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A 'Criminal Personas' Approach to Countering Criminal Creativity

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Abstract.

This paper describes a pilot study of a 'criminal personas' approach to countering criminal creativity. The value of the personas approach has been assessed by comparing the identification of criminal opportunity, through 'traditional' brainstorming and then through 'criminal personas' brainstorming.

The method involved brainstorm sessions with Computer Forensics Practitioners and with Product Designers, where they were required to generate criminal scenarios, select the most serious criminal opportunities, and propose means of countering them.

The findings indicated that there was merit in further research in the development and application of the 'criminal personas' approach. The generation of criminal opportunity ideas and proposal of counter criminal solutions were both greater when the brainstorm approach involved the group responding through their given criminal personas.

Introduction.

Criminal personas, as an approach to concept generation and design development, was practiced by Hilton (1989) as a method for developing a series of tamper evident packaging solutions, which won him a Royal Society of Arts design award. The purpose of this paper is to build on Hilton's (1989, 2002, 2003) work and apply these principles associated with design development, and to determine whether they can be applied to other areas of

criminal activity, so as to enhance the design of preventative measures. The work of Ekblom (1997) may be taken to support an approach of this nature.

‘...Designers have to undertake a major shift in perspective. Their normal stance is one of catering for users who own or operate their products ‘as intended’ – or, if not, any misuse is without malicious intent. But the offender sees the target of crime, and its environment, from a completely different angle.’

Ekblom (1997)

The aim of this project was to compare effectiveness of a persona approach in proposing counter measures to criminal opportunities in both physical and virtual environments. Computer forensics was chosen as a field of study, in addition to product, because of the growth in computer crime (National High Technology Crime Unit, 2003; Casey 2004) and because of the growing interdisciplinary work and synergy between the School of Design and the School of Computing, Engineering and Information Sciences (CEIS). The School of CEIS has been developing expertise in computer forensics as a means of countering computer crime.

This programme of research has taken the initial approach of a single persona further, as a group ‘personas’ activity, extending the thinking developed during an investigation of individual differences in motivation, Hilton (2002), and the value of ‘method acting’ within the design process, Hilton (2003), with reference to Boal (1992). The 2003 application of method acting involved design students getting ‘into character’ to enable them to develop new perspectives in identifying and developing innovative opportunities.

The wider, future context of this research is to investigate differences in creativity between ‘designers’, ‘computer forensics practitioners’ and

'criminals', to provide new perspectives on countering criminal creativity. The extended programme would first aim to investigate creative method and ability, but secondly personality, motivation, task processing and social background factors, to gain a holistic appreciation of potential differences. This would enable the present 'Assumption Personas' (Pruitt and Aldin, 1996), constructed through professional experience and secondary research through literature review, to be developed into 'data-driven Persona Profiles' through primary research. This paper seeks to disseminate the merit of this field of research at the outset of this programme, from the initial indicative findings.

In the discipline of computer forensics, creativity in criminals provides a continuous challenge for those involved in the prevention of crime and the design and implementation of security of computer systems as well as those involved in the detection, collection of evidence, analysis of evidence and resolution of computer crime cases, whilst maintaining evidential integrity and evidential continuity. In addition, it should be noted that Ekblom (1997) comments that those involved in criminology would benefit from learning to think like designers, something the extended programme of research could also look to inform of.

The overall hypothesis for the programme is: *'It is possible to develop a range of Criminal Personas, which may be used by product designers and computer forensic practitioners to enable the countering of criminal creativity.'*

In order to provide research focus, this project has been constrained to the consideration of theft and vandalism. The reason for this is that while it is acknowledged that there are many types of crime needing prevention, design is considered to have more immediate impact in the prevention of those criminal activities involving products and services. Additionally, it is acknowledged that there are now both physical and electronic environments for crime, and it is considered of interest to investigate differences between these criminal environment opportunities and the transferability of counter-criminal approaches from one environment to the other.

It is intended that the future of this research programme involves a primary research approach, as supported by Ekblom (1997) and Downes and Rock (2003), directly interviewing and testing criminal individuals, who are either imprisoned or on probation. This is similar to work undertaken with criminals convicted of fraud (Gill, 2005). This approach has also been positively supported by criminologists, computer forensics practitioners and members of the police service in preparatory discussions. However, in the short term, descriptions of criminal types, gleaned from literature reviews alone, were used to create five 'Criminal Personas' for the pilot test. This approach was taken in order to establish the value in pursuing this line of enquiry further. The following section describes the context involved in the development of this investigation and the proposed programme of further research.

Context.

In drama, and now in design, we may refer to categories of person type as characters (Boal, 1992) or personas (Pruitt and Aldin, 1996), whereas in criminology and forensics (including computer forensics), types may be referred to in terms of profiles Pinizzotto and Finkel (1990). Characters, personas and profiles have all been used to aid the communication of anticipated behaviours in response to changes, including new opportunities. In conjunction with the development of scenarios, personas especially help to tell a story and enable their audience to perceive and engage with them as real individuals rather than a set of summary facts.

It was observed on review of the literature that the majority of criminal profiling to date has focused upon murderers and sex criminals. In the cases where profiling has been used in connection with burglary, it has been where the criminals have displayed victimisation behaviour, leaving messages or calling cards, (Bartol and Bartol, 2005). In summary of profiling, there are many perspectives and approaches on categorising criminal traits, but at present the reliability and success rate has been found to be questionable, possibly due to the complexity of influences on individual differences, (Pinizzotto and Finkel, 1990). So at this time it seems unlikely that a perfect 'off-the-shelf' profile or persona set can be accessed.

While the 'reactive' intent of profiles has been to track and catch criminals, the proposed 'proactive' intent of personas is to provide new perspectives on countering opportunities for criminal creativity. Therefore, the purpose of this

research is to identify how using a personas approach, (Pruitt and Aldin, 1996), can benefit practitioners. Looser profiling may still prove effective for the purpose of brainstorm processes, focus groups, or as prompts in reflective practice, (Schon, 1983). However, it is acknowledged that the extended programme of research is likely to find that effective persona sets are developed specific to criminal environments.

The pervasive and ubiquitous nature of computing and Information Technology, coupled with the requirement of systems being convenient and easy to operate for users, mean that computer systems are vulnerable and more susceptible to being compromised by criminal activity. The computing environment is such that any criminal so motivated will find it relatively cheap and easy to enter into computer crime activities. As well as being cheap (hardware costs continue to drop) and easy to enter (technical requirements are not high and systems security is rarely robust) motivation for computer crime centres on relatively high economic rewards with relatively reduced risks when compared to “traditional” face to face crime. Similarly, punishment from the judicial system for those who are caught tends to be less severe because computer crime is perceived of as victimless. Another reason for entry into computer crime is because of the reluctance of business or organisations, which have been compromised, to report the crime on intrusion for fear of the reaction of customers or the market place. The 2003 National High Technology Crime Unit report indicates a potential 25% drop in business if customers perceive that organisations are susceptible to computer attack.

Casey (2004) suggests that “criminal motive is generally technology independent” and Grabosky (2000) advocates that the motivations to engage in computer crime are not new, but that the “element of novelty resides in the unprecedented facility of technology to facilitate acting on these motivations”. Grabosky (2000) goes on to argue that the motivations for those committing computer crime are diverse and include “greed, lust, power, revenge, adventure and the desire to taste ‘forbidden fruit’”. Rogers (2001) suggests a similar set of motivations for computer criminals including status, greed, money, revenge, anger, perversion politics and a desire for power.

Turvey, (2002) developed 5 general motivating typologies for computer crime; power assurance, anger realisation, sadistic, opportunistic and profit. Casey (2004) shifted the emphasis from classification of offenders to classifying offence behaviours, so the typologies were presented as; power reassurance, power assertive, anger retaliatory, sadistic, opportunistic and profit oriented.

Whether motivated by curiosity, economic gain or vindictiveness computer criminals have the potential for inflicting massive harm (Hundley and Anderson, 1995; Schwartau, 1994; and Denning 1999).

Many participants in computer crime do not necessarily appreciate the harm that they may cause and appear to be motivated by the “game” in which computer systems provide an intellectual challenge. They do not perceive that they are doing anything wrong by “breaking into” the target system.

The Criminal Personas.

Gudjonsson's and Sigurdsson's (2004) 5 criminal motivation forms:

Compliance, Provocation, Financial, Excitement, and Consequences, were decided on review of the literature, to be most suited as labels for the pilot criminal personas, because of their relation to the areas of theft and vandalism. These character labels and descriptors were expanded into 'assumption personas', (Pruitt and Aldin, 1996), using additional secondary data from literature including: Eysenck (1977,1987), Zuckerman (1979), Bandura (1977), Cornish and Clarke (1986), Katz (1988), Becker (1991), Cromwell (1996), Ruggiero (2000), Higgins and Thies (1981), McMurrin *et al.* (2001), Costa and McCrae (1992), and Walters *et al.* (2002). Descriptive elements from these works, which corresponded with the 'assumption personas', were used to build a greater sense of each individual, resulting in these initial, condensed, persona descriptors:

Excitement: Late teens. Extrovert: enjoys impulsive, sensation-seeking. A joy-rider and shoplifter. Able to 'Cut-off' from fear of consequences, e.g. of injury or imprisonment. Believes they know what they are doing, rather than just being lucky so far.

Consequences: Early twenties. Introvert. Enjoys planning actions and demonstrating their technical skills, setting up puzzles, mysteries and booby-traps. Neurotic: A propensity to become anxious. Has some compulsive behaviours.

Compliance: Mid-teens. Peer pressured and image conscious.

Mollifying responsibility for criminal actions, blaming others, or establishing self as a victim of external forces.

Provocation: Mid-Twenties. Psychotic: An Underdeveloped moral perception, resulting in a lack of sense of guilt, involving a dehumanisation of their victims. Has indulged in Expressive Burglary: as a 'Dominant' choosing to enter occupied homes. A Power Orientation thinking style, geared for control of the social environment through manipulation, intimidation and interpersonal violence.

Financial: Mid-Twenties. Motivated towards fraud and robbery, preferring high-payout low-risk activities. They assume that if they are nice about their criminal activity it will have no serious consequences.

Method.

To pilot test the value of this personas approach to concept generation in countering criminal creativity the method involved two participant types: Product Designers and Computer Forensics Practitioners. Each type was further split into two groups: Those brainstorming by traditional facilitation, and those by adoption of the five personas, which were allotted one per member.

The purpose of groups is to enable comparison of results to determine any benefits of the persona approach. The purpose of the themes and opportunities meanwhile was to compare responses to different areas of crime. Each 2 hour brainstorm session considered the two themes of opportunity: Theft and Vandalism. And each session was divided into two

parts: Part one required the generation of criminal scenarios for three opportunities, and part two considered the most promising criminal applications and suggestions made and how these scenarios might be countered in a proactive/avoidance sense.

The intention with the suggested opportunities was to use examples which were non-typical, where a 'crowbar' for theft and a 'brick' for vandalism would be considered typical Physical opportunities. The reason for this was that with typical examples the participants might engage more in a recall activity than a creative activity. To generate the opportunity themes a number of ideas were 'brain dumped', a creative fluency process involving writing down ideas until individuals 'dry up', followed by a review. The review initially grouped the ideas into similar themes, and looked for the best options for three dissimilar themes for each criminal act type. However, this approach proved easier with the Physical than Virtual criminal opportunities, due to the more specialist focus of computer forensics. Physical options included super-glue (isocyanate glue) and remote control (RC) toys, whereas Virtual options included:

- 'Phishing', i.e. using e-mail, or other communications means, to get potential victims to divulge personal data such as bank accounts, passwords, mother's maiden name etc. The details can then be used to gain illegal access to accounts or databases which can in turn lead to electronic theft or ID theft; and

- Malware which is the generic terms given to software such as computer viruses and 'Trojans' which hide themselves on computer systems and carry out malicious operations.

The participants for the Computer Forensics sessions were from academia and Northumbria police force's cyber-crime unit (part of the force's Economic Fraud Unit), whereas the Product Designer sessions were each composed of 5 academic staff, post-graduate and contract researchers from the School of Design. In the case of the Computer Forensics sessions, more participants were invited than the ten required. This was to ensure that each persona was represented. The participant mix was spread equally between the brainstorm groups, and in the case of the Computer Forensics additional participants, they were given a persona at random from the second set. Because of constraints on commitment of participant's time only one of each brainstorm condition was run, a total of four brainstorm sessions. Criminal opportunities were considered for theme against type:

Table 1. Criminal Themes and Opportunities.

	Theft using	Vandalism using
Physical		
1.	Web-cam	Isocyanate Glue
2.	Bum-bag	RC Toy
3.	Chewing-gum	Mobile phone
Virtual		
1.	Spyware	Malware
2.	Phishing	Identity
3.	Piracy	Denial of Service

Results.

In the comparative analysis of the results, two questions were key:

1. Does a criminal personas approach provide greater benefit over a traditional approach to brainstorming within these context themes?
2. Does the criminal personas approach indicate more benefit to one context theme of opportunity over the other?

The incomparable nature of the Physical – Virtual subject-matter meant that it was not possible to do any further analysis as to whether there was more benefit from adopting the criminal personas approach for one profession over the other.

In terms of assessing the ideas, an idea count measured creative fluency, and a count was made of the number of potential solutions given within the session's review period. Brainstorm effectiveness might normally be evaluated on the number of ideas that had a positive impact on the design development process, but since there was no intention to develop ideas from these pilot sessions, a more quantitative measure was taken to compare session outcomes.

Responses generated from these sessions included legislation for non-stick chewing-gum. This was in response to the scenario that chewing-gum can be misused to attach money or items underneath larger objects that individuals

can leave the scene with unquestioned. To the scenario of a bum-bag being unzipped unnoticed by a thief, a deterrent proposed was that the bag was made from a large number of coloured zips, only one of which opens, and the owner knows the colour. An age limit was suggested for the purchase of items like super-glue to reduce misuse. The suggestion that proximity sensitive credit cards, which can only be swiped in the presence of the owner, could reduce opportunities for the copying of credit card data. Also, 'e-community service', using virus developers in a poacher-turned-gamekeeper scenario to develop and distribute free anti-virus viruses.

Session participants were asked whether they believed their Persona's were a helpful tool and whether they felt they had really engaged with them. There was a positive response, that the role-play had been useful. The Product Designers reported that they were aware of dipping in and out of character rather than being in character the whole session. The Computer Forensics Practitioners noted that the Financial and Compliance personas seemed less effective in enabling idea generation than the other three personas. These observations may reflect differences in thinking styles between the subjects and professions, which might be better understood through the further programme of research.

Table 2. Traditional Brainstorm Results, figures per person.

Traditional	Theft			Vandalism		
		Ideas	Solutions		Ideas	Solutions
Physical						
1.	Web-cam	4.0	2.4	Isocyanate Glue	5.4	2.6
2.	Bum-bag	3.2	2.0	RC Toy	4.4	1.6
3.	Chewing-gum	4.6	2.4	Mobile phone	5.0	1.6
Average		3.9	2.3		4.9	1.9
Virtual						
1.	Spyware	4.0	0.4	Malware	5.8	0
2.	Phishing	5.0	0.5	Identity	4.9	0.1
3.	Piracy	7.3	0.5	Denial of Service	6.0	0
Average		5.4	0.5		5.6	0

Table 3. Personas Brainstorm Results, figures per person.

Personas	Theft			Vandalism		
		Ideas	Solutions		Ideas	Solutions
Physical						
1.	Web-cam	3.6	1.4	Isocyanate Glue	7.0	1.4
2.	Bum-bag	5.6	1.6	RC Toy	4.2	1.4
3.	Chewing-gum	5.4	3.4	Mobile phone	4.4	1.4
Average		4.9	2.1		5.2	1.4
Virtual						
1.	Spyware	2.3	0.7	Malware	3.2	0.7
2.	Phishing	2.7	0.7	Identity	2.1	0.6
3.	Piracy	4.0	0.7	Denial of Service	2.3	0.4
Average		3.0	0.7		2.5	0.6

So, in response to the two key questions:

1. The experiment indicated that there was a benefit to the Criminal Personas approach to brainstorming. However, there was found to be a difference in where that benefit lay. For the Product Designers the benefit was in Creative Fluency (Ideas), whereas for the Computer Forensics Practitioners it was in Responsiveness (Solutions). It is not possible to reason why at this stage, without further research.
2. The Product Designers and the Computer Forensics Practitioners found greater effectiveness with Responsiveness (Solutions) working with the Theft theme as opposed to Vandalism. This might be because it is seen to be so much easier to destroy than to steal successfully.

Discussion.

There seems likely to be differences in how professions would gain benefit from the application of a criminal personas approach in their services and processes. Greater understanding of application issues would be a key aim of further research. However, that would be subordinate to the research aim of developing sets of Criminal Personas by investigating differences in creative thinking processes.

The results indicated that there may be a difference in how applicable a personas approach is to different topics, but again until the Criminal Personas are more fully developed and tested with a broader sample group, it is too early to draw firm conclusions.

The investigation of criminal types is hoped to gain collaborative support because its aim will be to take a creativity focus on profiling, with a view to informing crime preventative design processes, asking how 'criminal thinking' individuals:

1. Identify criminal opportunities
2. Generate ideas for acquiring gain
3. Critically review criminal ideas
4. Use criminal criteria to decide upon action

It is proposed that in the further research the control condition profiles will be generated by asking Product Designers and Computer Forensics Practitioners the non-criminal versions of the above process questions.

By comparing and contrasting criminal and non-criminal creative processes, the differences highlighted should enable more effective guidance in countering criminal creativity. However, the creation of this knowledge will lead to the issue of application, and the question of training people in effective use of Criminal Personas.

The organisation of the brainstorm sessions in this pilot study faced the challenge of not knowing for certain who would be able to participate on the day, requiring that the personas were given out at the start of the session. While this approach may have avoided some people slipping into other persona perspectives during the session, the lack of immersion time may not have been as effective as it could have been, because the participants were

only given a few minutes preparation to get in-character. It is proposed that in the future research, Drama techniques for getting into character might be developed with the Product Designers and Computer Forensics Practitioners to determine the most effective form of engagement and skill development for those professions.

Conclusion.

A significant amount of research has already been carried out on approaches to the categorisation and profiling of criminal types. The major approaches have related to type of activity, motivation to engage, perception of consequences, and personality. However, no evidence was found of an in-depth investigation of criminal creativity and its types.

The approach of researching, and practicing, the countering of criminal creativity, adopted for this investigation, has not been to propose that all criminals are creative, nor that all creatives could be enabled to think like a criminal. The proposition has been that a percentage of criminals will display creative capacity in the way that they identify and acquire criminal opportunities, and a percentage of creatives will be capable of criminal thinking, in 'role-play', to identify and then creatively counter opportunities for crime.

The results of this pilot test, though only indicative rather than significantly conclusive, do suggest merit in further investigation. It may be found that the Criminal Personas approach is more applicable to certain contexts, and that

the nature of application may vary between professions. However, the comparative analysis of the Traditional and Criminal Personas brainstorming did suggest advantage may be gained from the adoption of Criminal Personas as part of the creative and critical thinking processes. Further research is now needed to develop deeper, more effective, criminal personas and the method by which people are to engage with and apply these personas.

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