



# Less Is More: What Design Against Crime Can Contribute To Sustainability

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## Abstract

Crime is a voracious form of premature obsolescence. Replacement of insured stolen items increases levels of product consumption that are unsustainable. Additional to the ecological cost of crime are the social and economic impacts linked to 'courts, cops and corrections' – money better spent on building social innovation and sustainability. The user/ abuser centered methodology of the Design Against Crime Research Centre (DACRC) at University of Arts London as a socially responsive design movement is described in this paper. It argues that DACRC's approach is unique. It addresses social agendas by accommodating consideration of multiple, often competing, user-demands in a given context, and responding in ways that produce both fiscal and social capital through sustainable design.

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## 1. Introduction

This paper argues that design against crime constitutes sustainable design because it attempts to anticipate and design out crime and other problems from the system in the first place, in a sustainable way, rather than solving them after they have arisen, often linked to inconsiderate design. It is written in seven sections that attempt to argue with Paul Cozens that “the ubiquitous issue of crime and the fear of crime are included within some sustainability frameworks, but arguably need to be explicitly integrated” (Cozens 2007, 187-196).

## 2. Crime And Sustainability: Why Crime Is A Barrier To Sustainable Development

A widely 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” (Sustainable Development Commission 2008). Crime, clearly contradicts these objectives, and as the UN and most domestic governments acknowledge, is a barrier to sustainable development.

To understand why crime is a barrier to sustainable development, and how it connects to design approaches, it is important to understand its impact at both the macro and micro levels. There are four levels of impact that should be briefly reviewed here including (i) economic (ii) environmental (iii) emotional and (iv) ecological influences.

### i. Economic impact of crime

The total burden of costs of crime against individuals and households in England and Wales was estimated by the British Home Office in 2003-4 (the most up to date figures we could find on record) to be around £36.2bn (Home Office 2005). This economic cost estimate is primarily linked to actual crimes measured in the annual British Crime Survey (BCS), rather than those recorded by the British police. This fact is important because, as the report explains: “cost components are effectively weighted by the probability that they will be incurred, which in turn depends on the probability that an offence is reported, recorded, investigated and so on.” (p5).

The method by which these costs are calculated are complex and difficult to summarise here. Various methodologies, necessarily speculative in their scope, were used to assess the overall figure of 32.6bn linked to likely costs of crime in England and Wales in 2003-4. To arrive at this figure, the typical costs of crime types covered in the survey were calculated and combined. The elements contributing to the cost of a typical robbery of an individual are reproduced in Fig. 1 below:

*See Fig. 1.*

In showing the above table that identifies the costs of an individual incident of robbery (including that of services provided by the health service and criminal justice system) we seek to show the extent to which economic impact of crime is not just experienced by victims, but also by

wider society through consumption of public funds. We argue that such costs, in the long term, are not sustainable. Anticipating and designing out crime - using toughened beer glasses, for example, to reduce the effects of wounding in a bar room brawl - can reduce costs of violent assault to the tax payer and the state, as well as the number of victims of serious wounding. Our perspective on the cost of crime is (a) costs are calculated in terms of negative impact and do not include hidden costs of reduced positive impact that may have resulted from the individuals involved in the crime not becoming so i.e. they do not include estimates of the economic or social benefits denied society as a result of the subsequent actions of the victimized or criminalized. However, it is beyond the scope of this paper, and our subject expertise, to formally take issue with the way the economic costs of crime are calculated, but, and more crucially (b) we passionately believe that monies currently spent on policing crime and dealing with its consequences could be better invested developing capacity to successfully design 'out' or 'against' a significant proportion of crimes that occur i.e. prevention rather than cure linked to designing out opportunities for crime.

## ii. Environmental impact of crime

The impact of 'fear of crime' by individuals whose response is disproportionate compared with *danger* or the probability of them actually being a victim of crime (Wikipedia 2008a), can also have a negative impact on our individuals and communities. In particular, fear of crime can produce vulnerability-led design responses that operate to negatively influence and determine the aesthetics of the environments we live in, as well as interaction with such environments, by individuals and communities.

Bill Durodie has discussed the "widespread presumption of human vulnerability that influences our discussion of disasters well before they have occurred" (Durodie 2004, 19) and speculates about the negative impact the accentuated focus on vulnerability leads to. Similarly we argue that security-led design responses that display an overt focus on crime and vulnerability can have a negative influence on the built environment and enjoyment of the public realm. One approach to address crimes that make people feel vulnerable has been to keep environments clean and friendly; to tidy up evidence of vandalism or civil disobedience and avoid what has been called the "broken window syndrome" i.e. "One un-repaired window is a signal that no one cares, so breaking more windows costs nothing... Untended property becomes fair game for people out for fun or plunder" (Wilson and Kelling 1982). This can be simplified as bad leads to worse. Similarly we argue that 'bad' design against crime, design that promotes an overt address to security over other considerations leads to fear of crime. Insensitive fortification of the environment, often from outside, against attack – locks and bolts, fences and gates, cameras and flood lights – exemplify this approach. Whilst we believe security is an appropriate design consideration in certain contexts within society, there is a lot to be said for 'stealth design' responses in which security is provided covertly by 'the invisible hand of the designer' within the objects and environments they design. In short, security issues should be addressed within certain design briefs and responses but should not define them. We believe design briefs and responses for objects, services or spaces should always be developed according to their context, understanding and prioritizing the needs and aims of those that experience them and commission them. Security-led design briefs and response, tend to ignore the importance of users, and instead view the design process as if blocking the abuser's intentions was the primarily goal, more significant than the requirements of others that experience or use such designs. Consequently, vulnerability-led design responses assume a high level of fortification regarding objects, services or spaces. The semiotics of this protection is often over-determined, and contributes to paranoid 'fortress aesthetics that are disproportionate to risk and of detriment to human well-being.

### **iii. Ecological impact of crime against 'hot' products**

Crime trends often follow consumer trends. Those products that are seen as most desirable and 'hot' are often those that are stolen most regularly according to the British Design Council (Design Council 2008).

Recent reports indicate that a third of mobile phone theft in England is linked to theft from children under 18 years of age, who simply replace their phones lost to theft, which may have been stolen but are often also linked to incidents of bullying rather than straightforward robbery incidents (Higgins 2006). Often replacement is with another or newer mobile phone model. Indeed, most individuals who have insurance cover usually replace items stolen – laptops, iPods, games consoles, bikes, mobile phones - with more up to date models. Crime is consequently a voracious promoter of premature obsolescence. It could be argued that the failure of designers to consider, and seek to mitigate, the criminogenic nature of these products is another voracious form of planned obsolescence. Anti theft functionality integrated into objects and buildings, without hindrance to the user, helps not just to design against crime, but also to protect the longevity of object use. Such an approach therefore is compatible, to some extent, with idea that both objects buildings and cities, in designing against crime, constitute more sustainable design (Knights, Pascoe and Henschley 2003).

### **iv. Emotional impact of crime**

We have proposed above that the design of objects, services and environments have an emotional impact on those that experience them. Whilst Situational Crime Prevention (SCP), and the case studies presented by scholars such as Ronald Clarke (Clarke 1992) and Marcus Felson (Felson 2002) have persuasively made the case that environmental manipulation can help design out crime by affecting behaviour, the account of impact of the environment on well-being is also linked to other evidence based research disciplines, not just those from criminology. To give just 2 examples from health care and economics. Roger Ulrich, currently Professor of Architecture at Texas A&M University, has delivered research that demonstrates that hospital patients recovered faster (and their medication demands were lower) when the hospital environment was designed to afford them views of the natural world outside and enjoyment of natural light, compared to those that were afforded no such considerations. Ulrich and his associates also researched the influences of aural surroundings on recovery outcomes in intensive care patients, including how unwanted noise can impact negatively on staff and patients, in order to make the case for the impact of design on well being (Ulrich and Simons 1986). Richard Layard, Professor of Economics at the London School of Economics, comes from a completely different perspective when he argues that negative perceptions of community safety militate against personal happiness. He suggests (Layard 2005) that despite increased prosperity and better material conditions for the majority, British people are no happier now than 50 years ago. Layard discusses many issues relating to why this might be so before observing that post industrial countries with the highest productivity and prosperity are not always the happiest. He goes on to suggest that fear and poor perceptions of community safety may significantly detract from personal happiness (although he does not fully develop this line of argument or test it in the evidence based way Felson's, Clarke's and Ulrich's research has done so).

In drawing attention to such research we are saying that environments can operate to design out crime, but if designers are not careful the visual impact of security design (linked to fear of crime and over fortification) can lead to stress and negative emotions. More significantly we suggest that community cohesion and the forming of meaningful social bonds (that produce social capital as well as fiscal capital) are not facilitated by criminal environments, which militate against trust, cooperation and the creation of community. Moreover, that crime inhibits sustainable development because individuals need to feel **safe**, both personally and publicly, in order to be able to participate in the creation of sustainable communities.

Whilst it is true that not all products that exhibit anti crime functionality (cars for example) have made the best use of resources or materials in relation to ecological impact, in terms of the **intensity of change** it brings, DAC is nevertheless compatible with the aims of sustainable design. This paper will go on to argue that models of design that anticipate and attempt to design out crime problems from an environment, system or product life cycle, rather than solve them post design implementation, will be more sustainable in terms of human and economic resources than those that don't.

### 3. Design Against Crime As Socially Responsive Design

Design Against Crime (DACRC) at CSM is a socially responsive, practice-led research initiative, which uses the processes and products of design to reduce all kinds of crime and promote community safety whilst improving quality-of-life (see [www.designagainstcrime.com](http://www.designagainstcrime.com) and [www.bikeoff.org](http://www.bikeoff.org)). It aims to strategically use design to maximize impact of resources in meeting current and future human needs. This requires tackling design in relation to contexts that offer competing ethical demands, negotiating 'tradeoffs' between the demands of society, the environment and the economy. In crime terms this includes the holistic consideration of the impact of products and consumer desire for objects like the mobile phone that have been linked to crime waves. DAC is linked to the theory of situational crime prevention (Clarke 1992). In a nutshell DAC philosophy suggests that crime is significantly about opportunity, and that IF we can design out opportunity for crimes to occur in the first place, we can reduce crime, and perhaps also the number of people who become criminalized. DAC is a relatively new, interdisciplinary area of enquiry developed through innovative national and international research collaborations. It has four overarching aims:

- 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; to this end
- To equip design practitioners with the cognitive and practical tools and resources and
- 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.
- To address environmental complicity with crime in the built environment to reduce crime and improve individual and community well being.

To realize these aims requires linking two worlds; helping designers to “think thief” and aiding crime prevention experts to ‘draw on design’. It also requires an understanding of multi-stakeholder needs, and ways of working with design in partnership with colleagues from local government and business, as well as the police and the communities they serve. DACRC’s approach is more common to what is traditionally called ‘service design’ i.e. “the activity of planning and organizing people, infrastructure, communication and material components of a service, in order to improve its quality, the interaction between [object or] service provider and customers and the customer’s experience” (Wikipedia 2008b).

The service element of design should not be confused with ‘service industries’. DACRC takes a service approach because it views that there are more stakeholders to be considered when reviewing the design process than just the person who primarily uses/ consumes an object, system or environment, the manufacturers and designers who produce it or the client that commissions it. DACRC’s understanding of service design includes ideas about the life cycle of the implemented design, and those that experience and engage with it, lifecycle (including an understanding of user/ abuser requirements/ desires) together with an account of community/public needs and impact. Also, that innovation in design is needed not just in terms of objects and spaces created, but also in terms of the services that are needed to maintain and make sense of them.

This approach seems complicated but it isn’t really, even if it does require more design forethought or what Thackara (Thackara 2005) calls ‘design mindfulness’. For example, when our researchers and designers started to look at bike theft (see [bikeoff.org](http://bikeoff.org)) and how to design against it - because bike theft compromises the use of the cycle as a sustainable transport system - the depth of our research focus into the relationship between bikes and crime, and understanding the entire life cycle of cycling products, led to the generation of:

- Communication designs aimed at informing cyclists how thieves steal bikes with the aim of helping them defend against thieves by registering their bike, using appropriate locks and improving their locking practice.
- Design of exhibitions linked to promotion of cycling but also information about cycle theft as it impacts on bike and bike parking furniture and facility design, aimed at informing architects and designers that cycle theft needs address alongside other cycle design drivers.
- Online design resources aimed at helping practitioners involved in cycling design provision to get smart quick about crime when developing secure bikes, bike parking furniture and bike parking environments.
- Design of anti theft bikes and bike parking furniture aimed at providing DAC benchmarks to be used operationally in the prevention of cycle theft and promotion of cycling, in addition to providing exemplars to the designers and providers of cycling infrastructure.
- Multi-stakeholder (including cyclists, designers, policy makers, private and public sector providers and crime prevention professionals) generated standards used to

brief architects/designers and local authorities about how to provide secure bike parking facilities.

The multi-stakeholder focus described above is applied to all aspects of our design research and iterated within our design process in order to ensure the relevance, efficacy and uptake of our design outputs in the public domain.

## 4. DACRC Iterative Design Model And The Methodology

The diagram below created in 2007 (itself the result of an iterative process of post rationalization, reflection and consultation on DACRC projects since 1999) helps visualize the iterative process of the DACRC approach to project delivery and management. Our practice-led research process has 2 strands as follows:

See Fig. 2.

The red circles show the research methodology that DACRC starts with is similar to the 'user' focus of interaction design, associated with design consultancies such as IDEO (Myerson 2001) who also fully research user needs. The main difference compared to IDEO is that DACRC reviews material linked to *abuse* and *misuse* as well as *use* in design terms. It also extends the notion of 'user' to include the multiple stakeholders listed above. Competing stakeholder aims are inevitable and are addressed through an iterative review, by a panel of colleagues that reflect the stakeholders involved, who comment on the work. These discussions are led by the researchers and designers, who used user feedback to review the necessary 'tradeoffs' between conflicting requirements according to priorities of the context being designed for.

In the nine years since our work started in 1999, our model has significantly been extended through engagement with practice and interaction with our stakeholders to address 'mis-use' as well as 'abuse' in terms of the 'ethnographic' review of factors to be drawn upon in the design process (Barab et al. 2004). In order to move beyond experiential data and interviews with users/abusers at the research stages, DACRC coalesces the conceptual frameworks, methodologies and practices of situational crime prevention, social anthropology, and psychology, among disciplines drawn upon, to offer an interdisciplinary account.

### Scoping

This is the crucial stage of projects. Many forms of empirical research, as well as user data (and theory) inform the scoping stages in order to reach understanding of what crime problems or questions can best be addressed by design (rather than social policy). Also it is often the case that the researchers may bring their personal experiences of crime to bear on the scoping phase.

### Research

The difference between the practice-led approach to the design process employed by DACRC at CSM and the interaction design focus and methodology that is traditionally drawn upon, is that DACRC starts with a crime problem and researches how best to address it in broad and multidisciplinary ways. It draws on anti crime thinking, in order to adapt the user centered interaction design model to address issues raised by crime. In order to bring some rigour into design thinking and the critical process of decision making in relation to 'troublesome tradeoffs', Paul Ekblom has created a series of questions and prompts in his model of the Conjunction of Criminal Opportunity: A Tool for Joined Up Thinking... (Ekblom 2000) hereinafter called CCO. DACRC at CSM suggests CCO should be applied by designers to ensure that their address and subsequent visualization of the crime and design problem is comprehensive, systematic and well grounded in theory. CCO allows designers to fully understand the problem BEFORE and DURING the generation, selection and refinement of design concepts and solutions aimed at solving the crime problem.

## **Observe**

One of the reasons DACRC has been able to keep staff passionately engaged with the projects we deliver is that it is important to us that our own experience is included at the scoping stage (the idea that the personal is political) and during further observations we make. For example, we as staff have often been victims to the crimes we are trying to design against and we draw on this experience in addition to that of stakeholders. We also draw upon many levels of observation in our consideration of how best to respond in design terms. We also encourage observation in the field, watching how people use objects/ spaces that may eventually generate theft. We do our best to understand theft perpetrator techniques (MO's) in order to design against them.

## **Visualize**

Visualization of these observations are central to the approach and any address to crime through the design process. Visualization aids both individual understanding and group consultation.

When thinking about design against bag theft and pickpockets, for example, the following, MOs well as many other levels of empirical research linked to bag use are researched, observed and visualized by the team. Visualizations are shown to experts, and all comments and fed back to researchers and designers to help us focus on how to best respond to design briefs.

*See Fig. 3.*

## **Generation of Prototypes/ Critique**

DACRC adopts an iterative and emergent approach to both research and the generation of prototypes and usually appoints stakeholders in advisory groups and expert review panels to help critique both research stages as well as design concept and prototype stages of development. Consequently, DACRC develops hybrid approaches to the quantitative and qualitative specification and evaluation of data to be drawn upon by designers as well as



products, services and environments they produce to maximize the efficacy, relevance and adoption of the proposed solutions.

In this way DACRC delivers an iterative design process, one that has been adapted to include stakeholders such as crime prevention advisors, who have strategic knowledge of the criminal approach to objects, as well as stakeholders from business and local government who experience crime or who have reason and specialist experience about why there is a need to design against it. Like all approaches to design that contain some aspect of 'forecasting' DACRC advisors and designers engage, as Ekblom has pointed out, with "practical considerations in handling the uncertainty which by definition surrounds the estimated risk. It is pretty likely that on average, some broad types of product will be riskier than others." (Ekblom 2005). This strategic stakeholder 'consultation' process, that occurs at stages during the development of design resource and design response iterations can help manage such risks and also identify multiple drivers that need to be addressed in order to really solve the crime problem whilst being attentive to other user considerations where desirable and possible.

The grey circles on the diagram (Fig. 2) show how the process is repeated by individual designers in the creation of specific design exemplars for specific contexts. This process eventually leads to prototype creation of a product, system or service. The designer will anticipate the interaction of many types of users (including victims) as well as abusers and mis-users (criminal perpetrator data) connected with the object, system or service, before showing it to the advisory panel for feedback and refinement (or dismissal!) of these ideas. Typically, several prototypes are generated and amended before the final iteration is agreed upon. Design prototyping is of course constrained by project resources and time constraints. What is seen as the 'best' or 'final' prototype may be linked to funding break points i.e. what can be delivered on budget available. The 'final' design prototypes created will aim to get the balance right between ensuring that user flexibility and desire for the output is not compromised by addressing security through modifications to enhance crime resistance. Where possible, once the product is created we will seek to test and observe the product in situ to ensure its efficacy prior to final production prototyping. Whether the design goes into production will also depend on other commercial constraints linked to materials and manufacturing needs that the designer should have addressed as part of the iterative process as well as the economic performance of the business in question. To some extent, the DACRC model moves beyond a functionalist rationale – problem solving is not the only aim of the design process, which seeks to deliver sustainable anti crime design. DACRC also tries to find a pleasing and creative 'resolution' for design (rather than compromise) in terms of the way security and criminal behaviour is addressed by the object, service or system, in order to aid adoption by a wide audience. Some testing is necessitated by the process, and it is here that research funding is crucial, as testing of objects for public spaces, in particular, is very expensive and needs to be undertaken to exacting standards with an interdisciplinary team (we often work in partnership with the Jill Dando Institute of Crime Science (JDI) to ensure that anti crime functionality is effective). Again, modification of a small batch of prototypes may be undertaken, before mass production and roll out of an appropriate solution.

## **5. Reviewing DACRC's Philosophy And Methodology**

Central to the DACRC philosophy is the opinion that design should be linked to the promotion of well being, particularly design that is located or experienced in public space. We believe it is possible to address security issues without compromising functionality and aesthetics (i.e. the simple idea that "secure design doesn't have to look criminal or ugly") or other forms of performance, nor being oblivious to other ethical design drivers. Our research projects attempt to "... help designers keep up with the adaptive criminal in a changing world" (Ekblom 2000). This generative design research approach has led to much product innovation, discussed in Design

Appendix 1, also to over 15 international design exhibitions DACRC/ Bikeoff has curated and delivered (see [www.designagainstcrime.com](http://www.designagainstcrime.com)) in addition to inclusion of our work in many museum shows including *Safe– Design Takes on Risk* exhibition curated by Paola Antonelli (Antonelli 2005) for the Museum of Modern Art, New York.

DACRC's methodology, holistic approach and progressive social aims, have much in common with the 'transformation design' approach delivered by Hilary Cottam and the design agency Red, and more recently Participle. When interviewed about this approach in October 2007, Cottam argued transformation design is "a hybrid approach which combines people-centered methodology with systemic policy thinking". She said: "We start from the individual, unlocking a unique set of insights and motivations, which we then apply to the broad systemic problems we are seeking to answer. Our hybrid approach also means we test and scale in a different way. We rapidly apply our thinking and insights to the development of 'prototypes'. Prototypes differ from pilots: they involve early service models developed in situ, which are then tested and improved in rapid cycles, again in situ. This approach reduces risk and tends to result in new services that work and can be scaled as well as important new policy insights. Our hybrid approach and our person-centered starting point enables us to work beyond existing service silos, efficiently harnessing a broader set of resources contributing to the development of affordable whole system solutions" (Experientia blog, comment posted 20<sup>th</sup> October 2007).

Also DAC has much in common with the emergent approach described by Barab et al (Barab et al. 2004) who state that:

"As designers with a change agenda...our agenda is always evolving and mutable. In fact, in our work, we have abandoned perspectives and goals that were at one point central to our agenda in favour of new goals and commitments that revealed themselves as more applicable, meaningful, and useful over time."

The negative aspect of the DACRC methodology, which has much in common with both progressive accounts described above should also be reviewed. The DACRC iterative approach can significantly add time and cost of product development to the design account, and may be viewed by business as problematic, because of its insistence on a holistic focus. DACRC do not apologise for this approach as we are research based and research led designers, and in our opinion real innovation is linked to the full exploration (and exploitation) of so-called design problems. A further common criticism of the iterative consultative process and the DACRC approach that should also be understood by the design community is that some designers object to the 'design by committee' approach, which they see as implicit to the iterative process, and expert or multi-stakeholder review process. Indeed, some designers argue that this collective approach limits their creativity. We think this type of feedback is out of step with today's climate and linked to very old-fashioned design thinking. Designers, in our opinion will always be central to the design process, as their visual skills and abilities are much needed (and not everyone can draw or visualize well) but increasingly, across the industry, there is recognition of the value multiple stakeholders bring to understanding of a design's lifecycle and also what they can bring to design innovation, as Charlie Leadbeater has been at pains to point out in his recent account social innovation as the 'We think' approach (Leadbeater 2008). The DACRC recognize with John Thackara that "Complex systems are shaped by all the people who use them, and in this new era of collaborative innovation, designers are having to evolve from [solely] being the individual authors of objects or buildings, to [acknowledge their role as] being the facilitators of change among large groups of people." (Thackara 2005). Additionally, the DACRC iterative process also focuses on post consumption activities linked to designed objects, systems or services, which DACRC also often seek to test and review once they are actually out there – in the market or on the street – to monitor and evidence the change!

We find DACRC projects are rarely 'finished', but always in the stage of 'becoming' something else, moving on to the next phase. This is because the behaviour of adaptive criminals, competitive rivals and changing social and market requirements (and the evolution of our own insights and understandings) means that we are constantly replenishing the depth of our research focus and developing ideas about how best to design out crime and make the world a better place.

To truly develop DACRC outputs (see Design Appendix 1) we feel we absolutely need to have a relationship with the public sector, and to design for it, but also that we need to make interventions in consumer-led markets to gain evidence of the commercial effectiveness of DAC. Here we may aid providers, via product differentiation in saturated markets, to generate fiscal capital linked to products that just so happen to offer anti crime functionality and so have a USP that also has the potential to create social as well as fiscal capital. Indeed, it is precisely DACRC's potential for generating 'innovation' in terms of the marketplace, that may mean it does not simply equate with purist definitions of socially responsible design, the sort originally associated with the account of those such as Victor Papanek (Papanek 1971). We think, like Nicola Morelli (Morelli 2007) that "the time has come to review Papanek's recommendations from a new perspective, which reduces the distance between market-based and socially oriented initiatives".

At least 6 years ago, with delivery of the Karrysafe range, DACRC decided to abandon Papanek's socially responsible account of design for the real world and use the phrase "socially responsive design" to describe our practice-led design model and outputs. This model is ethical in its implication, and in tune with what Thackara calls 'design mindfulness' because we recognize that sustainable aims must be applied in social as well as ecological terms if sustainable design is to address the needs of the real world of the 21st century.

Socially responsive design tends to start with designers individually, or as a group, trying to make their intervention through practice, but it offers a collective dimension as a model too. Ultimately, we believe DACRC's methodology and approach to design research and the generation of products, services and environments, is important and part of the sustainable agenda, and positions DAC alongside other established thematic movements such as eco-design and inclusive design.

## 6. Crime And Market-Led Design

DACRC is research based, but practice-led. This means disseminating design exemplars (see Design Appendix 1) is the ultimate aim of our research, and DAC thinking on this has so far worked in partnership with a market-led model of design aimed ultimately at making profit as well as generating social change. That research has ultimately led to the creation of spin-off products and companies, a phenomenon that is not uncommon in science-led industries. That these activities are designed to create positive social change is less common. Often the market rules design. For example, the pharmaceutical industry is driven by profit and the impetus for even the successful design of security into automobiles partly resulted from the British government publishing lists of the cars most frequently stolen, which shamed manufacturers into improving security and led them to compete in *market-led terms* over their reputations. Subsequently anti-theft designs based on electronically coded ignition keys and immobilizers were made mandatory by EU directive, but were also seen as part of necessary marketing of brands to sell automobiles. DACRC is not market-driven in this simple way. The problems we seek to research and respond to with design, are not market-led but can be positioned to be compatible with some market forces, even if the drive to design out premature obsolescence from products like mobile phones

or iPods means that we are trying to inhibit manufacturers making money from crime in negative ways i.e. we think phone companies regarding theft of mobiles should make profits from anti-theft design not from insurance upgrade linked to stolen mobiles.

Criminogenic designs (those that cause crime) often do so because they are easy to steal as well as being attractive. Criminologists identify a cluster of risk factors, for theft in particular, known as CRAVED - objects that are Concealable, Removable, Available, Enjoyable and Desirable (Clarke 1999). These factors could equally be read as a list of desirable features for mobile products which highlights the need for consideration of 'troublesome tradeoffs'. We do not seek to be against making things desirable (i.e. to always prefix this list of CRAVED characteristics with 'Un-') but rather wish to limit their impact in criminogenic terms – through design.

Of course, it is dumb to 'blame' crime on designers when the culture of consumption where 'having' (things) is more important than 'being' (a decent person) generates greed and obsolescence. But, as John Thackara points out some "of the troubling situations in our world ARE the result of ... too many bad design decisions" (Thackara 2005), and so DACRC, as advocates of a pragmatic change movement, starts from the premise that something needs to be done now in order to address poor design decisions and to correct them where possible. Mindful of the idea that manufacturers often have more final choice over final design decisions than the humble designer and also of Papanek's belief that "design has become the most powerful tool with which man shapes his tools and environments (and, by extension, society and himself)." (Papanek 1971).

## 7. Conclusion

We conclude by arguing the DACRC research model is compatible with the aims of sustainable development. We target crime problems that stand as a barrier to the progress of social and ethical agendas. Our current focus on bag theft (mobile property theft) that detracts from the enjoyment of public spaces and public transport, and bike theft that detracts from cycle use, continue to be on-going areas of enquiry. In future we also plan to expand the design territories our Centre is able to address as socially responsive design "which takes as its primary driver *social issues*, its main consideration *social impact*, and its main objective *social change*." (Gamman and Thorpe 2006).

In describing the socially responsive methods and objects generated by the DACRC and its Bikeoff initiative, this paper has sought to offer a definition and illustration of socially responsive design, that is both design-led, and interventionist in its approach. One that is hopeful that objects, spaces and services and the material culture they produce, can help change consciousness and society for the better. We have also outlined some of the ways that design can address and drive social issues linked to the desire to bring about positive social change. Additionally, one of the academic objectives of this article has been to demonstrate that DACRC offers a sustainable design model. We hope in describing our own practice and how we have attempted to *slow down* crime by promoting secure design (prevention over cure) we have made a strong case as to why DAC constitutes integration into broad and holistic accounts of socially responsive and sustainable design. DAC seeks to secure and sustain a future where responses to negative risks like crime are proportionate to real danger (rather than fears) and are integrated, (by design) within models that seek pragmatic improvement in social prosperity as well as the quality of life for individuals and communities.

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Offence category	Costs in anticipation of			Costs as a consequence of crime (2003 prices)						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	1,826	10,407
Homicide	145	229	860,380	-	-	-	2,102	451,110	770	144,239	1,458,975
Wounding	1	1	4,954	-	-	-	7	1,166	1,348	1,775	6,852
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	8,058
Sexual offences	0	5	20,754	-	-	-	32	4,430	516	3,058	31,438
Robbery	0	0	753	-	-	-	6	289	133	255	1,440
Burglary in a dwelling	221	177	119	261	187	-22	11	10	-	217	844
Theft	59	52	192	261	59	-36	1	10	-	301	634
Theft - not vehicle	-	33	118	175	17	-13	1	3	-	159	4138
Theft of vehicle	546	370	800	2,367	349	-542	1	47	-	50	858
Theft from vehicles	116	50	255	240	125	-11	1	20	-	65	510
Attempted vehicle theft	65	21	194	-	154	-	1	11	-	126	856
Criminal damage	13	35	472	-	212	-	2	6	-	-	-

Annotations in the image: 'Physical Impact' points to the 'Physical and emotional impact on Direct victims' column. 'Health Service' points to the 'Health Services' column. 'Criminal Justice System' points to the 'Criminal Justice System' column. 'Robbery' points to the 'Robbery' row. Specific cost values are highlighted: £3046 (sum of Defensive Expenditure and Insurance Administration for Robbery), £483 (sum of Health Services and Criminal Justice System for Robbery), and £2601 (sum of Physical and emotional impact on Direct victims, Health Services, and Criminal Justice System for Robbery).

Fig. 1: Estimated average costs of crime against individuals and households in 2003/4 by crime type and by cost category

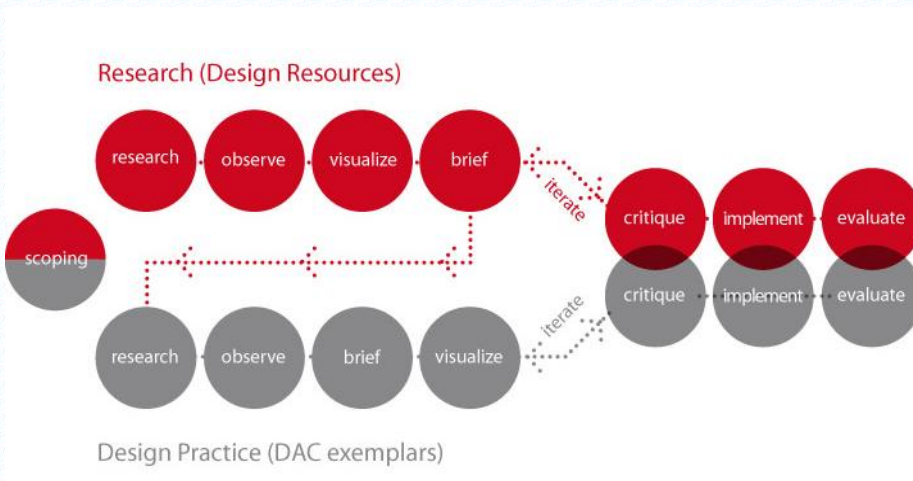


Fig. 2: DACRC Iterative Design Model

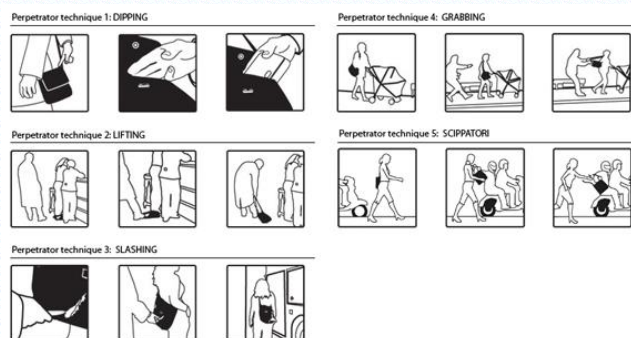


Fig. 3: Perpetrator techniques

# Design Appendix 1: DACRC Design Innovation

## 1. Why Design Against Cycle Theft?

Cycling helps fight obesity, is good for our hearts as well as offering an important sustainable transport system as an alternative to the gas-guzzling car for urban mobility. No wonder our London Mayors - past and present - with the help of TfL encourage Londoners to cycle more.

Yet Transport Research Laboratory's research shows that 17% of all people that cycle have their bikes stolen – and of this group 24% stop cycling altogether and 66% cycle less often. Worse, our own Bikeoff.org research shows that after making 8,500 observations of cyclists parking on the streets outside our own College that many people are complicit with theft, as they do not appear to know how to lock their bikes securely, making life too easy for thieves. So we felt something needed to be done about cycle theft. Our top 4 anti cycle theft designs – that help block some of the common ways thieves steal bikes - include:

### CaMden Stand (M Stand)



The caMden (M) stand was developed to covertly persuade the cyclist to lock low – securing frame, wheel to the stand – because the less secure 'wheel only' or frame only' locking options require more effort to achieve with this design. Unlike the ubiquitous Sheffield (U) stand that tends to inspire people to lock through the top of the frame (making it easy for thieves to steal bikes) the M encourages cyclists to lock their bike in a more secure way. We decided to call this stand the caMden (M) stand because this borough, in partnership with TfL, wanted to be the first to help us design out crime in London and have already installed over 100 stands on their streets. The success of this design has encouraged Brighton and Hove to install and test the design as part of their anti bike theft initiative which we are helping them deliver linked to their Cycle Demonstration Town status.

### Front Wheel Enclosure



The front wheel enclosure performs in a similar way to the M-stand whilst also having a sculptural quality – lacking in much street furniture - that in my opinion would not look out of place outside the Tate Modern. For years DAC’s shout line has been “secure design doesn’t have to look criminal” – this product delivered partly by designers from Vexed Generation (who often work with DAC) illustrates that fact. The best ways to lock up a bike – particularly in cities where bike theft is part of daily life - is not just to “lock both wheels and the frame stand” but also to use 2 different types of lock (as shown here) so the thief is forced to use more than one type of tool if they try to steal your bike.

Our Bikeoff team – led by senior designer Adam Thorpe – designed both stands and the Jill Dando Institute (JDI) of Crime Science, who evaluated our designs, delivered research that shows that the stands do in fact improve the security of cyclists’ locking practice. So we have some proof that our designs work in practice - not just in theory - and the stands are now available from Broxap, Britain’s biggest cycle furniture manufacturer ([www.broxap.com](http://www.broxap.com)).

## Puma Bike



The Puma Bike applies a classic DAC strategy – ‘spoiling’ – to deter bike theft. The wire cable is a structural part of the bike frame as well as being a ‘built in’ lock that can secure the bike and its wheels to parking stands or other stationary objects. The idea is simple – if you cut the lock you break the bike – making it less viable or valuable for re-use or resale. But it is not just the anti-theft functionality that is strong in this design, is the way it is delivered. This address to DAC is what led to this bike’s most original and distinguishing feature. It’s a great example of how the ‘different question’ of “how to avoid theft” led to the different answer of “integrated cable lock”



that makes this bike so unique, and a USP in the market place. It's great to see DAC contributing to innovation in the 'sports lifestyle' market! See [http://www.coolhunting.com/archives/2005/03/first\\_glimpse\\_t.php](http://www.coolhunting.com/archives/2005/03/first_glimpse_t.php).

## 'Lock Both Wheels And The Frame To The Stand' Sticker



This simple sticker is important because works to improve cyclist-locking behaviour, as JDI evaluation of it on U stands shows. It offers an economy in design – the idea that you should seek to get as much performance from as little design as possible. These stickers were proposed as a way to improve locking practices of cyclists and thus reduce theft of parked bikes. The graphics and colours are chosen to lend an air of civic identity and familiarity – the graphics are simple and easy to understand even without being able to read the concise messaging that accompanies it. The idea of using small stickers on the bike stands rather than signs in the street surrounding them that deliver more visual clutter is important. It offers as a way of 'talking' to cyclists about how to lock their bikes rather than 'shouting' above the cacophony of other graphics competing for our attentions on our cluttered high streets. This sticker was tested in London and Brighton – again with JDI evaluating the results – and it was found to produce a 10% increase in secure locking practices – small but significant. We have licensed this design to a number of local authorities and are now in discussion as how best to roll these stickers out across London and beyond! See [www.bikeoff.org](http://www.bikeoff.org).

## 2. Designs Against Bag Theft

The British Crime surveys shows that in Britain a bag or mobile phone is stolen every minute. It is annoying to lose all our favourite things – money, mobiles, iPods and more – to sneak thieves. But even more overwhelming than the personal cost of such losses is the extra punishment of time spent canceling credit cards and re-cutting keys. So our Design Against Crime (DAC) Research Centre wanted to do something about pick-pocketing and bag theft, as annoying crimes against the person. Our 3 best designs include:

### Design Against Crime Chair

(available winter 2008 from Danish furniture supplier Dan-Form ([www.dan-form.dk](http://www.dan-form.dk)))



This DAC chair (1) looks lovely as design - no big locks or bars needed your bag safe from thieves and the floor tidy (2). It utilizes the defensible space of the body (the bag-holding slot is located near the genital region) to enable the individual to sit pretty secure on their belongings with the understanding that their unconscious is very awake to infringements in this region! (3) Designers Jackie Piper and Marcus Willcocks helped Lorraine Gamman deliver this design to Dan-form, who have licensed it recently. It will be on market from Winter 2008. We recognize that pickpocket/bag theft problems are not just about poor bag design but also about the furniture we respond to locate in public space. If you leave your bag on the floor or on the chair next to you – you make it too easy for thieves to simply slip away with it. So best to remove opportunities by sitting on your assets, preferable on a DAC chair.

## Karrysafe Scroll-Top Backpack

([www.fonehouse.co.uk/feelgood/karrysafe](http://www.fonehouse.co.uk/feelgood/karrysafe))



Rural backpacks for hiking were re appropriated for urban environments as city bags. What idiot designer first put an insecure bag opening on our urban backpacks away from our natural sightline is unknown to DAC, but he/ she seems to have inspired a million other idiot designers to come up with the same concept, and the rest of us to buy them.

The Karrysafe backpack, delivered for DAC by designers who were commission from Vexed Generation, offers anti crime functionality by (1) putting a simple combination lock on the bag of the bag so no one can get into it when the owner is not looking. (2) It also includes a side lanyard so users can secure their bag a train (Eurostar/) seat or the pub table when they need to go to the toilet/bar without having taking ALL their belongings with them. It also leaves you users

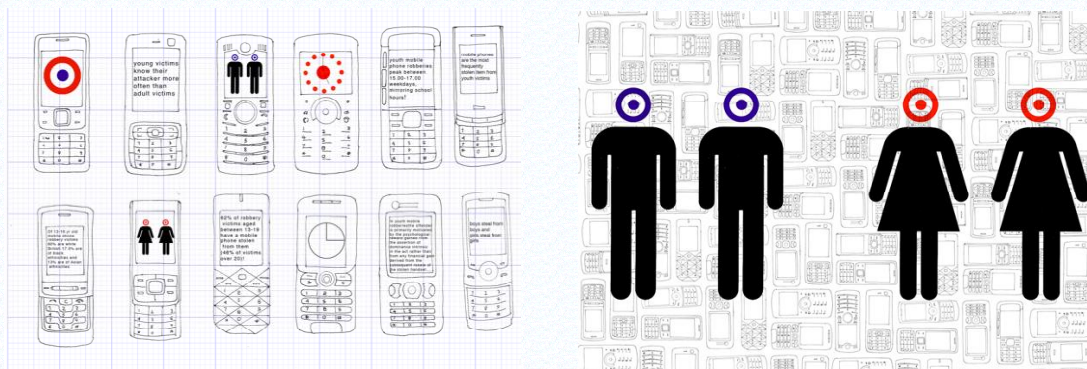
safe in the knowledge that no one can open their bag or remove it from the seat/table before they get back. (3) It takes 2 hands to open it (thieves usually “dip” with one hand) and (4) it uses Cordura – which is not a designated anti-slash material – but one that makes it hard for thieves to slash bags with simple knives or blades and thus get at possessions this way. Why this design hasn’t been copied by every major bag manufacturer/designer out there DAC has no idea – we suppose it is too sensible to catch on? But DAC still think its one of our best anti theft designs on the market and is currently available at £29.99 from [www.fonehouse.co.uk/feelgood/karrysafe](http://www.fonehouse.co.uk/feelgood/karrysafe).

## Is Mobility Messy?

The DAC team is still working on a low tech anti mobile phone theft device – and we can’t mention any more about it in this article, as the design won’t be available till the end of the year. Our sponsors, the British Transport Police (BTP), have briefed us to figure out how to make commuting safer from pickpockets and we are developing a relationship with a commercial client too. BTP came to us because our exhibition *Secure Design for Safer Travel* - at Victoria station successfully communicated via an anti crime wave of anti theft objects - that design can make a difference... even if mobility is invariably messy.



## 3. Mobile Phone Theft



So we have chosen the DAC anti mobile phone theft poster that appears on our design resource [www.inthebag.org.uk](http://www.inthebag.org.uk) (which is currently open to comment from viewers to help redesign the site in a more user-friendly way). Our point in choosing an illustrative design communication, as well as objects, is to remind everything that graphic communication has a role to play in helping to make crime prevention sexy and to design out crime from the world.

Full of facts about crime against young people, the poster reminds us that it's our young that get clobbered most for their phones. (Higgins 2006). But phone theft against young people often appears to be more about bullying than it is about stealing. Even though there are organized phone thieves out there who work in gangs and ship our stolen mobiles abroad after we have been "dipped", when it comes to young people - power (bullying) as well as profit may be the primary motive as to why kids get "taxed" by other kids for their mobiles.

#### 4. Design Against Burglary - Secured By Design Poster



Some part of London look like fortresses – such as Fortress Hackney – with its flats that feature iron bars on windows and barbed wire on supermarket. No wonder DAC feels the need to encourage more architects to think about crime BEFORE they design our buildings, hence this poster.

Retrofitted security looks criminal and worse, contributes to making people feel safe unsafe. Crime is a voracious form of planned obsolescence and a barrier to sustainable development because money spent on insurance up-grade of objects stolen through burglary fuels consuming passions. Worse, the costs of policing this sort of crime and dealing with the consequences of theft and vandalism, across the world, as we have already stated could be better spent on essential social infrastructure such as health, education, transport, and culture.