

Thinking Thief, Thinking Designer – Designing Out Crime from Places and Products

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Arts & Humanities
Research Council

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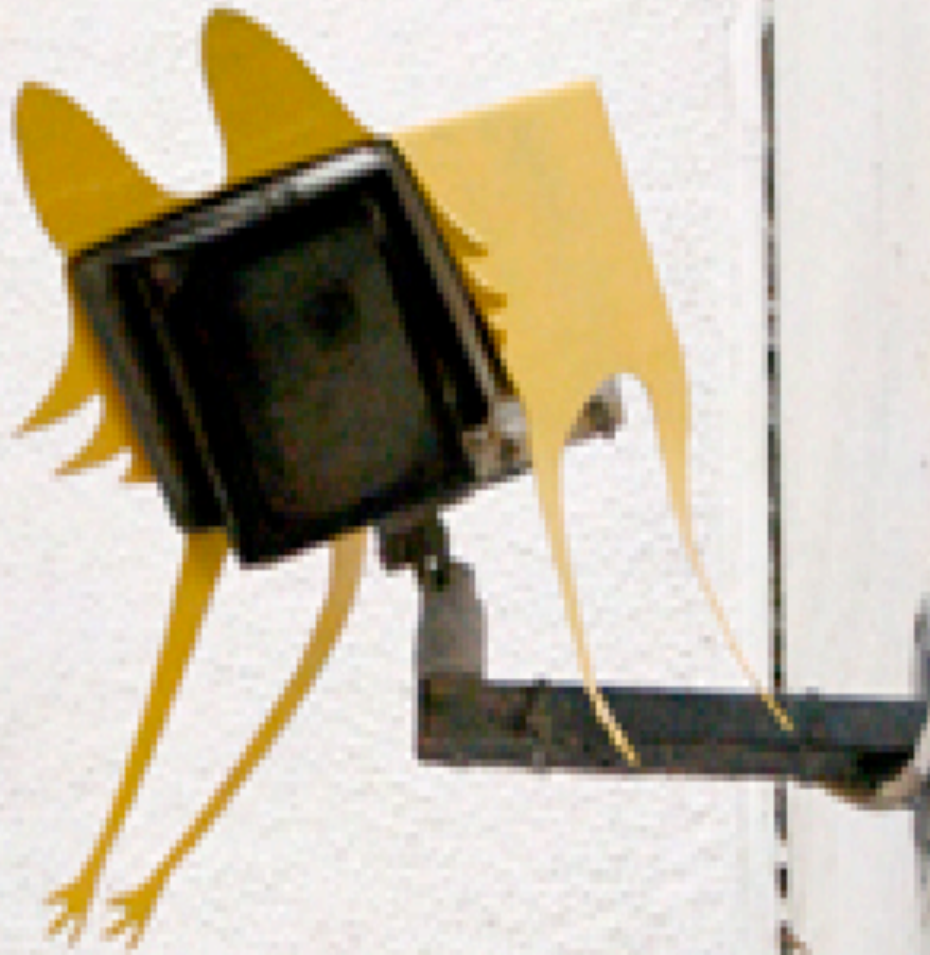
What is Design Against Crime?

DAC uses the tools, processes & products of design to work in partnership with agencies, companies, individuals and communities to

- prevent all kinds of **crime** – including antisocial behaviour, drug abuse/ dealing and terrorism
- promote quality of life & sustainable living through enhanced **community safety**

through designs that are 'fit for purpose' and contextually appropriate in all other respects

...and DAC can be quirky too



Scope of Design Against Crime

- Secure products
- Security products
- Security components
- Security features/ furniture
- Secure systems
- Secure information
- Security communication/ art
- Secure clothing
- Secure places/ environments
- Secure communities

Inherently secure product ... then



...and now - Vexed Generation/ Puma



Hard or soft target?



Evolution of a secure product – Preventing the clipping of coins



Hammered



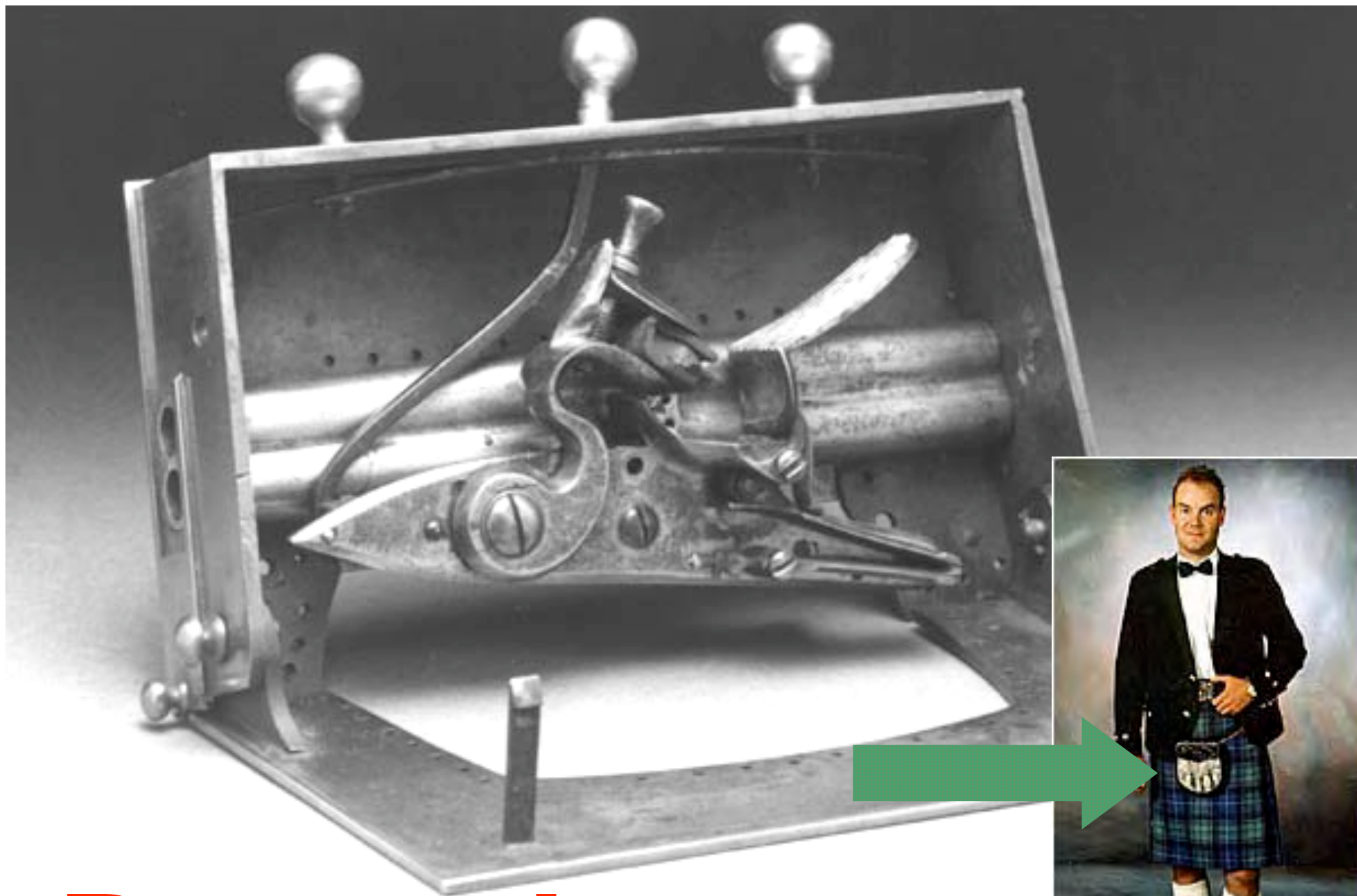
Milled

Security product – Clothes tagging device



Security Product/ Security Communication





Danger!



Security component – Brand Protection

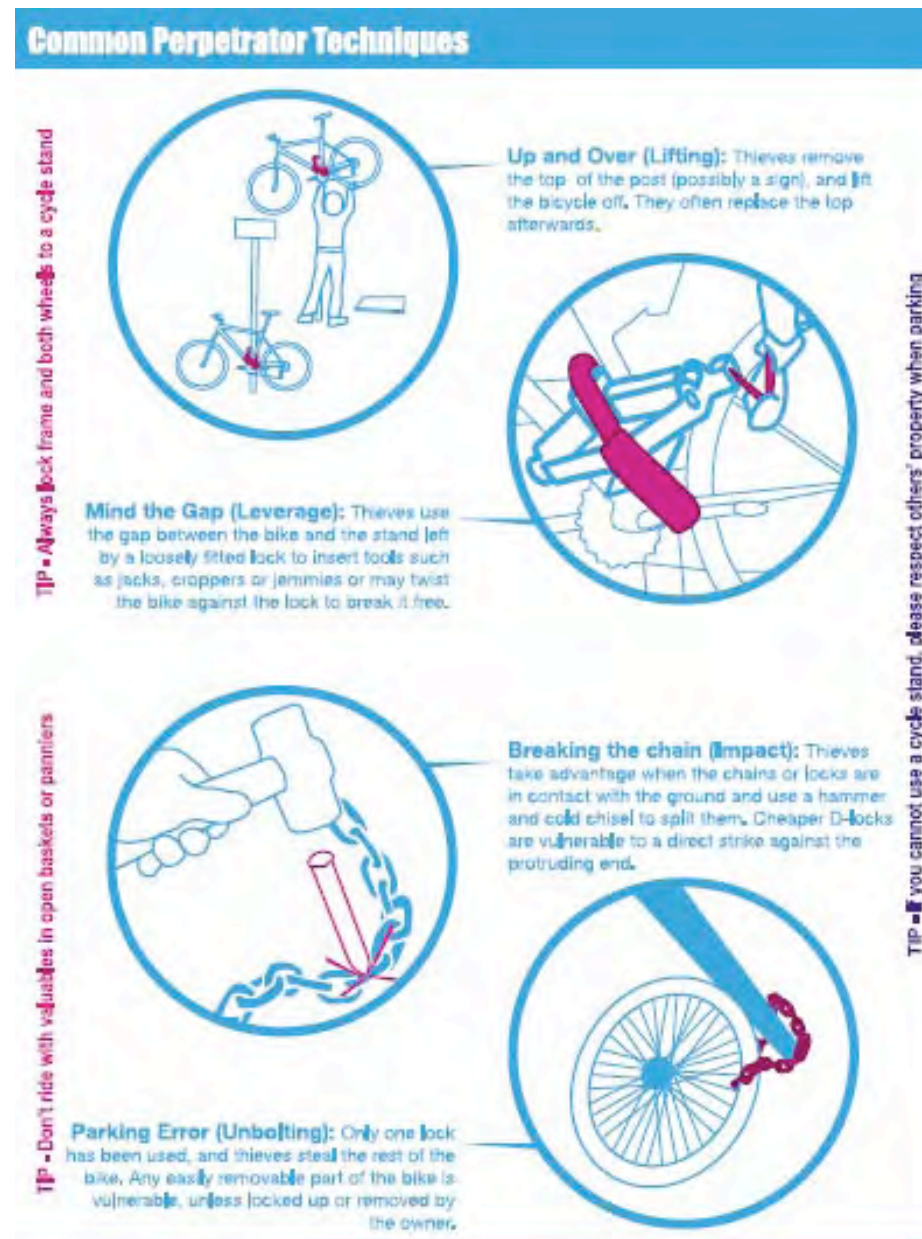
Security Features/ Furniture/ Accessories



Security System – Chips Protect High-Value Alpacas



Security Communication



Security Communication/Art



Security Clothing – Wearable Solutions



Secure Place: Maiden Castle



Secure Communities



Designing for social cohesion & conflict reduction

Hi-tech solution

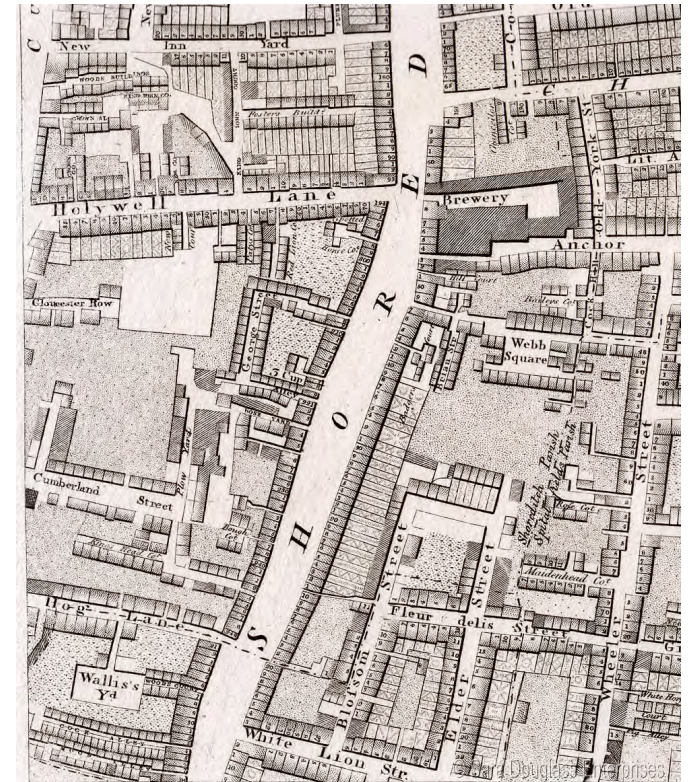
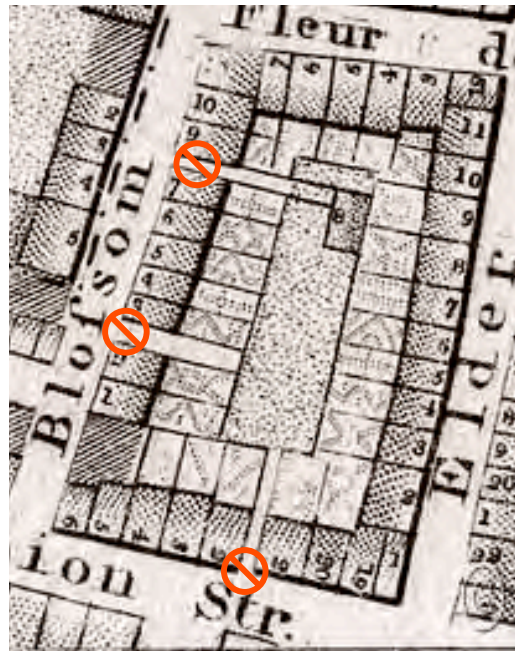


Lo-tech solution

Note that here,
security derives from
combined features of
product and place



Scale of DAC



Does DAC work?

- Car theft
- Mobile phone cloning
- Underground ticket machine slugs
- Secured By Design/CPTED
- But more hard evidence needed

The challenge of DAC



The challenge of DAC: Troublesome Tradeoffs

Can we design secure products *without* jeopardising their main purpose and *without* their being

- Inconvenient?
- User-unfriendly?
- Ugly? Effective but hideous & clunky engineering solutions
- A threat to privacy?
- Environmentally unfriendly?
- Unsafe?

Too expensive?



Yes! Tradeoffs can be resolved...

- **Where Design Expertise is fully engaged, early in the Design Process**
- **And all these considerations are incorporated in the Requirements Capture with sufficient priority**

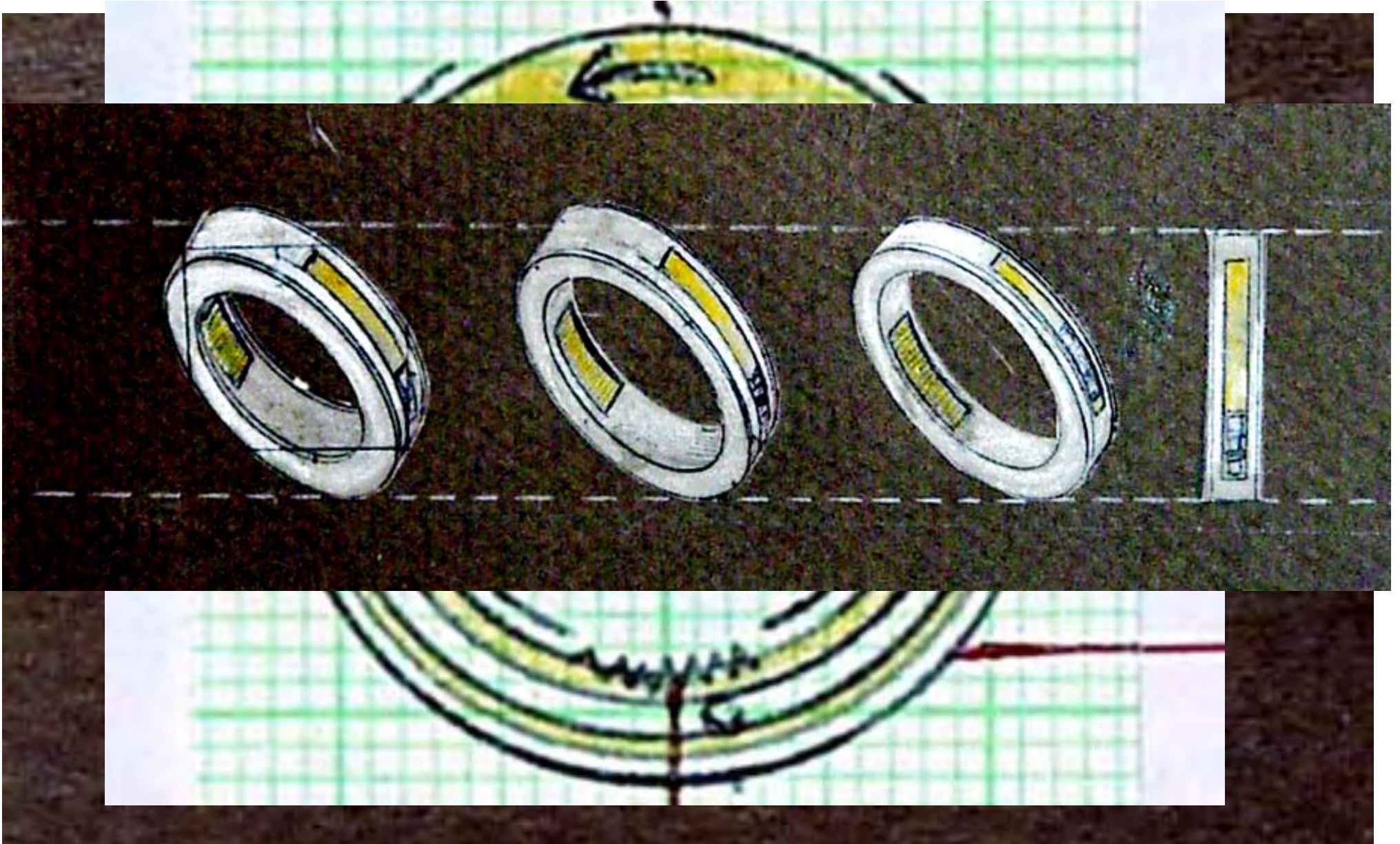
Secure products need not be ugly



DAC doesn't have to be expensive



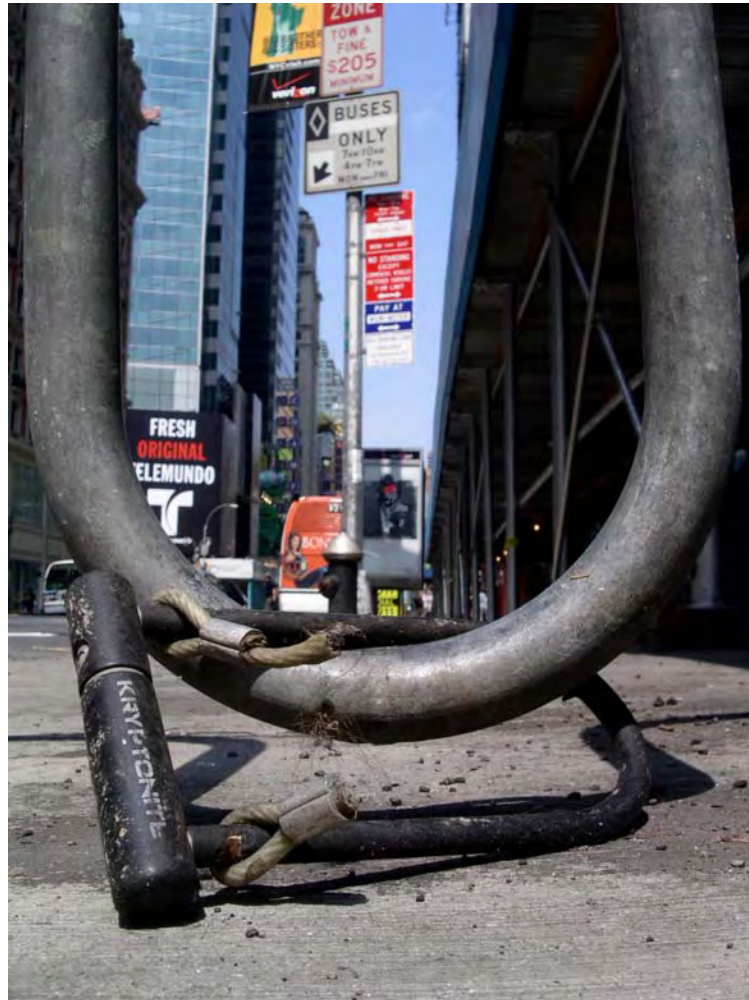
Subtle and dynamic – the ultimate tradeoff?



When is design not design?

1. The technofix

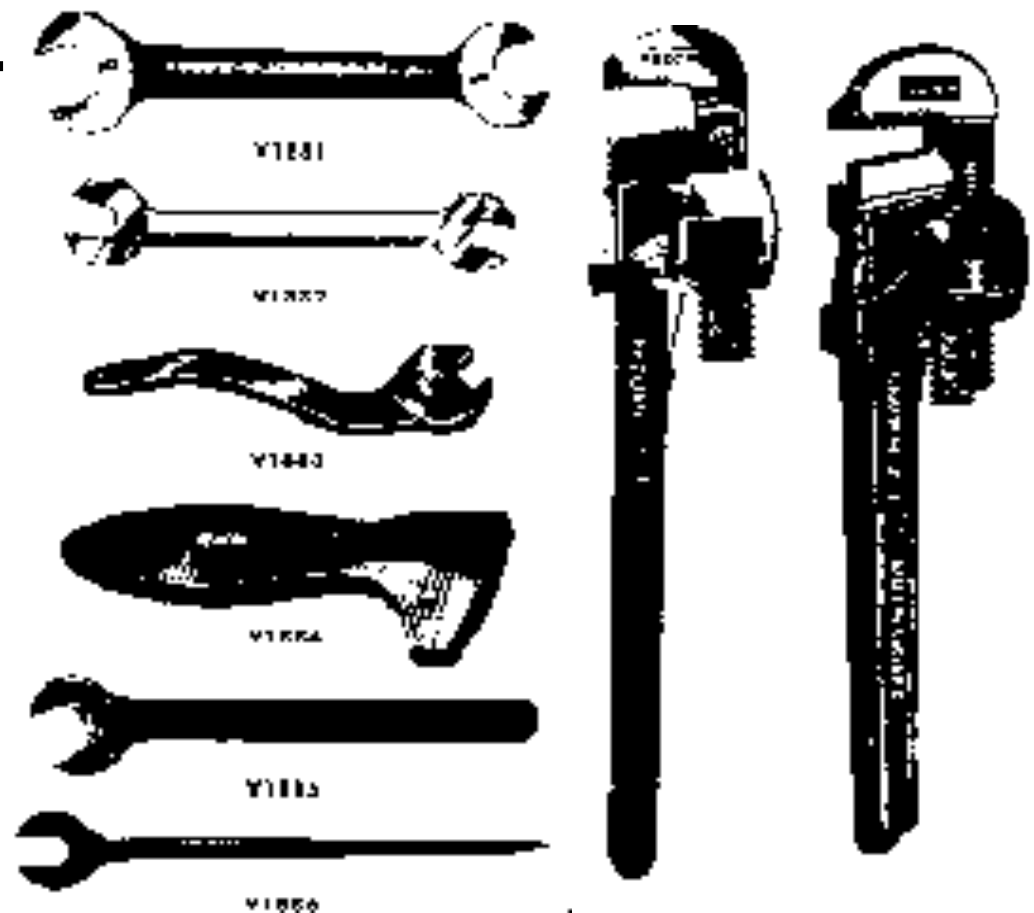
- Shallow, single, exposed line of defence
- Bolt on, drop off



When is design not design?

2. Heavy engineering

- Does the basic job well enough, but...
 - Clunky, not user-friendly
 - Ugly, maybe fear-inspiring



Problem...



Problem...



**'Engineering'
solution**



'Engineering' solutions



**More
aesthetic
solution**



Problem...



More aesthetic solution



...but where do the drinkers go?

More aesthetic solution

- Traditional style
- With backup



Anti-terror aesthetics



The challenge of DAC – **Caught unaware – failure to anticipate**

- Product designed naïve to crime
- Crime harvest
- Retrofit solutions
 - Constrained
 - Rushed
 - Legacy of crime and/or inconvenience

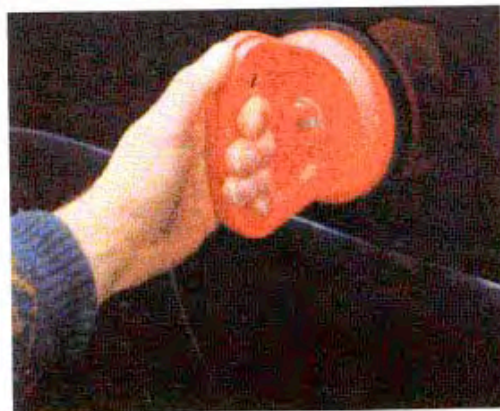
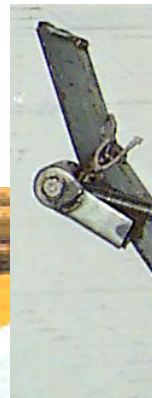




What made Queen Victoria go red?

The challenge of DAC – Offenders fight back

- Tactical countermoves
 - in situ
 - return better tooled
- Counter-exploitation
- Strategic counter-design
- Reverse engineering



Open to release



Close handles to pull out dents



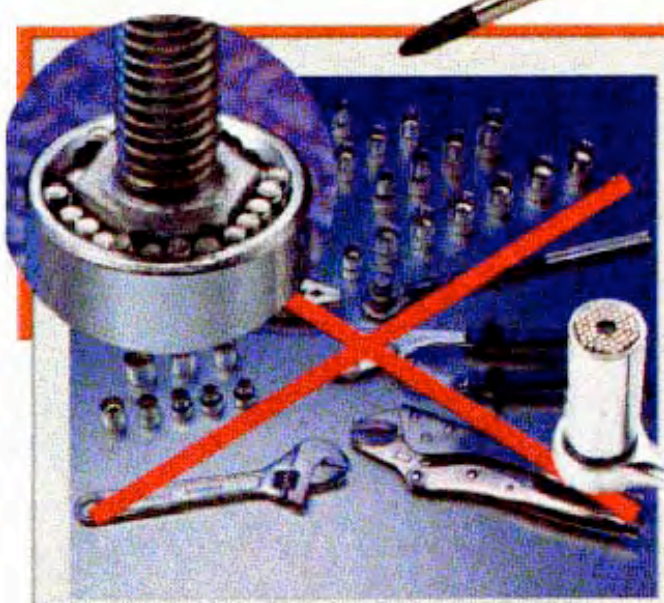
Repair car dents quickly and easily!

For minor dents on your bodywork the Dent Puller is the answer with vastly improved suction compared to others on the market. Simply place the cup over the dent, click the handles shut for automatic suction and gently pull out the dent. Open the handles to release the vacuum and remove without damaging the paintwork. No need to pay expensive panel beaters' bills! Can also be used to carry safely sheets of glass, metal, mirrors, etc.

Car Dent Puller Deluxe **£12.99** MX0220

The challenge of DAC – Obsolescence

- Adaptive offenders' countermoves
- Changing social conditions
- New tools/ skills for crime



One socket that does the work of a whole set

A DIY sensation from America, the Gator Grip Universal Socket replaces all your socket sets, both metric and imperial – as well as doing many of the jobs where you would normally use pliers or spanners. The unique internal arrangement of 54 steel pins grips any shape instantly, adjusting automatically for hex nuts, square nuts and wing nuts, even broken and rusted nuts so long as they still have at least one reasonably flat side. Designed to fit every nut and bolt from 7mm to 19mm ($\frac{1}{4}$ " to $\frac{3}{4}$ "), Gator Grip is precision-made from alloy steel and comes with a drop-forged ratchet handle (its standard $\frac{1}{2}$ " steel drive also fits your existing socket set handles and extension pieces).

Gator Grip **£24.99** MX0190








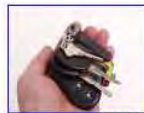









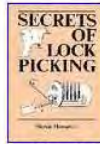


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Delivery is extra – please see order form.

Arms Race – Safes and Safecrackers



Spread of criminal know-how – from pubs & prisons to the Internet

 <p>... lock picking and lock pick equipment 236 x 195 pixels - 6k - jpg www.force-ten.com [More results from www.force-ten.com]</p>	 <p>Lock Picking 101 Guide to Lock ... 541 x 445 pixels - 54k - jpg www.geocities.com</p>	 <p>Lock Picking 101 Kit - Locksmith ... 223 x 298 pixels - 19k - jpg www.lockpickshop.com</p>	 <p>... get the pins out of the old lock 400 x 238 pixels - 28k - jpg www.howstuffworks.com</p>	 <p>Lock-Picking-Basics 225 x 334 pixels - 17k - jpg www.lockpickshop.com [More results from www.lockpickshop.com]</p>
 <p>Lock Picking 101 Guide to Lock ... 1632 x 1224 pixels - 263k - jpg img208.imageshack.us</p>	 <p>... lock pick into the tubular lock ... 350 x 262 pixels - 34k - jpg www.devonlocks.com</p>	 <p>Ideal Creations Lock Picking ... 300 x 222 pixels - 9k - jpg www.idealcreations.net</p>	 <p>... LOCK-PICKS-SHOP lock picks, ... 193 x 166 pixels - 17k - jpg www.lock-picks-shop.com</p>	 <p>LockPicking: After 2 days of talks ... 640 x 480 pixels - 65k - jpg photos.hackinthebox.org</p>
 <p>Lock Picking 101 Guide to Lock ... 1632 x 1224 pixels - 695k - jpg img157.imageshack.us</p>	 <p>Lock Picking 101 Guide to Lock ... 410 x 401 pixels - 35k - jpg www.geocities.com [More results from www.geocities.com]</p>	 <p>Lock Picking 101 - Lock Pick Shirt 400 x 334 pixels - 17k - gif www.hackerstickers.com [More results from www.hackerstickers.com]</p>	 <p>Improvised Lock Picking 150 x 194 pixels - 10k - jpg www.lock-picking.org [More results from www.lock-picking.org]</p>	 <p>Abus spool pin 285 x 524 pixels - 103k - jpg www.crypto.com</p>
 <p>Guide to using our Tubular Lock Pick 350 x 262 pixels - 34k - jpg www.devonlocks.com [More results from]</p>	 <p>... keys and against lock-picking 244 x 167 pixels - 35k - jpg www.chez.com</p>	 <p>Secrets of Lock Picking 181 x 254 pixels - 11k - jpg images.bestwebbuys.com</p>	 <p>ADVANCED LOCK PICKING SECRETS 295 x 475 pixels - 27k - jpg www.privateinvestigators.cc</p>	 <p>Lock Picking 101 Guide to Lock ... 1632 x 1224 pixels - 152k - jpg img436.imageshack.us</p>

Beware cookbook copying – Importance of context for replication

ELECTRONICALLY SECURED CYCLE PARKING

GHENT, BELGIUM



WALTHAMSTOW CENTRAL STATION, LONDON



False security from rigid prescription + adaptable criminals? ‘Helpful’ entrance porch



Meeting the challenge

- We have to innovate faster than offenders whilst adapting to context of users and crimes
- This needs
 - Motivation
 - Capacity development
 - Collaboration between Preventers and Designers

Implementing DAC through process:

Getting designers to

Think Thief

...and

crime preventers to

Draw on Design

Design – product or process?



- Is design what we make, how we make it, or both?

Importance of process knowledge – throwing away the cookbook

- Crime prevention requires practitioners to
 - Be adaptable, subtle, alert to tradeoffs – customising the response to context, and creating and configuring plausible proposals for new circumstances
 - Replication is innovation
 - Handle uncertainty and lack of complete knowledge of what works
 - Anticipate & allow for change
- This needs practitioners more like expert consultants than technicians

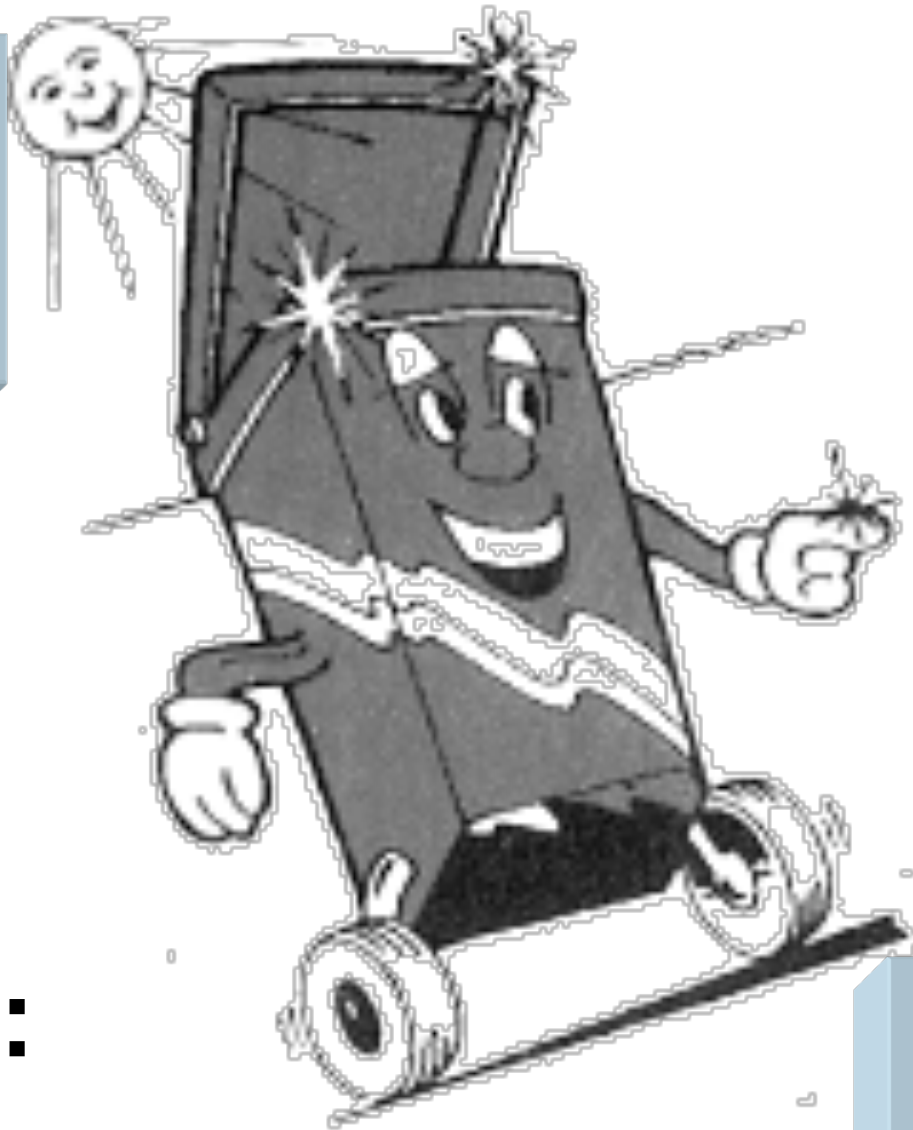


Helping designers think thief – Developing & building capacity for DAC

- Mindset
- Clear definitions – tools for thought
- Knowledge for interventions
- Knowledge management – capturing & replicating good practice and supporting innovation without stifling creativity
- Anticipation

A receptacle
for grime?

**Wrong
mindset
for design:
failure to
think thief**



Or a tool
for crime?

Failure to 'Think Drug User'



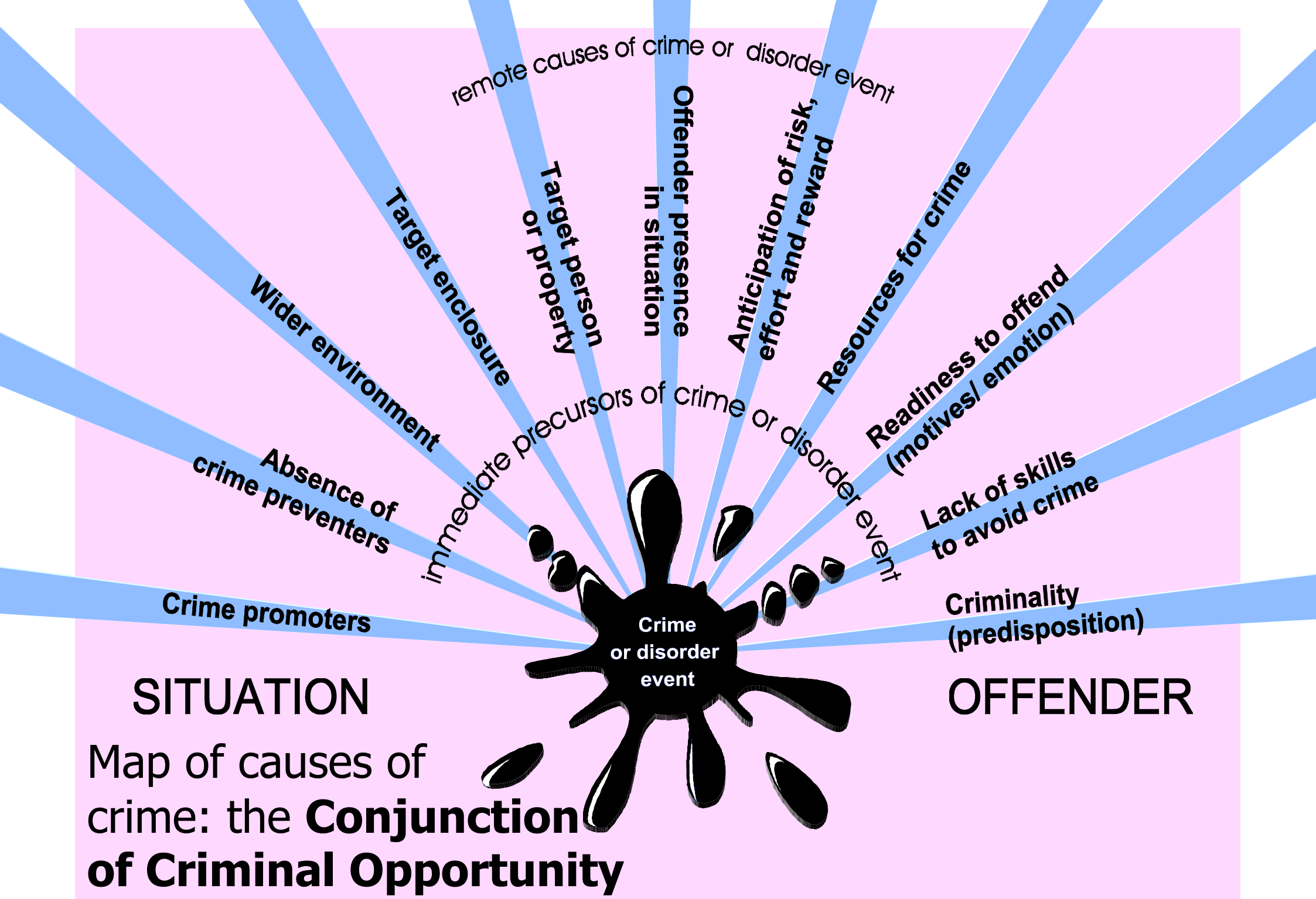
Giving designers knowledge from crime prevention – Maps and frameworks

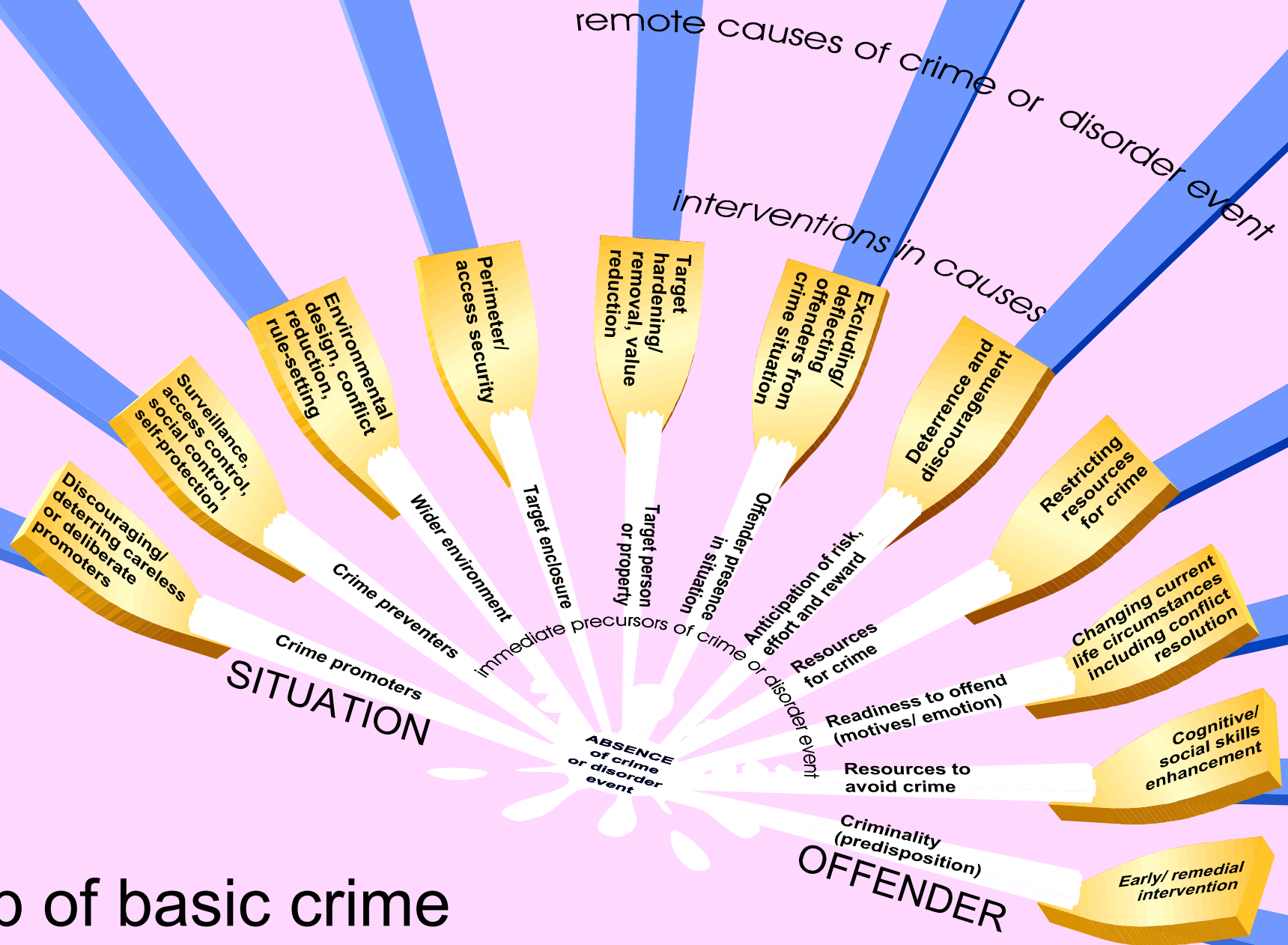
- Importance of *Rationale* for design –
Problem, consequences and context
 - Causes
 - Intervention principles
 - Intervention practice

Can use Crime Triangle



But I prefer...





Map of basic crime prevention **intervention principles**

**But... designers must be both
disciplined and creative**



Capturing dynamics – Scripts

- In situations which people repeatedly encounter – eg parking/storing bike – they learn which actions work best
- Result of this learning is a **script** – structured sequence of things to **attend to**, and things to **do/avoid**, in achieving some **purpose** or **goal/s**
- Scripts may be **flexible** and branching (plan A, plan B)
- Scripts may be associated with particular **roles** – with crime, these are **offenders, preventers, promoters**
- **User/preventer** script:

Find bike stand, park and lock bike, go to destination, return, find bike, unlock, exit, use

- **Abuser/offender** script:

Seek bike parking site, see, gain entry, release bike, take bike, escape, sell

Script *clashes*

- User and abuser have conflicting goals, causing script clashes:
 - Surveill v conceal
 - Exclude v permit entry
 - Wield force v resist it
 - Challenge suspect v give plausible response
 - Surprise/ambush v warning
 - Pursue v escape...
- Designers' task is to arrange the situation to favour the user over the abuser in each of these clashes in terms of the shifting dynamics of risk of harm, effort, reward
 - so the story ends with the bad guy losing!

The **Anticipation** dimension:

Every design is a bet on the future

- Can product be made?
- Will it work?
- Will it last or fall to bits?
- Will it sell at a profit – what's the competition?
- Will people use it as intended?
- *Will it be involved in crime?*

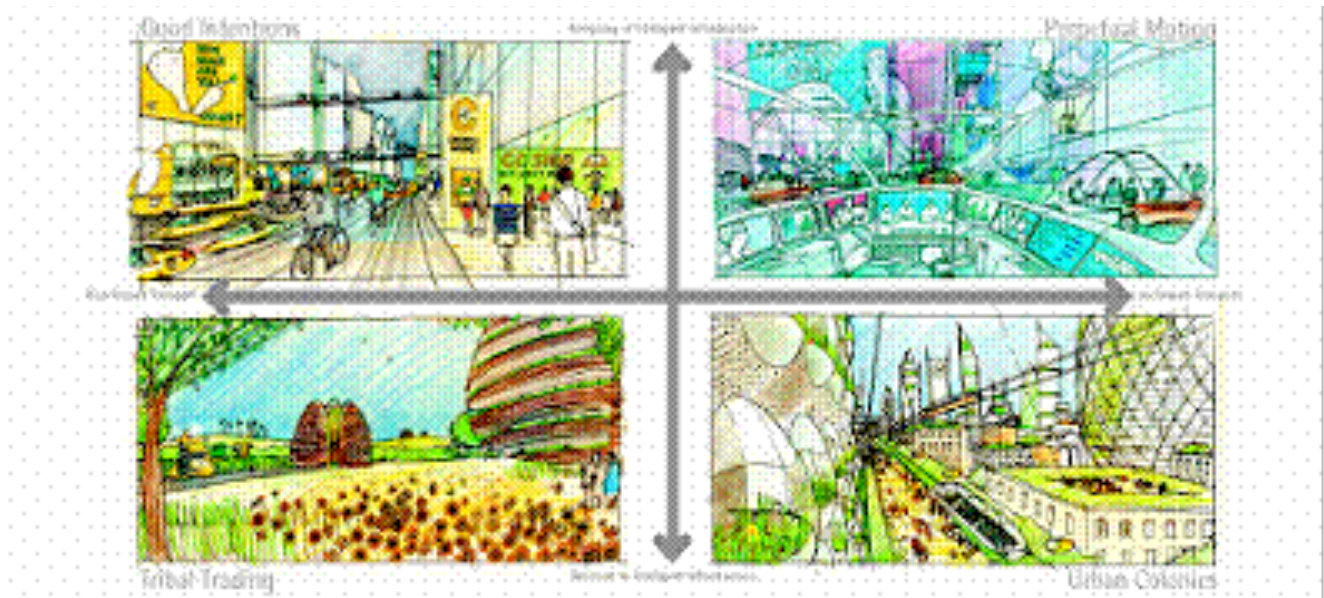


The **Anticipation** dimension

- **Crime Risk Assessment** – specific **incoming** threats from elsewhere affecting one's own activity
- **Crime Impact Assessment** – specific **exported** threats from own activity
- **Crime proofing** of designs/products
- **Horizon Scanning**
 - All-encompassing approach over a range of timescales eg 5-50yrs
 - needs wider knowledge of **trends** and forecasting of **events** over 'PESTLES' dimensions (political, economic, social, technological, legal, environmental, scientific) and their interactions
 - Makes plausible forecasts backed by **evidence, theory and logic** – inexact but not wild guesses or fringe ideas
 - Helps manage a **range** of risks and opportunities – 'futures thinking', not 'predicting a specific future' – policy and practice designed to be **robust across this range**

Crime and design - futures

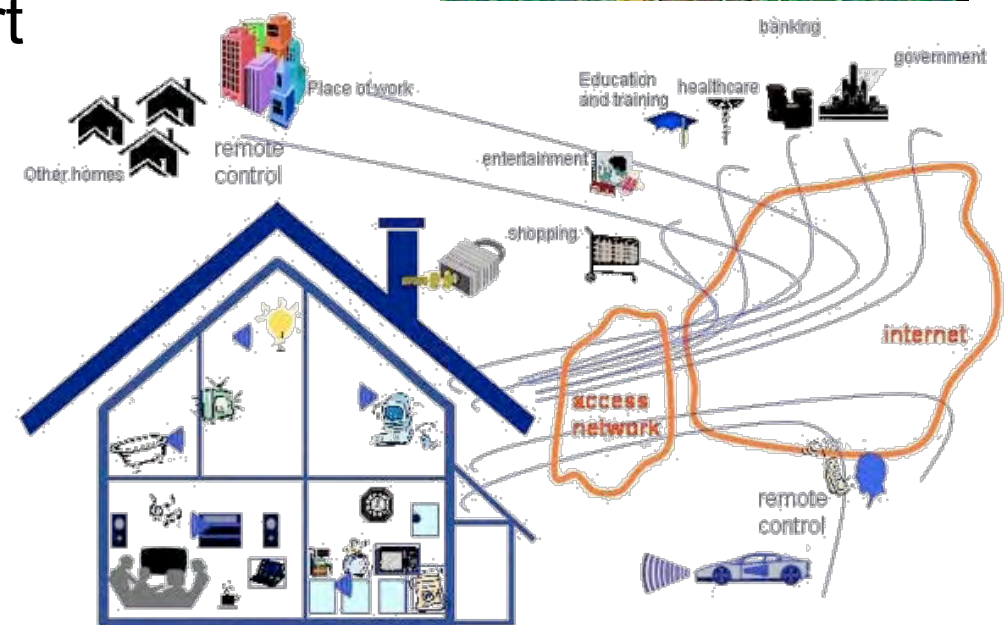
- Changing crime – new tools, new targets
- Changing priorities
 - Sustainability
 - Low energy
 - Resilience to climate shift, terrorism
 - Privacy/freedom v security



Crime and design - futures

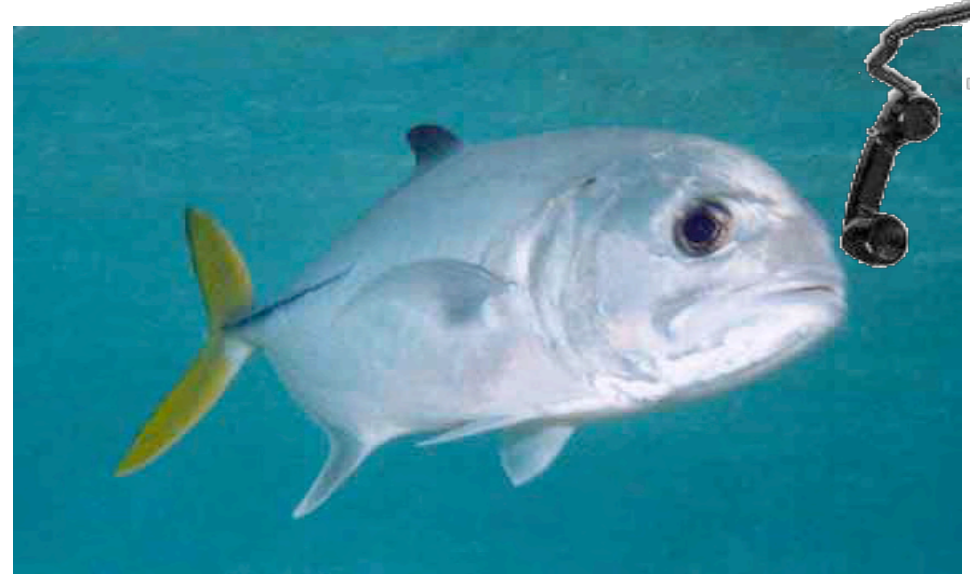
Changing context on all scales – crime threats and CP opportunities

- New land uses
- Blur between products, places, systems
- Intelligent homes/products linked to internet
- Automobiles v public transport
- Cameraphones – changing nature of ‘eyes on street’
- Intelligent CCTV, multimodal alarm systems
- New materials – sensitive, resilient, anti-graffiti?



How to Anticipate – Building on knowledge of correlations & causes

- Empirical approaches
 - Projection of linear trends
 - Statistical modelling of cycles etc
 - eg time series techniques
 - Risk and protective factors - CRAVED
 - But - **nonlinearities**
- Theory and logic
 - In each case we can use CCO (as an integrated map of crime theories) to systematically ask **‘Will the forecast changes affect *this* cause of crime, beneficially or harmfully? The potency and implementability of *this* preventive intervention?’** Can home in further by additionally using **types** of crime threat or of crime problem
 - Major issue with all theory is that many causes **interact** – CP theory has limited knowledge of such interactions
- Simulation – software agent-based modeling – may be able to explore emergent processes from these interactions



Misdeeds & Security Framework – for anticipating types of crime threat & crime prevention opportunity from scientific & technological innovations

Misdeeds (Ms)

Misappropriated - stolen

Mistreated – damaged

Misused – tool/weapon for crime

Mishandled – fraud, counterfeit

Misbehaved with – disorder/ASB

Mistaken – false alarm

Mistrusted/ Misunderstood

Misaligned – adverse side effects

Security (Ss)

Secured against theft

Safeguarded against damage

Shielded against misuse	Supporting justice/ crime reduction/ community safety
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Scam-proofed

‘Sivilised’

Slip-proofed

‘Sertain’ to report/ understand

Straightening adverse side-effects

Risk factors for Misappropriation

Hot Products

- **C**oncealable
- **R**emovable
- **A**vailable
- **V**aluable
- **E**njoyable
- **D**isposable



The Perils of Forecasting



Gearing up against crime – A dynamic strategy for arms races

- Encourage variety
- Design to performance standards/ generic principles
- Study offender resources – current and future
- Exploit new technology for prevention – eg wearable tech?
- Avoid rigidity - remember Tyrannosaurus
- Future proofing
- Pipelines
- Learn from other **evolutionary struggles**

Learning about MOs

Perpetrator Techniques: Dip Lift

modus operandi



Removal of articles from a bag without the owner's awareness

Dip

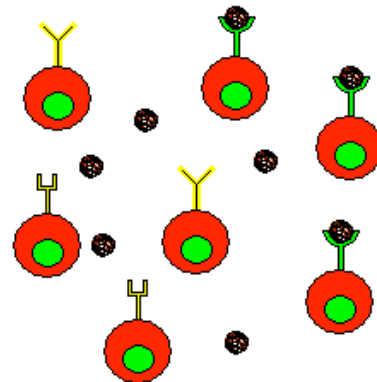
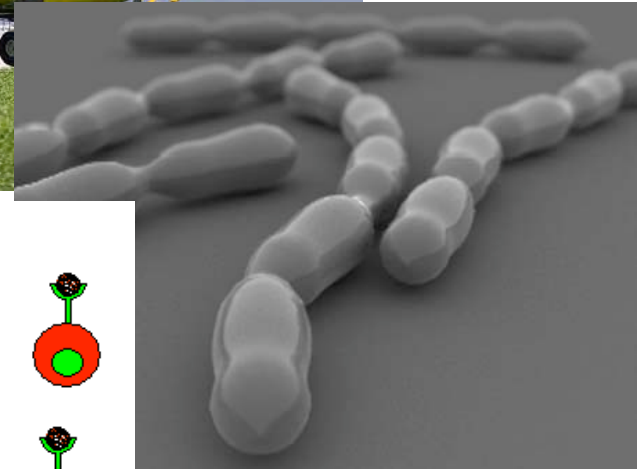
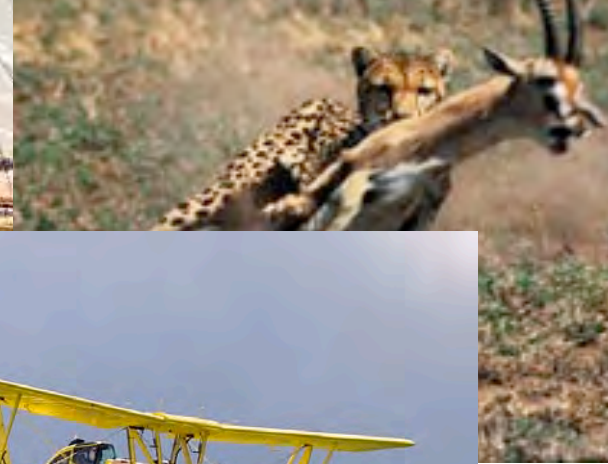


Removal of the bag and contents without the owner's awareness

Lift

Learning from other struggles

- Military
- Predator-prey
- Pest-farmer
- Bacteria-antibiotic
- Immune system-virus



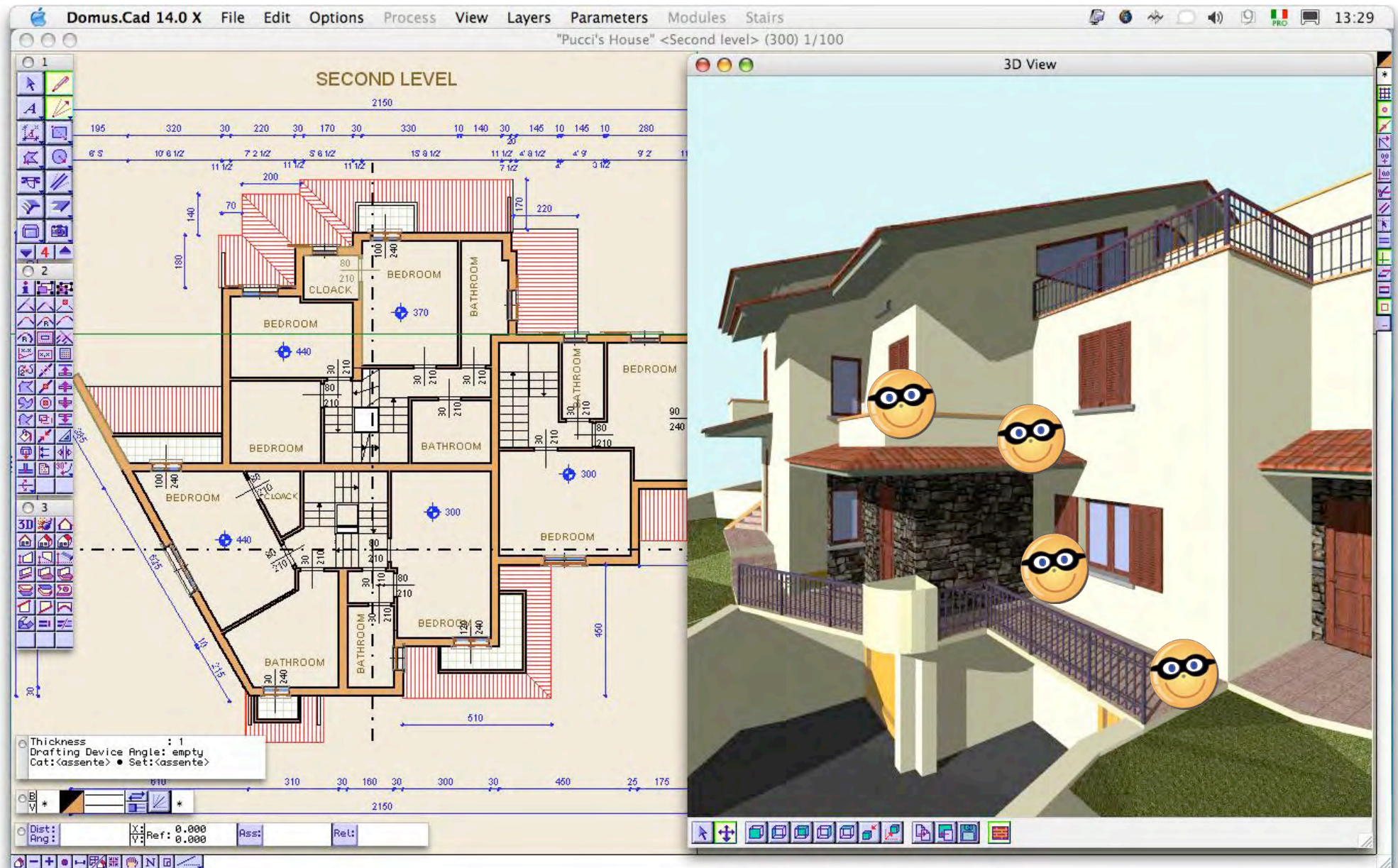
Boosting inventiveness to cut crime whilst respecting the tradeoffs

- **TRIZ** – a theory of inventive principles
- Based on analysis of **oodles** of patents
- 40 generic **Inventive Principles**
 - Including the comb-over?
- 39 **Contradiction Principles** – the sharper-expressed the contradiction, the easier the problem to solve...link to troublesome tradeoffs and the fundamental contradiction at the heart of crime prevention (user-friendly, abuser-unfriendly)
- **Lookup tables** – what inventive principles solved what contradictions in past?
- Analysis of **evolutionary trends** of invention (solid > segmented > flexible > field) – look for what's likely to be next to limit search for next solution



**Technology of design
visualisation –
Helping designers, clients and users
with virtual reality design aids**

Computer aided design



Virtual Reality for lighting design

- Enables designers to visualise lighting before implementation
- Provides a means of communicating design ideas to different interest groups







Criminogenic products – Who is responsible? Are designers complicit in crime?

- Loss/ replacement benefits industry...and owner too
- Designed-in obsolescence
- Fashion – *must* get new model, new style
- Leading architect: ‘crime is not the fault of the design, but of the people’
- Crime is a hidden cost or tax – but should polluter always pay?

Mobilising designers and design decisionmakers

- Clarify crime prevention roles/ tasks to achieve
- Locate appropriate preventive agents
- Alert them
- Inform them
- Motivate them
- Empower them - increase capacity
- Direct them - objectives, standards



Contact us at

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www.designagainstcrime.com/web/crimeframeworks

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**DESIGN
AGAINST
CRIME**

