3046

£483

£2601

3. DAC Drivers: Environmental impact

Fear produces fortress architecture.



3. DAC Drivers: Ecological impact

Theft and insurance replacement / upgrade drives consumption and contributes to premature obsolescence.



3. DAC Drivers: 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.



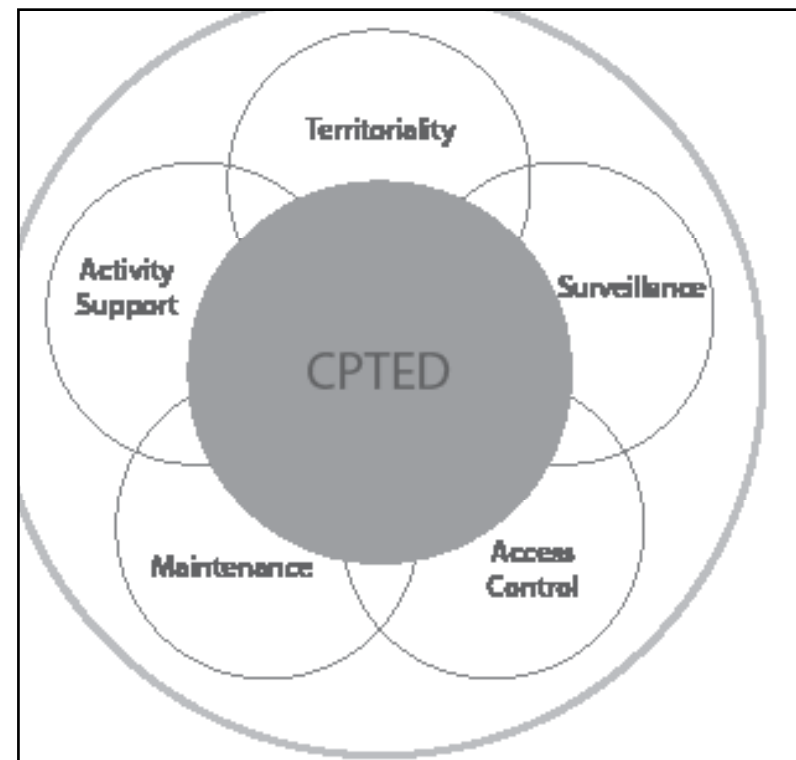
3. DAC Drivers: Environmental impact

- Environmental complicity
- CPTED
- Costs of management and maintenance

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.

The wider environment



4. DAC Methodology

DACRC takes user-centred design model (IDEO 1991) and extends it to cover mis-use and abuse.

4. DAC Methodology

We look at

the user experience and the abuser experience

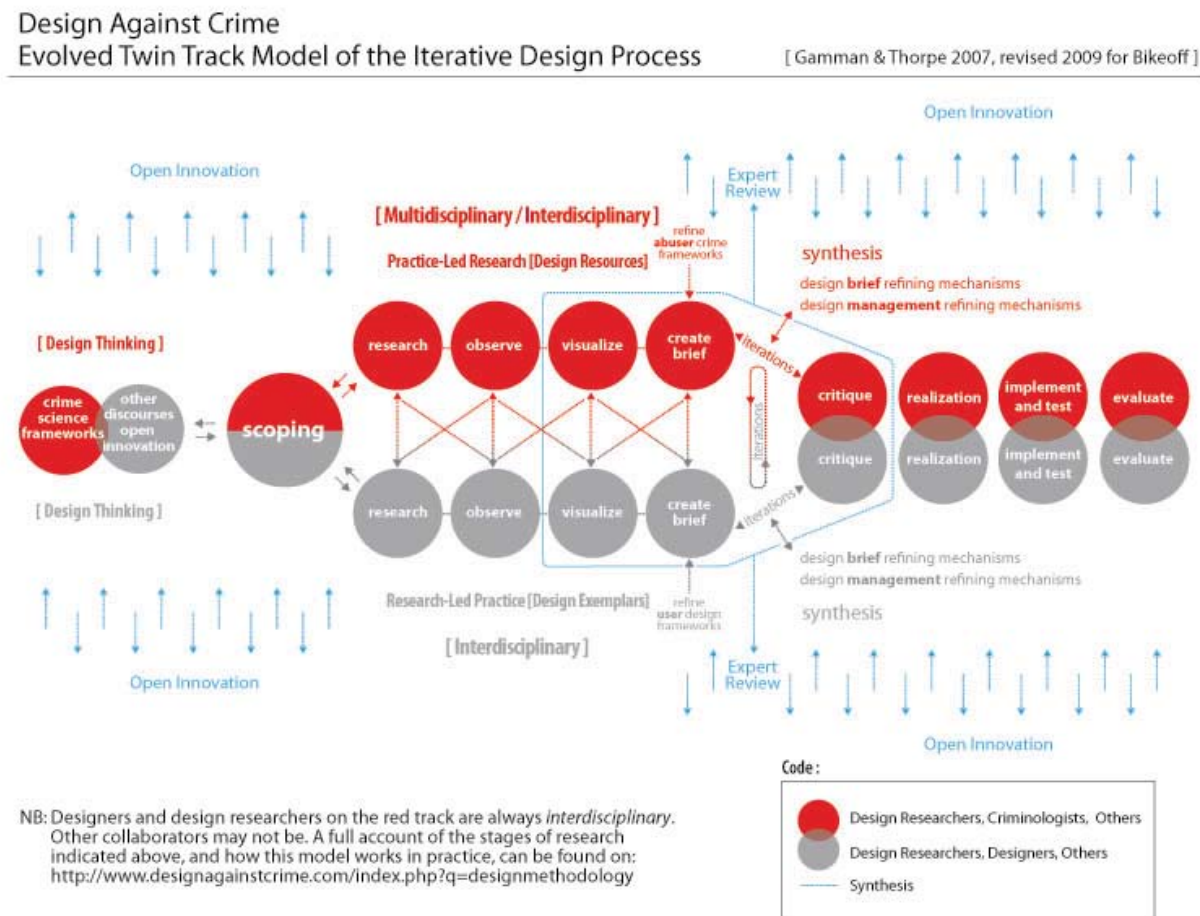


4. DAC Methodology

We bring together researchers, designers, architects, planners, criminologists, engineers, manufacturers, anthropologists, the police and others whose lives our designs impact upon. They help develop design questions and review design proposals/design tools to ensure they are effective and appropriate.

4. DAC Methodology

Our working process has 2 strands. Each strand has 7 stages.



4. DAC Methodology

Our model can be summarised as:

- Scope and consult
- Research and create
- Create and consult
- Create and test

We iterate at every stage drawing on expert advice of stakeholders to seek to ensure the efficacy of our outputs.

4. DAC Methodology ‘Twin track’ approach generates:

- Tested ‘design resources’ that are freely disseminated to stakeholders within design education and design practice with the aim of “equipping design practitioners with the cognitive and practical tools and resources to design out crime”.
- Tested ‘design exemplars’ that address industry and ‘the market’, providing the case for DAC as a tool for socially responsive innovation and “promoting the social and commercial benefits of designing against crime to manufacturing and service industries”. These exemplars are applied to afford social impact and create social change.

5. DAC Dissemination

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



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5. DACRC Funding Mechanisms

small grant funding/consultancy



networks and workshops



larger RC grant funding



research augmentation



consultancy/KTP

6. Methodology Applied to Bikeoff2 Project

What is Bikeoff?

- Bikeoff initiative started in 2004 as the DAC research strand addressing bicycle theft.
- Bikeoff investigates how the design and provision of cycling related objects, services and environments can reduce the incidence of bicycle theft.
- Research, create and test design solutions to reduce cycle theft.
- Identify and disseminate best theft reduction practice to stakeholders and duty holders; providers, specifiers, designers of cycle products and environments and the crime prevention community.

6. Methodology Applied to Bikeoff2 Project

Scoping : Cycle theft is one of the greatest detractors from bike use 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)
- **Low Hazard** (less harmful than motor vehicles)
- **Low consumption**
- **Quiet**



6. Methodology Applied to Bikeoff2 Project Scoping

UK: aims to increase cycle usage fourfold by 2012.

DTR National Cycle Strategy 1996

London: aims for 80% increase by 2012 and 200% increase by 2020.

Mayor's Office

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

Transport Research Laboratory 1997



6. Methodology Applied to Bikeoff2 Project Research

UK: 1 bike stolen every minute (439,000 bikes stolen a year). *British Crime Survey 2004-5*

London: 80,000 bikes stolen; < 5% returned to owners.

Transport for London 2005-6

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



6. Methodology Applied to Bikeoff2 Project Research

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)



6. Methodology Applied to Bikeoff2 Project Research

Abusers - Theft perpetrator techniques

Lifting



Levering



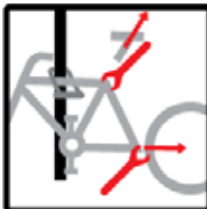
Striking



Cutting



Unbolting



Picking



Users/Community

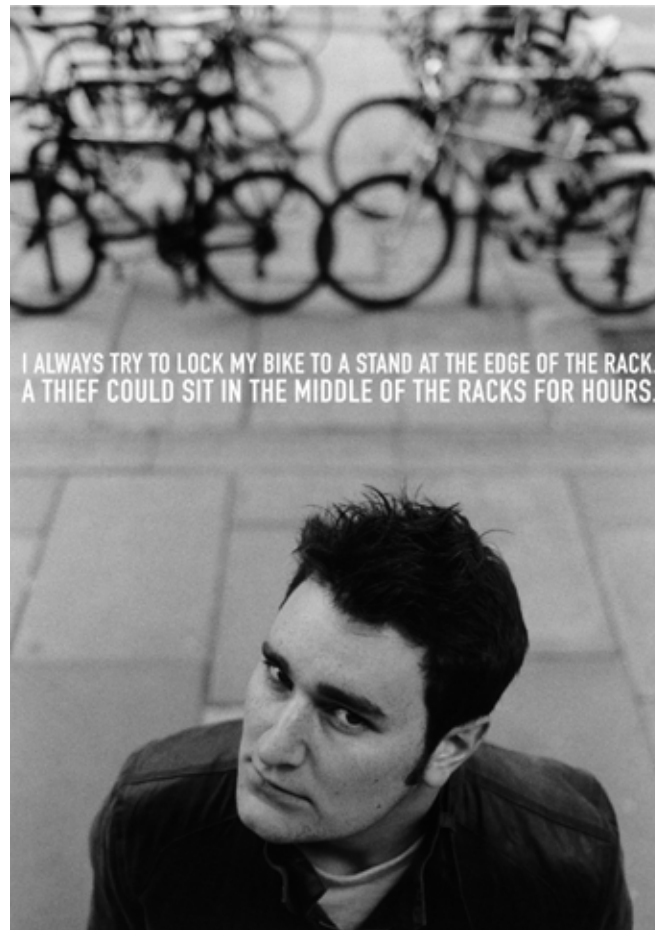
Bikeoff Weblog



6. Methodology Applied to Bikeoff2 Project

Visualise

Users
Bikeoff
Weblog



6. Methodology Applied to Bikeoff2 Project

Visualise

Users

Bikeoff Weblog



6. Methodology Applied to Bikeoff2 Project

Visualise

Users

Bikeoff Weblog



6. Methodology Applied to Bikeoff2 Project

Bikeoff 2: Catalysing anti-theft bike, bike parking and information design for the 21st C.

November 2006 - November 2008

Aimed to “catalyse a design revolution in secure bike cycling for the 21st C. to overcome the adverse effects of bicycle theft on the achievement of sustainable transport objectives within European cities”.

6. Methodology Applied to Bikeoff2 Project

Bikeoff 2: Motivating factors

1. Absence of a definitive current standard or researched comparative overview that effectively informs designers, specifiers and providers how to achieve secure cycle parking (£140 M over next 3 years to facilitate cycle use).

2. Lack of rigorous testing/evaluation of bicycle parking security, or of bicycle security products, with the narrow exception of 'Sold Secure' accreditation of locks.

3. Absence of a clear mechanism for research dissemination to inform designers, engineers and other providers.

6. Methodology Applied to Bikeoff2 Project

Bikeoff 2: Research Portfolio - 4 interlinked projects

1. Bikeoff parking guidelines: (innovative capacity) The development of design guidelines for secure bike parking via literature review, consultation with stakeholders, crime prevention frameworks and practice.

2. DAC exemplar creation and evaluation (operational capacity)

3. Design Resource: (innovative capacity) Development of a design resource for education, linked to a national design competition delivered with the RSA 'Design Directions'

4. Bikeoff TV: (innovative capacity) User evaluation of bike parking products and environments.

6. Methodology Applied to Bikeoff2 Project

Predicted Outputs

1. Website



2. Design Resource



3. Bikeoff TV

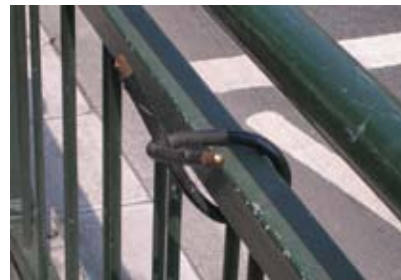


4. Design guidelines



6. Methodology Applied to Bikeoff2 Project

Observation : Use and Abuse



6. Methodology Applied to Bikeoff2 Project

Observation : 8500 observations of 'locking' events - practice and context

										<input type="radio"/> Well maintained <input type="radio"/> Fairly Used <input type="radio"/> Battered <input type="radio"/> Abandoned		Colour _____ Make _____	<input type="radio"/> F <input type="radio"/> M
Visit _____ Stand _____ ID _____			observations stand _____ _____ _____ _____ _____		cover <input type="radio"/> cover <input type="radio"/> cover <input type="radio"/> cover <input type="radio"/>				Observations lock _____ _____ _____ _____ _____				
<div style="display: flex; justify-content: space-between;"> <div> </div> <div> </div> </div>													
Date _____ Time _____ Take _____		Data taken by mon tue wed thu fri sat sun						Observations of site and surrounding area _____ _____ _____					

6. Methodology Applied to Bikeoff2 Project

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



6. Methodology Applied to Bikeoff2 Project

Visualise : We rated locking practice as good, ok or bad...



✓ Good locking practice



✓ OK locking practice



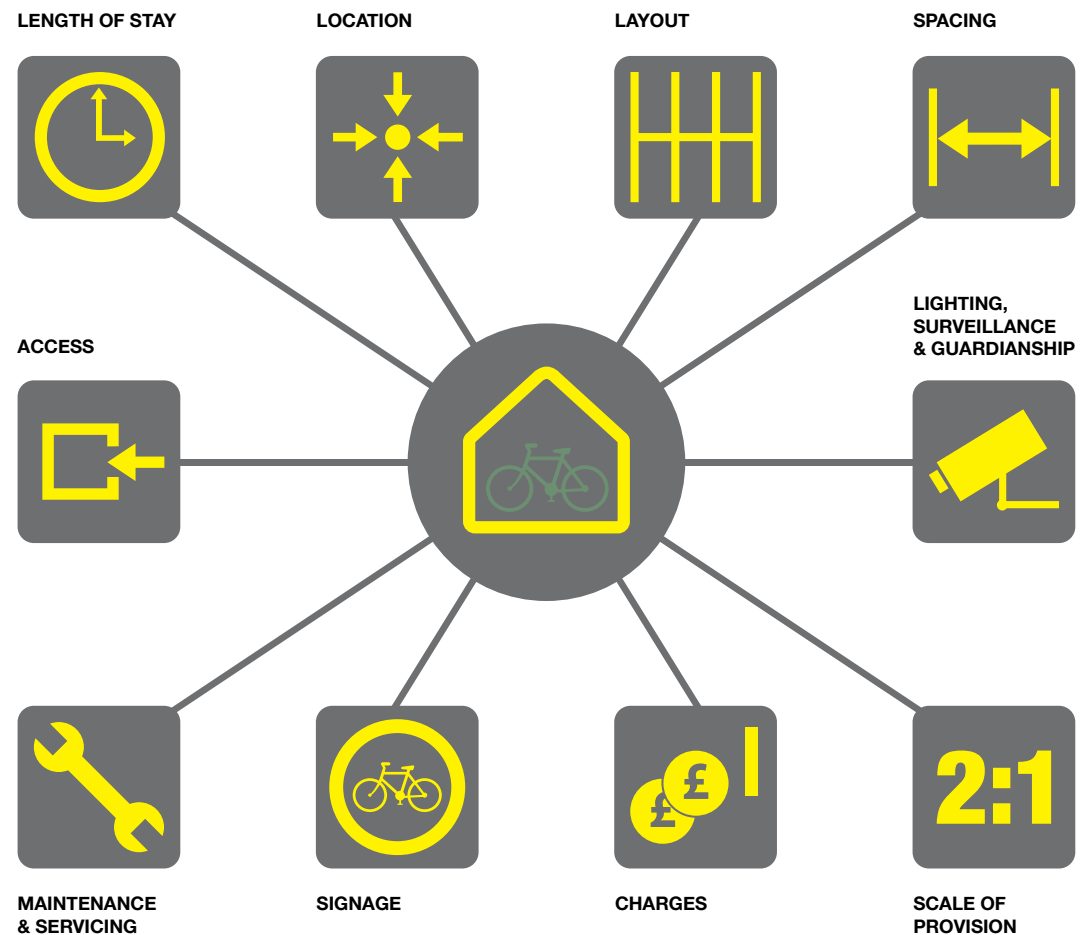
✓ OK locking practice



✗ Bad locking practice

6. Methodology Applied to Bikeoff2 Project

Visualise : Bikeoff design guidelines



6. Methodology Applied to Bikeoff2 Project

Visualise : Exhibitions



6. Methodology Applied to Bikeoff2 Project

Brief/Critique : Stakeholder seminars



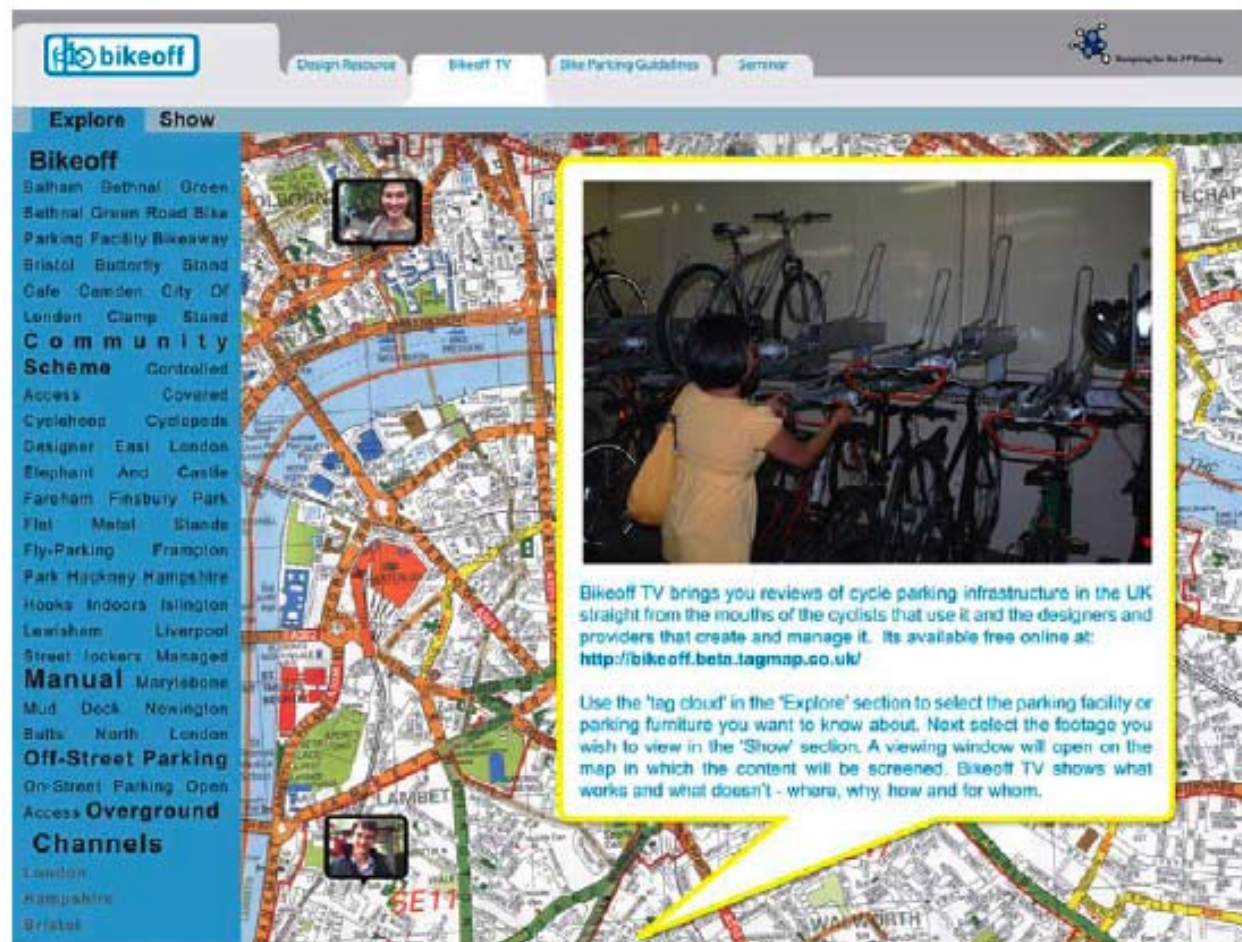
6. Methodology Applied to Bikeoff2 Project

Realisation : Design Resource



6. Methodology Applied to Bikeoff2 Project

Realisation : Bikeoff TV



6. Methodology Applied to Bikeoff2 Project

Realisation : Design Guidelines Wiki

The screenshot displays the Bikeoff website interface. At the top, there is a navigation bar with links for 'Design Resource', 'Bikeoff TV', 'Bike Parking Guidelines', and 'Seminar'. The main content area is titled 'Home Page' and includes a 'What YOU can do' section. A yellow speech bubble highlights a consultation box with the following text:

The Bikeoff bike parking design guidelines consultation enables the cycle parking community to combine knowledge, expertise and experience to produce comprehensive and definitive design guidelines for bike parking. Starting with a summary of current bicycle parking design advice we offer two ways for you to get involved. It is free and easy to register, comment and contribute at www.bikeoff.org/consultation

Use the Bikeoff consultation WIKI to create content of your own and discuss the contributions of others.

Use the Bikeoff consultation WEBLOG to comment on existing guidelines.

The website also features a 'Contents' section with a list of topics: Introduction, 1. Legal Issues, 2. Location, 3. Scale of Provision (Capacity), 4. Length of stay, 5. Aesthetics, 6. Signage and Communication, and 7. Layout and Spacing of Parking Furniture.

6. Methodology Applied to Bikeoff2 Project

Realisation : caMden stands



6. Methodology Applied to Bikeoff2 Project

Realisation : caMden stands



6. Methodology Applied to Bikeoff2 Project

Realisation : Puma bike



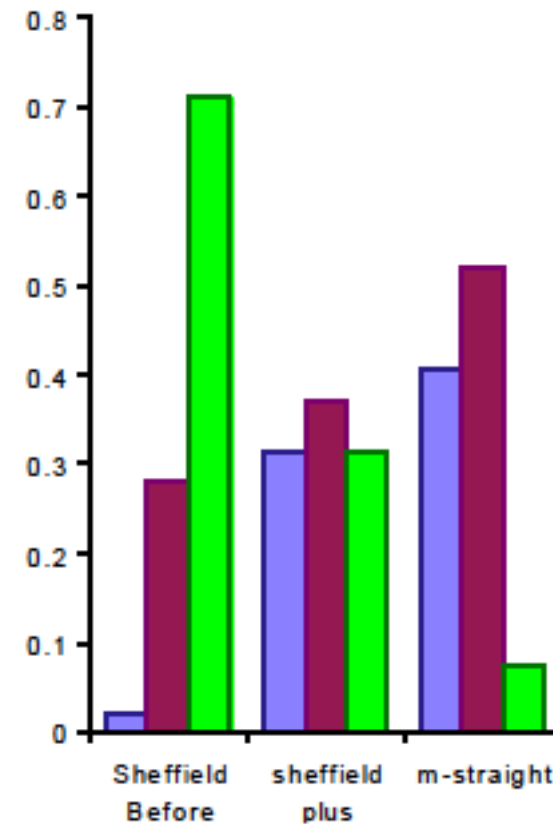
6. Methodology Applied to Bikeoff2 Project

Implement / Evaluate : Design Resources. Studio Projects
MA Industrial Design - Holborn Unlocked.
Unlocking the potential of cycle parking infrastructure to
regenerate public space.



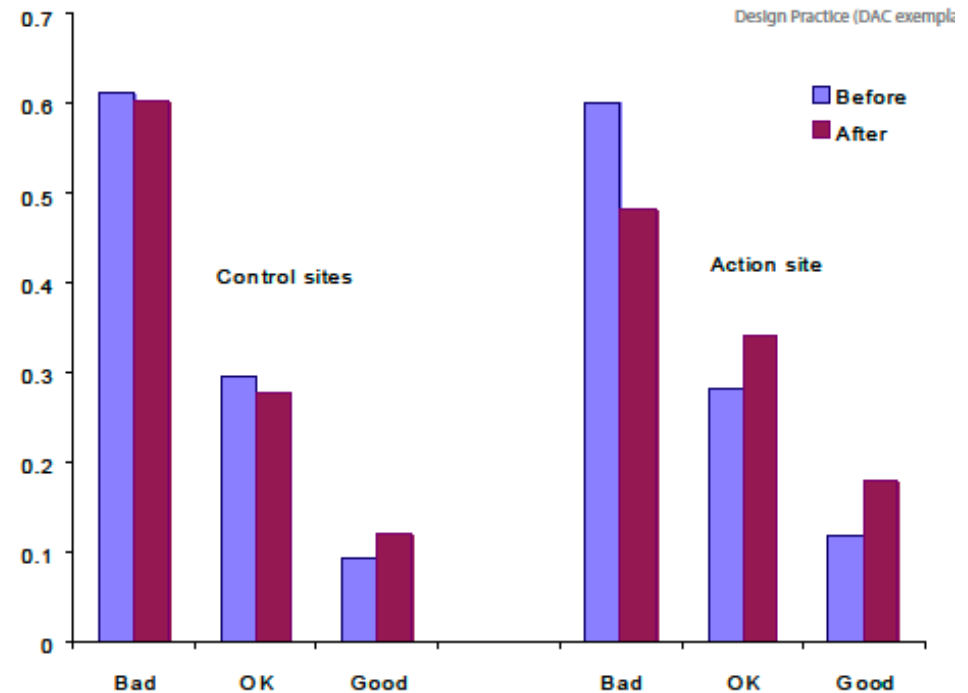
6. Methodology Applied to Bikeoff2 Project

Implement / Evaluate : Stickers



6. Methodology Applied to Bikeoff2 Project

Implement / Evaluate : Stands



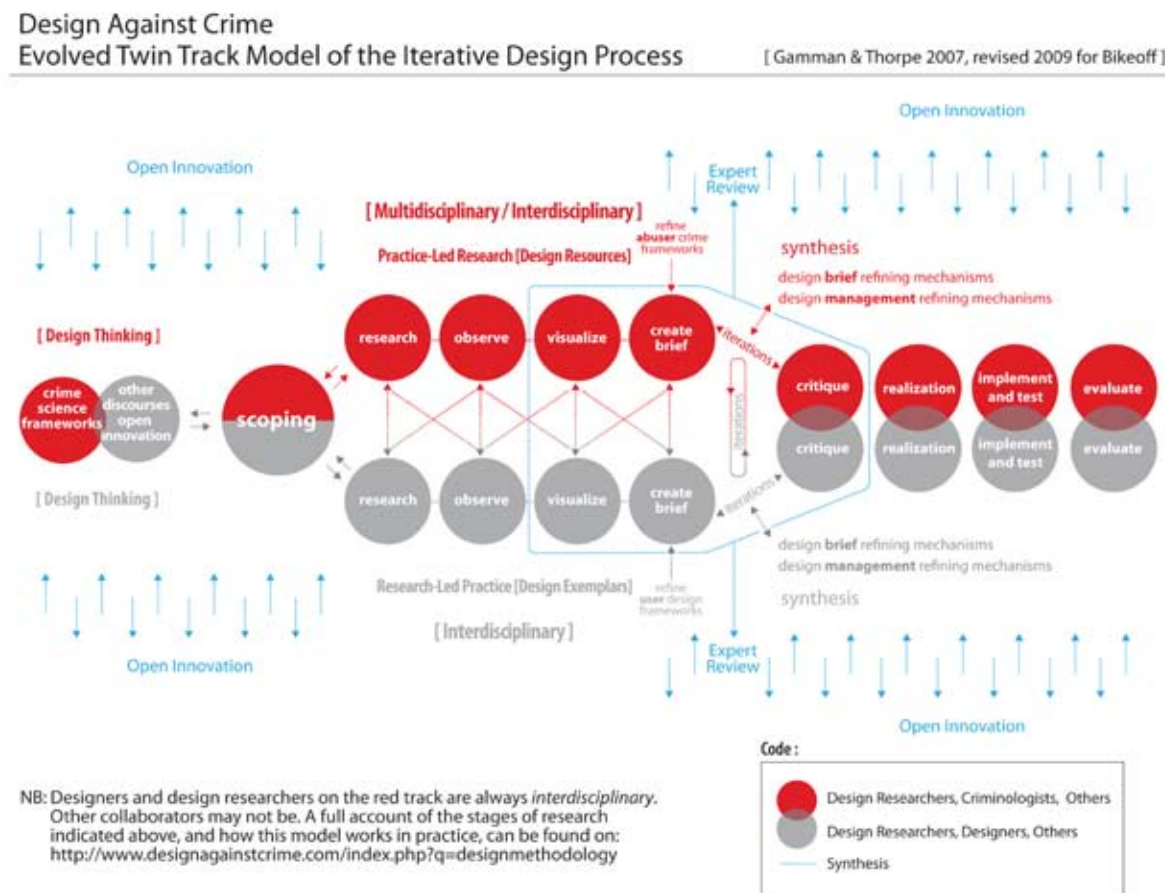
7. Open Innovation Model of Research

Outcomes

- Model generates significant unpredicted outputs (National/International)
- Bikeoff 2 (an AHRC funded 2 year research project) delivered 100 outputs of which only 75% were predicted

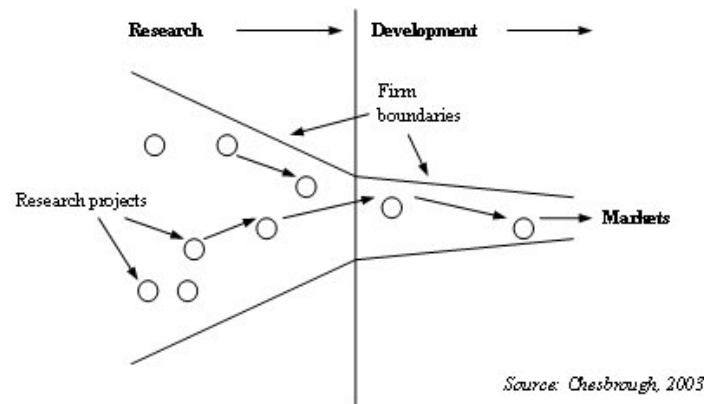
7. Open Innovation Model of Research

Emergent process - described by 'open' research innovation model.

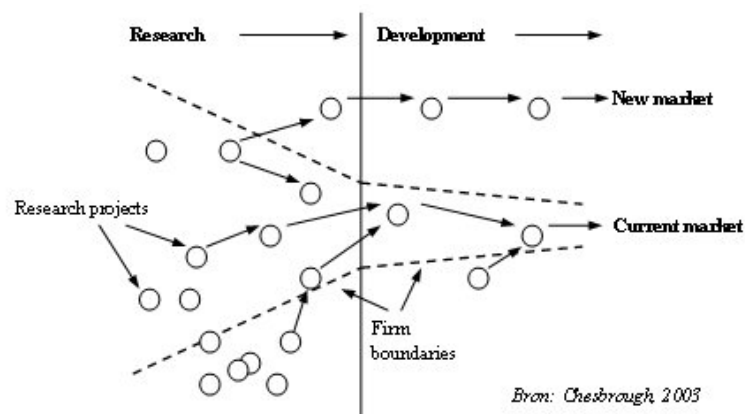


7. Open Innovation Model of Research

Chesbrough 2003, 'open' and 'closed' innovation



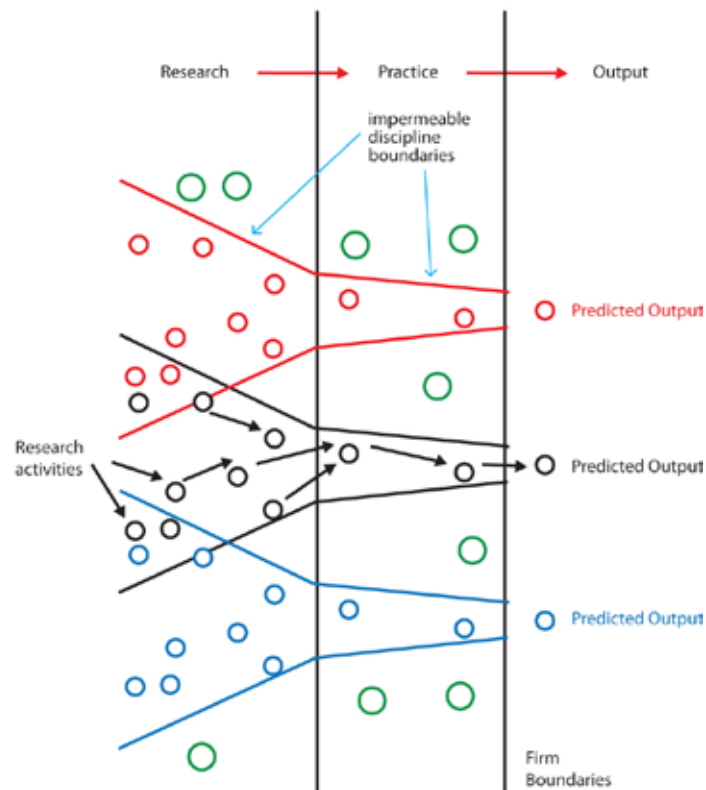
Closed



Open

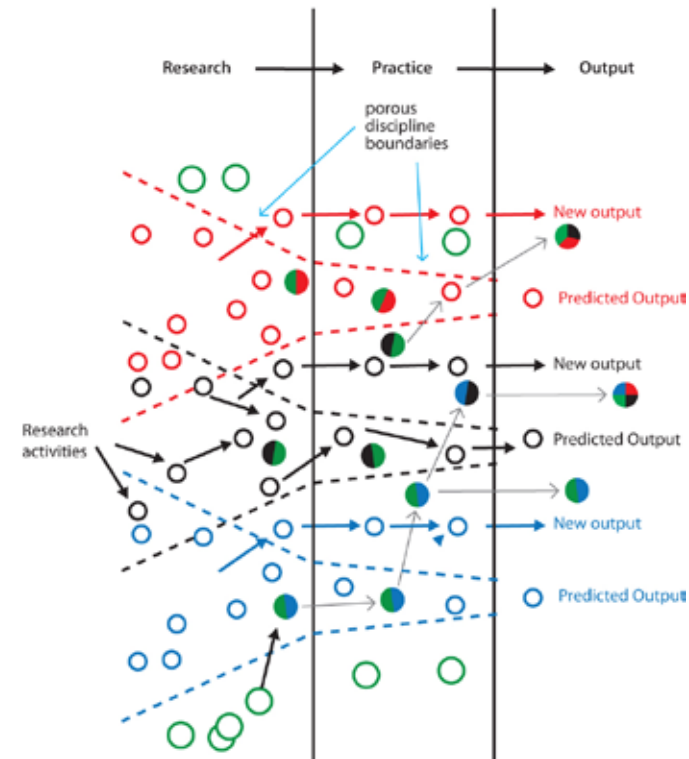
7. Open Innovation Model of Research

Closed Research Innovation



- Criminology
- External Stakeholders
- Crime prevention
- Design

Open Research Innovation (emergent)



- Criminology
- External Stakeholders
- Crime prevention
- Design

8. Conclusion

Why are Design Against Crime / Bikeoff2 sustainable initiatives?
A research process linked to multiple design iterations and expert review, in partnership with business/community stakeholders, is more likely to generate social cohesion and civic well being than market-led design.

8. Conclusion

What can DAC / Bikeoff2 contribute to innovation?

- Our process can identify the links between design innovation and social innovation - via design thinking
-
- Our process delivers participatory design processes and design briefs that are fit for purpose
- Our process involves multiple stakeholders and involves them in delivery of both predicted and also many unpredicted design and research outputs
- Our process aids multidisciplinary teams to deliver interdisciplinary research

8. Conclusion

DAC / Bikeoff 2 are Socially Responsive Design

“Design which takes as its primary driver social issues, its main consideration social impact and its main objective social change” *Gamman & Thorpe, 2006*

or simply,

“Design that responds to social issues and context in pursuit of social change”

8. Conclusion

Our work and open innovation process show that a crime focus can deliver new USPs and also that consideration of multiple drivers and a consultative approach can create products, environments and services that are good for:

- Society - less crime and less people criminalised - more well being
- Environment - less environmental complicity, less fear of crime - more public engagement
- Economy - a creative focus can lead to USP that delivers innovative products that add value

Thank you
www.bikeoff.org
www.designagainstcrime.com

