

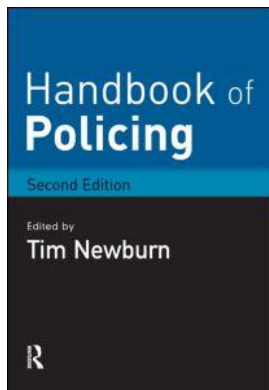
This article was downloaded by: 10.3.97.143

On: 04 Jun 2023

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



Handbook of Policing

Tim Newburn

‘Interpretation for action?’: definitions and potential of crime analysis for policing

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9780203118238.ch16>

Nina Cope

Published online on: 01 Aug 2008

How to cite :- Nina Cope. 01 Aug 2008, *‘Interpretation for action?’: definitions and potential of crime analysis for policing from: Handbook of Policing* Routledge

Accessed on: 04 Jun 2023

<https://www.routledgehandbooks.com/doi/10.4324/9780203118238.ch16>

PLEASE SCROLL DOWN FOR DOCUMENT

Full terms and conditions of use: <https://www.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Chapter 16

‘Interpretation for action?’: definitions and potential of crime analysis for policing

*Nina Cope*¹

Introduction

Increasingly the discipline of analysing information has found itself central to supporting the delivery of policing services. Key drivers include a focus on reducing harm and managing risk, alongside responding to demand. An increased emphasis, as part of a more community focused approach, on access to information about policing problems and police force performance, statutory changes that further reinforce partnership working and the development of shared outcomes and targets, such as Local Area Agreements, contribute to the demand that information be accessible, processed, where necessary shared, and understood. Alongside the structural and policy changes that affect how police forces are constituted, measured and the agencies they need to collaborate with, comes an increasingly complex criminal landscape and an advancing technology infrastructure that impacts on what information can be gathered, stored and cross referenced. It is in this mix of availability of data, inter-agency co-operation, risk mitigation and the very real need to make connections in order to understand both the environment of crime and policing interventions, that crime analysis has found its niche. However, it is inevitable that being driven by such a broad array of demands places significant expectation and pressure on the process of analysis and the analyst who undertakes the task.

This chapter is divided into three sections. The first considers the definition and process of analysis in policing, exploring the broad range of functions it is required to fulfil. The second section considers how the demand for crime analysis has emerged and developed. It discusses some of the opportunities, challenges and limitations of the current practice. The final section focuses on the techniques of crime analysis and the theories that can contribute to analytical practice.

Analysing analysis: process, product and person

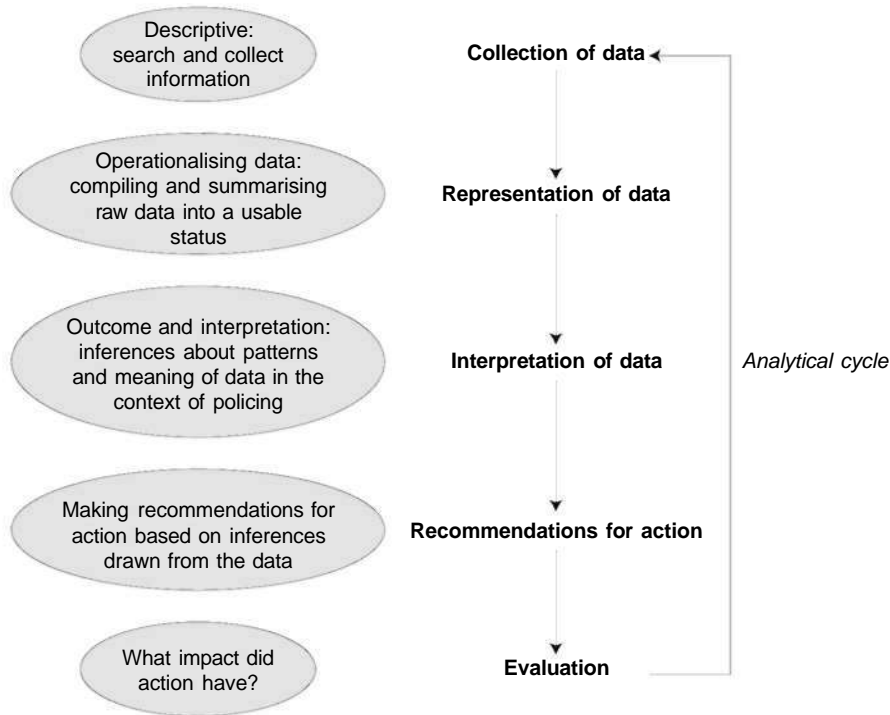
While the process of analysis, as examining an area in detail in order to draw conclusions, is readily understood, defining crime analysis is complicated by the range of terminology that is applied to it. Often defined by its subject (crime), its information source (intelligence), or its product (crime pattern), crime analysis can mean very different things to different people and different agencies. This chapter focuses on analysis in policing,² though it should be acknowledged that despite efforts towards standardisation (such as the implementation of the National Intelligence Model; see Maguire, this volume) different police services both in the UK and abroad will construct and integrate analysis differently (see Cope 2004; Ratcliffe 2008)

Broadly understood as the 'systematic study of crime and disorder problems ... [and other] police related issues ... to assist the police in criminal apprehension, crime and disorder reduction, and crime prevention' (Boba 2005), engaging in the process of analysis suggests patterns of crime and disorder can be identified among offenders, offences, victims, spaces and places. Furthermore, once identified and understood, this can inform interventions to prevent, reduce and investigate crime by providing the police with information that enables them to prioritise interventions (Gill 2000). Local crime analysis identifies the location of crime problems, criminal targets and vulnerable victims to prevent and reduce crime, while investigative analysis assists with solving crimes and the prosecution of offenders by providing information for presentation at court (see Cope 2005). A systematic, five-stage analytical process is outlined in Figure 16.1.

The first stage of crime analysis concerns the *collection* of data. This is the initial research phase, which will involve the analysts pulling together a range of data sources. In the main, analysts focus on police data and information held by other criminal justice agencies, although arguably this should extend to include relevant quantitative and qualitative research that would provide a broader insight into crime and criminality. To support analysis the police must gather and store a range of data relating to crime and criminal activity. While technology and the often bedevilled form-filling by police officers and staff may assist with this, research recognises that a range of *experiential* knowledge is not systematically recorded by the police but is held in officers' heads or shared informally (Manning 1992; Gill 1998).

Collecting information from various sources to be analysed can take time, especially when the technology has not been designed with analysis in mind and therefore simply stores a range of data in no particular order or coding system to facilitate interrogation. The growth of computer and information technology has supported the increasing demand for information and intelligence, reinforcing the role of the police as key providers of risk-related information (Ratcliffe 2002a; Ratcliffe 2008). This usually means a lot of information is stored 'just in case'. Canter (2000: 4) notes that data for analysis should be relevant, reliable, accurate and timely. However, attaining data standards to facilitate analysis is complicated. The relevance of information is temporal, influenced by current priorities, agendas, criminal activity, and crucially, current constructs of risk and threat. Without a robust framework

Figure 16.1 The analytical process



against which to judge information, it is likely its relevance only becomes fully evident after an incident has occurred, undermining the proactive value of analysis. The detailed deconstruction of intelligence processes and analysis within the FBI undertaken after the September 11 2001 attacks on the World Trade Centre and the Pentagon exemplify how crucial cross referencing and sharing information is, and the vital role analysis plays in this process (The 9/11 Commission Report 2004).

The police service also faces an increasingly complex challenge of managing information. The Bichard Inquiry (2004) initiated after the conviction of Ian Huntley for the murders of Jessica Chapman and Holly Wells in Soham brought the management of police information, amongst other issues, into public consciousness. Highlighting the lack of standards and understanding about how and what information should be reviewed and retained, the Inquiry highlighted both the limitations of existing information technology and failures in business practice, reinforcing the lack of knowledge in police forces around what information to store, data standards, the accuracy of data recording and protocols for information sharing (Maguire and John 1995; Ericson and Haggerty 1997; Ratcliffe 2002a). The Management of Police Information, adopted as a police code of practice in 2005, has aimed to standardise information practice. Despite progress in this area, police services continue to face an enduring challenge of how to gather and review information. It can appear overly bureaucratic and further limited by the

existing technology architecture that was, in the main, designed to record and retain the facts provided, not develop and link inferences and contextual information to provide greater insight and enhance the ability to assess risk.

The second stage of analysis focuses on the *representation of data*. Technology has dramatically affected the capacity of crime analysis to chart key variables associated with crime data, such as the peak days and time of offending, offenders' association networks and the spatial characteristics of crime (Weisburd and McEwen 1998). Indeed, the reliance of crime analysis on technology has led research to suggest that some key stages, such as the collection and representation of data, could be automated (Read and Oldfield 1995). Developing an analytical picture of crime involves analysts seeking basic information to explore the 'who, what, where, when, how and why' of offending. Ekblom (1988: 12) identified seven key variables for crime analysis: the nature, location, time, method, target and physical and social circumstances of the offence. All need to be addressed when considering what data to gather.

While this list appears simple, the feasibility of gathering such information is often significantly impaired at every stage of crime reporting (see Ratcliffe 2008). It relies on clear and accurate information being provided by victims or witnesses which is precisely recorded by the police officer or staff. In reality, analysts will struggle with incomplete, unreliable and inaccurate information, all of which affects the quality of analytical reports, and often mean they are left in the frustrating position of being unable, or at least unable without significant further effort and time, to do anything more than summarise, present and highlight gaps in information and intelligence.

The issue is not that representation of data is not an extremely powerful tool. It has significant value as it supports the visualisation of relationships and patterns in crimes and offences (Eck *et al.* 2000), which has proven vital with an increasing focus on police performance and local accountability (Maguire 2000). Representation also draws us to a key distinction between reactive analysis that supports the police after an incident has occurred, and more future orientated, strategic and proactive approaches (Maguire 2000; Cope 2005). What is perhaps more important to accept is that representation is, in the main, a retrospective, descriptive process. The aim, through presenting data on maps and charts, is to describe where crime *has* occurred, where offences *were* concentrated, the timings of precursors of the incident and the issues that emerge after it has occurred. This collation and presentation of information does not take us to *why* this pattern emerged, *what* might occur in the future and *how* it should influence decisions around police deployment (Groff and La Vigne 2002).

Interpretation is arguably where *analysis* really adds further values and can challenge the conventions of policing delivery. Interpretation drives analysis to draw conclusions and make inferences. The process of interpretation in crime analysis is both deductive and inductive. A *deductive* method involves the development of a theory, which is then tested through empirical research. In analysis this may be the hypothesis that young men commit more violent crime than young women, which is then validated through the analysis of crime trends. *Induction* is the reverse of deduction and involves developing

explanations and theories based on observation and research. For example, the representation of data reveals that theft is concentrated in a socially deprived area that has recently experienced gentrification, culminating in the development of a large entertainment and residential complex. An analyst might consider the impact of the development on the population and opportunities for crime in order to explain the crime trend. Interpretation moves analysis from the descriptive presentation of data to *explanation* so that the patterns and distribution of crime can be explained and understood. The ability to map or present volumes of data in a visual form is an achievement for policing, but it cannot be understood as crime analysis, which is a far more *cognitive* than technical and computer-driven process (Buslik and Maltz 1998). As the data for analysis can be fragmented, incomplete and inexact, inferences need to be drawn to ensure that the implications of the patterns, profile and crime distribution are interpreted to support police decision-making (Kelly 1990; Eck 1998).

The fourth stage of the analytical process involves *recommendations for areas of action and intervention*. By reviewing the data, crime analysts can identify and prioritise crime problems so that police activity can be focused where an intervention is most likely to impact on crime reduction or prevention.

It is probably fair to surmise that the interpretative and recommendation stages of the analysis process continue to represent the most challenging and contentious ones for analysts and their police colleagues. A range of skills are assumed in the interpretative stage, to ensure an analyst has the ability to make sense of information on crime. Clarke and Eck (2003) refer to the requirement for an analyst to 'rethink their job' and aim to become a crime expert. This necessarily entails reading around the subject to gain a better understanding of the context in which crime and disorder manifests itself, its precursors and the protective factors that frequently prevent it. It requires analysts to get involved with local policing, understanding the environment, the trends and the people. Indeed, the ability to apply the theory to a local policing context in order to understand an incident (or number of incidents) might be summarised as the key to interpretation. Ratcliffe (2008: 94) points out that developing and utilising such skills might be a 'tall order for staff often at the lower pay scales of the [police] department'. There is no doubt that effective policing requires an understanding of policing problems. However, in trying fulfil this requirement, analysis and analysts confront three major challenges.

The first is a challenge for the discipline of analysis and concerns the type of information that is routinely valued in policing. It is a feature of police culture to attach value to action-oriented work, along with experience, and *grounded* knowledge (see Westmarland, this volume). Crime analysis is frequently office based and computer driven, it represents the antithesis of action-oriented police work. As Kelly (1990: 151) notes: 'analysts and investigators . . . inhabit positions . . . which breed friction . . . the intelligence analyst is situated in an information processing . . . unit, while the street investigator [is] working with . . . others [that] may not be able to see the forest for the trees'. The process of analysis often involves decontextualising data to provide overviews of crime (Peterson 1990). This differs from police practice, which validates knowledge gathered and understood through the experience of

policing (Manning and Hawkins 1989). Analysis appears to promise an objective account of facts, which may be comforting for police organisations. However, analysis which takes crime reports, or intelligence derived from police officers and staff as its primary data source will already be heavily biased. Interpretative analysis necessarily involves a subjective assessment of information (Innes *et al.* 2005), which may appear a less reliable foundation for intervention, particularly if the subjective interpretation comes from an individual less practiced in policing, than academic and technological training.

This goes to the heart of the second challenge for the analyst. Considerable misunderstanding often exists between police officers and analysts of one another's roles. The background and experience of analysts are highly variable across UK police forces. Although frequently civilian members of staff, they come with a range of experience to occupy a quasi operational support role (Cope 2004). Some of the challenge is due to this civilian status and the ability of police forces to comfortably accommodate an employee into an organisational structure and hierarchy that is fundamentally based around the requirements of serving officers (Taylor *et al.* 2007). Matrix role based management, recompensing skill and attainment (not rank or grade or pay based on time served) and recognising qualifications and accreditation that indicate professionalisation, are all desirable to retain an effective analytical function, and yet are often unattainable in a more traditional policing structure (Cope 2005). The distinction of roles between analysts and police is probably most marked in making recommendations. Reviewing analysis to recommend a course of action is often understood to be the police officers' role. Such a division of labour emasculates both the analyst and the officer. To exclude making recommendations from an analyst's task potentially reduces their accountability for their research product. A reluctance to encourage recommendations might be based on a lack of distinction between those who propose, and those who decide on the course of action, taking the recommendations into account (Cope 2004). In reality collaboration is likely to produce the most effective product.

The third challenge is for those who commission and receive the analytical product. Research has identified that despite a belief among officers that analysis supports an intelligence-led approach to police work, a lack of understanding of analysis among police officers, and policing among analysts, severely limits its contribution and development, which can lead to analysts being excluded from operational practice (Cope 2004; Ratcliffe 2004; Taylor *et al.* 2007). If officers do not value the information (see Chan 2001) or trust the process of analysis, they are unlikely to respond to analysts' reports. While some of the misunderstandings can be addressed through joint training and development, a more consistent accommodation of analysis requires a shift in thinking about policing generally and the value of analytical products. While certainly this shift is underway (see discussion below; Maguire and John 2006), there is further to go to appreciate more interpretative analysis. No doubt to realise the potential of analysis this relies on the principle that both role holders need to understand and inhabit each other's worlds.

The final stage of the analytical process is *evaluation*. Generally the police do not capture the impact of their activity because they are continually

responding to new or different problems, or they do not have the time, resources, people, skills or motivation to evaluate practice. Increasingly 'what works' research has aimed to provide an evidence base for policing and crime reduction interventions (Goldblatt and Lewis 1998; Sherman *et al.* 1998), although there is some way to go before the knowledge developed from research is fully integrated into police practice (Ekblom 2002). Evaluation, understood as research that aims to assess the impact of activity to inform policy, is crucial for developing evidence-based decision-making (Ratcliffe 2002a; Tilley 2002b). In the complex environment of policing and crime it is especially important for evaluation to capture the context of interventions and the mechanisms that make them successful or otherwise (Pawson and Tilley 1997). The role of analysis, in continually monitoring crime, places it in a good position to evaluate police practice, in this way it plays an invaluable role in contributing to the development of research and the integration of evidence into policing (Cope 2005; Maguire and John 2006).

Developments in policing and the demand for analysis

O'Shea and Nicholls (2003) in their study of the integration of analysis in America note that

if police operations and management are designed to identify and apprehend offenders, then the demand for data analysis will conform to that limited philosophy. If, on the other hand, a broader mission and vision is developed, one that seeks to better understand the complex nature of the criminal incident, then the form of and demand for data analysis will change accordingly as will the function of crime analysts. (2003: 11)

In essence in seeking to understand what questions need to be asked of analysts, a broader understanding of the context of policing delivery is required. While the formalisation, even professionalisation, of analysis might be associated with the development of Intelligence-led policing, analysis in a more perfunctory form has operated within police forces over a number of years. This chapter identifies four major innovations that have directed the type of questions asked of analysis, and the key purpose of the analytical product. Arguably the first two innovations are broadly managerial in their emphasis – performance and accountability through information, exemplified by COMPSTAT, and the development of intelligence-led policing – while problem solving and the development of community based approaches have increased the demand for analysis from operational officers.

Management demand

A reform agenda for policing and other public services, has introduced new modes of public management and ways of capturing accountability (Bottoms and Wiles 1996; Johnston 2000). In the US this developed the COMPSTAT

regime, that fundamentally relied on timely capture and reporting of statistics for crime and disorder, both to departments and publically. UK policing also has a rigorous target structure and league tables of comparable forces, generating a clear expectation that the performance of a force, and an operational area within a force, should be understood and communicated. The relationship between COMPSTAT and crime analysis was confirmed by the former's reliance on timely data that showed crime 'peaks and troughs', and a heavy emphasis on crime mapping (McGuire 2000). However, while it may appear a seemingly beneficial partnership, Willis *et al.* (2007) suggest COMPSTAT cannot be credited with encouraging police managers to maximise the contribution analysis can have on decision making and developing different ways of tackling problems, as police managers tended to respond to data using existing and known tactics. Certainly a performance focused police culture has emphasised the demand for timely and accurate police data, which has supported analysis. Nevertheless the tendency is to focus on descriptive reporting for the information of managers (arguably stage two of representation in our process outlined above).

Intelligence-led policing (ILP) aimed to shift the emphasis of the police away from demand-driven interventions towards proactive methods of crime control (see Tilley, this volume). The importance of using intelligence, defined by Grieve (2004) as information developed for action, to focus police activity on offenders who were responsible for the majority of the police workload, was outlined in the Audit Commission report, *Helping with Enquiries: Tackling Crime Effectively* (1993). Intelligence-led policing has developed within the broader context of the 'risk society' that has influenced the proliferation of risk management strategies throughout criminal justice agencies (Ericson and Haggerty 1997; Maguire 2000). The role of analysis is to develop an understanding of risk and how it might be mitigated, a critical role as police forces, despite becoming increasingly 'information rich, remain knowledge poor' (Ratcliffe 2008: 9). While principally an investigative approach to support proactive and disruptive intervention, ILP became increasingly managerial in its emphasis on its codification in 2000 as the National Intelligence Model (NIM) (NCIS 2000). The Code of Practice in 2005 presented NIM as a strategic business model and aimed to standardise processes and products across forces (see John and Maguire 2007; Maguire, this volume). The impact on analysis is ambiguous. In many ways it is highly positive, as it has formalised the role of the analyst and creates an expectation that analysis forms a crucial part of policing delivery. The less positive impact is a consequence of the laudable effort to standardise analytical processes and reports. In effect, standardisation focused on output, not process, and therefore has led to a proliferation of guidelines and templates which can mean analysis becomes slow, overly bureaucratic and lacking creative enterprise (see John and Maguire 2007).

Operational demand

While analysts may be accepted more readily by police managers (Taylor *et al.* 2007), it is delivering an understanding of crime problems in an operational

context where analysis can fully realise its interpretive potential. Within problem-solving policing crime analysis aims to identify problems to enable 'tailor-made' interventions to be developed (Tilley 2002a). Models for problem solving, including SARA (scanning, analysis, response and assessment) or the 5is (intelligence, intervention, implementation, involvement and impact) (Eckblom 2004) indicate the extent to which understanding the circumstances of crime problems and reviewing the impact of interventions are central to delivering a sustainable crime reduction effort. Throughout early 2000, police reform has emphasised the development of community focused interventions, ensuring police delivery was focused on the concerns of the citizen and included the explicit aim to reassure by directly tackling concerns about crime and disorder (see Innes 2006). Outwardly, this emphasis on subjective perceptions might appear incompatible with maintaining an analytical evidence-based approach to directing interventions. However, Maguire and John (2006) note that intelligence-led policing need not be so narrowly understood in terms of proactive operations, highlighting that analysis already takes account of many of the factors that would be relevant to community safety, including understanding local contexts and partner perspectives. Analysis is not simply about creating an 'objective' account of information, but about reconciling various data sources to gain a better understanding of the drivers and dynamics of crime and disorder. Any interface with the public, by community or specialist police personnel, can only be enhanced by being informed.

Getting the job done: the types, techniques and theories of crime analysis

The possibility of crime analysis in policing has increased alongside the proliferation of a range of technology and specialised software packages, which support the stages of the analytical process. The frequently computerised techniques aim to provide a detailed picture of offending to facilitate the interpretation of trends, patterns and incidents. Analytical techniques focus on the analysis of *trends, spaces, times* and particular crime types, criminal associations and offenders through the development of *profiles*. Crime analysis can be both tactical and strategic. *Tactical analysis* aims to maximise the impact of enforcement by reviewing current crime problems and prolific offenders to inform investigations and operations. *Strategic analysis* identifies longer-term crime problems and future trends to provide management with an understanding of the scope and dimension of criminal activity in order to assist with local policy development and planning. The appropriate analytical technique should be selected according to the problem being investigated, the data available for analysis, the tactical or strategic focus of the analysis and the analytical report being produced. This chapter provides a general introduction to the techniques of analysis and analytical products, their rationale and some of the associated strengths and weaknesses (see Table 16.1 for a summary).

Table 16.1 Summary of analytical techniques and outputs/products

<i>Explanation</i>	
<i>Analytical techniques</i>	
Statistical analysis	The monitoring of all statistical data pertaining to crime and police activity. Provides an overview to identify areas for more detailed analysis.
Crime pattern analysis	A widely used term that generally refers to the analysis of spatial patterns of crime and the identification of crime hotspots to target police deployment. Crime pattern analysis is usually associated with geographic information systems (GIS) that support the mapping of crime and other social data.
Temporal	Monitors the temporal patterns of offending around days and hours. Identifies any trends to assist with targeting police deployment.
Seasonal	A strategic form of analysis that monitors seasonal trends in crime, to enable potential crime problems to be anticipated.
Network analysis	Usually associated with tactical analysis, it assesses the associations and linkages between offenders to identify areas for intervention. Frequently supported by analysts' software such as I2.
Telephone record analysis	A form of tactical network analysis that assesses the trends and patterns of phone records. Often used in investigative analysis to support the prosecution of offenders.
Time series analysis	A form of network analysis that reviews the pattern and frequency of criminal activity within a given period of time. Useful for assessing prolific offending patterns and the escalation of offending.
<i>Analytical outputs/products</i>	
Criminal market analysis	Assesses the operation of criminal markets and networks. Can facilitate a market-focused crime reduction strategy.
Demographic and social trend analysis	A product in the NIM that assesses the context of broader demographic and social issues and their impact on crime. Will involve the analysis of data from other criminal justice agencies. Useful for strategic analysis as it considers issues associated with population, employment, education and their potential impact on offending patterns.
Results analysis	A product in the NIM that assesses the impact of activity (or no activity) on crime problems. Facilitates an understanding of 'what works' and an evidence base for future decision-making and deployment.
Risk analysis	A product in the NIM that assesses the extent to which crime problems are persistent or irregular and the imperative for police intervention. Considers the impact of intervention or non-intervention.
Target profile	A tactical form of analysis that assesses the criminal activity and methods of a prolific offender.

Source: Peterson (1994); NCIS (2000).

Downloaded By: 10.3.97.143 At: 07:26 04 Jun 2023; For: 9780203118238, chapter16, 10.4324/9780203118238.ch16

The strengths and weaknesses of analytical techniques

Computer-based techniques aid analysis by presenting data in a format that can be easily understood. However, 'any analytical technique, no matter how elaborate or elegant, will not replace good data or make up for poor or inadequate information' (Ianni and Reuss-Ianni 1990). Therefore, it is important to consider the quality of the information that is presented by analytical techniques, such as crime maps or offender network association charts.

Considering the prolific role of crime maps in policing (Weisburd and McEwen 1998) and their strength at representing volumes of spatial information (Ratcliffe and McCullagh 2001), the extent to which maps represent an accurate picture of crime needs to be discussed. Maps rely on accurate data, which can be undermined by the lack of knowledge about the exact location of offences and the recording of incomplete addresses, or incorrectly spelt street names. To map data within a geographic information system (GIS), geographical references are applied to addresses, known as geo-coding. However, some police computer systems do not support geo-coding (Ratcliffe 2000). Furthermore, the methodology of mapping is important as different approaches to spatial analysis may result in the identification of different 'hotspots' (Ratcliffe 2002b). Some maps count crime in localities producing the computer equivalent of the manual 'drawing-pin' maps that adorned office walls prior to the introduction of mapping technologies. Another type of hotspot map draws ellipses to delineate a general area where crime is concentrated. The latter can identify broad areas for intervention but may not be as accurate as the more information-laden dot-map version (Harries 1999).

A further limitation of maps is that they count data but do not offer an insight into the relative risk of crime (Craglia *et al.* 2000). For example, a burglary hotspot map does not indicate how likely a resident in the area is to be burgled. To assess the relative risk of burglary an analyst would need to take account of the number of households in the area and to what extent they represent the target population. However, the degree of random error in mapping affects the extent to which the relative risk of offending can be assessed. While maps are exceptionally good at drawing attention to areas where crime is high and low, they provide little insight into the causes of crime because, unless they are properly constructed and interpreted, they tend to ignore the geography of an area and other factors that may affect levels of crime.

The focus on the descriptive 'tools of the trade' is also an explanation for the struggle strategic analysis continues to have in trying to find a legitimate place in supporting police decision-making. Aiming to contribute the 'richer picture', strategic analysis assesses long-term threats and trends. However, Sheptycki and Ratcliffe (2004) highlight that limited information, and information sharing, combined with an emphasis on understanding today's crime problems and an inability to shift to accommodate future priorities, all conspire to weaken the potential impact of strategic reports. More recently, guidance on analysis has moved away from the technique to focus on the process. Clarke and Eck (2003), Ratcliffe (2004) and Walsh (2004) all emphasise the importance of viewing the development of an analytical report as a project,

imbued with a rigorous research methodology. This suggests some key elements need to be present to ensure a robust product – including contextualisation of the issues, verification of the data, collaboration on the findings and justification of the inferences and recommendations. Without this, analysis is likely to continue to struggle in finding its rightful place in informing the delivery of police and partner interventions.

Offender profiling

Some techniques of crime analysis are more specialised, focusing on particular offences or aspects of crime. Offender profiling is perhaps the most debated, as practitioners seek to understand the 'science' behind the approach (Alison *et al.* 2004). Referred to as offender, behavioural, investigative and criminal profiling, it describes a process of inferring the characteristics of an offender based on a detailed analysis of his or her crimes (Alison and Canter 1999; Alison and Barrett 2004). Offender profiling is founded on the assertion that while an offender's behaviour may change and develop over time, an offence will have key 'psychological signatures' that will be consistent and can be interpreted to provide further insight into the offender's motivations, social and occupational status, criminality and personality (Grubin 1995). For example, Britton's (1997) accurate profile of John Bostock, who admitted to two counts of murder in 1986, highlighted the age range of the offender, his sexual immaturity, lack of social skills, physical strength and area of employment. The nature of offender profiling makes it best suited to exploring serious crimes, such as linked sexual assaults or murders.

While the contribution of offender profiling to criminal investigations is relatively recent, the principle of studying the association between the characteristics of offences and the offenders is long established and has often been mythologised in literary portrayals of detectives, such as Sherlock Holmes. Perhaps it is this association that has continued to fuel the often idolised relationship between the media and profilers, an association that is based on little evidence of actual practice (Alison and Barrett 2004).

Approaches to offender profiling

The case of the 'Mad Bomber' in 1956, where James A. Brussel, a psychiatrist, assisted the police by providing a remarkably accurate profile based on a psychoanalytical interpretation of the crime scene, initiated public interest in profiling. However, a process to support systematic offender profiling was not developed by the Behaviour Science Unit (currently the Investigative Support Unit) of the FBI until the early 1970s (Ainsworth 2001). The FBI approach exemplified trait-based profiling, predicting the likely characteristics of an offender based on evidence at the crime scene (Alison 2005). The early typology based on investigators' experience of sexual attacks and murders facilitated the investigative distinction between organised and disorganised styles of attack in murder cases, where the former would be carried out with restraint, compared to the erratic, impulsive actions involved in the latter

(Canter 1994). The FBI asserted that the classification of crimes reflected the personality of the offender. The protagonist of an organised crime would be more intelligent, socially skilled and sexually competent, while a disorganised offender would be more likely to live alone, near the crime scene and have limited social skills and sexual experience (Ainsworth 2001).

There is some debate around the usefulness of such typologies and classification systems in offender profiling. Alison and Barrett (2004) note that the ability to infer background characteristics from a crime scene rests on two generally unreliable and unproven assumptions, that there is consistency of behaviour and the homology of offenders' characteristics in the course on committing an offence. Coleman and Norris (2000) question the possibility of classifying offences as either organised or disorganised and the extent to which a consistent motivation, implicit in a classification system, can be assumed in multiple offences. Canter (1994) also highlighted the difficulty of maintaining boundaries between the categories and argues they are inherently ambiguous. The methodology of developing the classification system has been widely criticised as unsystematic and relying too heavily on the experience and intuition of investigators, rather than a theoretically grounded study of crime (Alison and Canter 1999; Rossmo 2000). The proliferation of profiling procedures has largely developed unguided by an evidence base (Grubin 1995). Alison (2004) notes that despite this and even given profilers' admission that much of their work is educated guess work, the demand for profiling remains.

This is not to suggest that psychologists cannot assist policing. Indeed Canter's approach was to explicitly include psychological theory in the study of crimes. The case of John Duffy, the Railway Rapist, was Canter's introduction to the practice of profiling and the possibility of applying psychology to criminal investigations. John Duffy exhibited 13 of the 17 attributes identified in Canter's profile, matching the predicted employment, marital status, home address and offending history (Ormerod 1999). Canter went on to research profiling hypotheses, developing the scientific discipline of investigative psychology and ensuring later forays into profiling were more theoretically driven than the initial experience of the Duffy investigation. An example is the circle of crime theory. The profile of John Duffy included his residential location, based on the analysis of the location and proximity of offences. Canter developed the concept of mental maps as a method of interpreting the geographic distribution of offending, noting that

mapping murder [for the police] consists of creating a mental map that attempts to reconstruct . . . the killer's psychological journey . . . and an actual map of where crime and related activities, or series of crimes have occurred. The real science of profiling consists of building up an understanding of how these two maps relate to each other. (Canter 2003: 222)

The geographic approach to profiling is supported by a range of evidence that highlights the offender's relationship to the location of their offences (for example, Davies and Dale 1995; Godwin and Canter 1997). Canter's research has led him to outline five important characteristics to help criminal investigations (Ainsworth 2001):

1. Residential location.
2. Criminal biography.
3. Domestic and social characteristics.
4. Personal characteristics.
5. Occupational/educational history.

The investigative psychology approach aims to base the development of such categories on the systematic analysis of data (D. Canter 2000). For example, Canter and Heritage (1990), based on a detailed study of over 60 sexual assault cases, developed a list of 33 common offence features of sexual crimes. By further exploring the association between the factors, Canter was able to develop an insight into the most critical characteristics of rape. More recently, Canter and colleagues have developed 'facet theory', the study of associations between variables, to explore the complexity of criminal situations and identify common crime scene characteristics that can be distinguished from unusual features in the process of criminal investigations (Ainsworth 2001).

Critiques of offender profiling

As with all analytical techniques, profiling relies on accurate information about crimes being reported to the police, something that cannot be relied upon in serious crime investigations (Canter and Alison 1997; Ainsworth 2001). Offender profiling continues to be plagued by broader questions about its aim, definition and impact. Alison *et al.* (2003) in their study of how profiling reports were interpreted found that in more than two-thirds of cases the profiler made no justification as to why particular advice was offered. Copson (1995) noted some confusion among police officers about how to use profiling information in the course of police investigations and whether it is intended to give advice, direct an investigation or be used in court to support prosecution (Wilson and Soothill 1995). In practice there continues to be little commonality in methods between profilers. Approaches can be idiosyncratic, based on accepted wisdom and the skills and personality of the profiler (Copson and Marshall 1999). This potentially means that good profilers may get it right, without fully understanding why (Grubin 1995), pointing to a broader question about the role of expertise in developing profiles. Not all profilers subscribe to the Canter approach but actively draw on a wealth of clinical, professional and intuitive experience when developing profiles. The key issue with such experiential approaches is assessing their reliability and validity (Ormerod 1999) in a context where getting it wrong can potentially have considerable consequences (Ainsworth 2001). Crime profiler Paul Britton's now infamous connection with the Rachel Nickel murder on Wimbledon Common and the subsequent arrest, prosecution and acquittal of Colin Stagg exemplifies a number of potential problems associated with using profiles. The Stagg case was dismissed and the judge rejected the use of profiles as evidence, stating that the court 'would not wish to give encouragement either to investigating or prosecuting authorities . . . to supplement their cases on this

Downloaded By: 10.3.97.143 At: 07:26 04 Jun 2023; For: 9780203118238, chapter16, 10.4324/9780203118238.ch16

basis' (Ormerod 1999: 209). While the court did not totally dismiss the assistance of psychology in criminal cases, it indicated that consideration needed to be given to the boundaries of its influence in investigations. It is probably more realistic that the systematic study of available information will contribute to our understanding of crime and criminal incident (Canter 2003; Alison and Barrett 2004) and psychological interpretations and theories of offending will have purchase, alongside their more sociological counterparts, through developing the discipline of systematic research and analysis to support police work.

Theory for practice: developing explanation in volume crime analysis

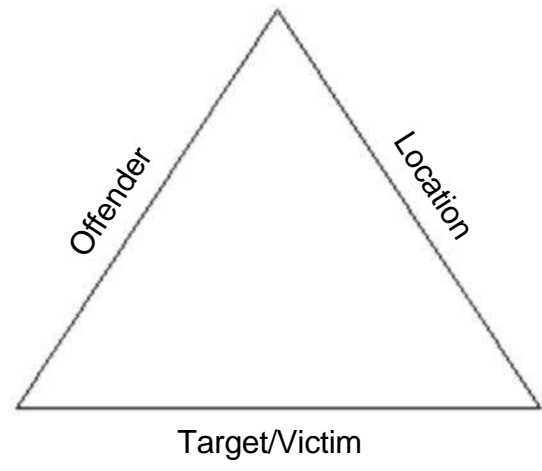
In this final section, I want to discuss key areas of criminological theory that support the development of interpretation in the analysis of volume crimes. Crime analysis goes back to environmental criminology (Bottoms and Wiles 2002). For example, the Chicago School scholars, as early pioneers of environmental criminology, drew on the disciplines of urban sociology and human ecology to illustrate the association between crime, social disorganisation and poverty in urban settings (Weisburd and McEwen 1998). While the influence of ecological theories has diminished within criminology, exploring the spatial distribution of crime continues to be important and has found new energy, especially among practitioners, with the development of technology that supports the computerised mapping of geographic information.

As with all research processes, an integral relationship exists between theory and analysis (see Bottoms 2000). Criminological theory can support analysis through its capacity to reveal and explain consistent empirical *facts* about crime, concerning its distribution or the risk factors associated with offending and victimisation (see, for example, Braithwaite 1989; Farrington 2002). Indeed, the mere fact that an analyst asks particular sorts of questions or anticipates certain patterns of crime reflects the importance of theory for the interpretation of data in analytical inquiry (Eck 1998).

In order to develop a theoretical framework for interpretation in analysis I want to draw on two key models: the crime triangle that is the relationship between victim, offender, location (see Figure 16.2) and Ekblom's (2001) conjunction of criminal opportunity.

Clarke and Eck (2003) explain that the 'crime triangle' has resonance for analysis as it points to three key reoccurring problems for policing: *repeat offending* where offenders attack in different locations; *repeat victimisation*, where victims are attacked by different offenders and *repeat locations* where different offenders and their targets interact in the same place. Ekblom (2001) drawing on the relationship between victim, offender and location, goes on to examine a range of factors that contribute to a criminal offence. Outlining 11 factors that follow from the situation to the offenders, they cover: *crime promoters; absence of crime preventers; the wider environment; target enclosure; target person or property; offender present in situation; anticipation of risk; effort and reward; resources for crime; readiness to offend; lack of skills to avoid crime; and predisposition to criminality*. As a framework to inform the development of problem solving

Figure 16.2 The crime triangle



interventions, Ekblom also distinguished between drivers in the above factors that are distanced from the offence. For example, a stable relationship is understood to be a protective factor for crime, but is unlikely to be proximal to an incident. Factors that will be more valid to an analyst are the imminent precursors to crime and disorder. However, it is only by understanding the meso-levels and micro-levels at . . . 'that we might look to try and understand why a particular offender frequents a particular situation and how the components of the situation itself have come together to produce a criminal event' (Ekblom 1996: 61). Taking the example of burglary, research suggests that residents in deprived areas are more likely to be victims of burglary (Ratcliffe and McCullagh 1999). However, people are not simply victims of burglary because they are poor. They are more likely to be victims because they live near burglars, who are unlikely to travel long distances to offend (Craglia *et al.* 2000). Policing alone cannot tackle poverty, a more distant cause of crime. However, by analysing the pattern and opportunities to commit crime, the police are able to develop a range of interventions to address the proximal circumstances of offending. Space precludes a lengthy discussion of all the relevant theories and their critiques, therefore I want to focus on key theoretical concepts that relate to local crime analysis and crime prevention to demonstrate how the application of criminology can support the interpretation of analytical data.

Reason, rationality and routine: theory for crime analysis

Opportunity-based theories of crime consider the situational and environmental characteristics of offending. A long tradition of research has indicated that the distribution of crime in space is not random. Despite the contribution of early studies on the spatial attributes of offending, for example, Shaw and McKay's (1942) work on social disorganisation, the broad focus of spatial analysis has limited ability to address the more detailed causal analysis of crime in a particular place (Sherman *et al.* 1989). Therefore, more detailed

research of the micro-context is necessary because, as Felson (1998: 52) has observed: '[Offenders] typically behave like criminals only in certain settings, that is, slices of time and space within which relevant people and things are assembled'. Drawing on control theory (Hirschi 1969), which emphasised the importance of understanding why people do not commit crime, Felson (1998: 23) noted that crime was committed by people who were 'tempted more but controlled less', and aimed to explore the relationship between the daily routines of everyday life and opportunities to offend. *Routine activity theory* asserted that for crime to occur a minimum of three factors needed to come together in time and space: a suitable target, a likely offender and the absence of a capable guardian (Felson 1998). Crime rates are not only affected by the prevalence of the three factors but also the frequency at which they converge together in time and space creating a hotspot of crime (Sherman *et al.* 1989). Therefore, an explanation for the high levels of crime around a train station might refer to the volume of suitable targets and likely offenders, but also the absence of capable guardians and low levels of informal social control exercised in such a transient and impersonal space.

Routine activity theory stresses the importance of assessing the suitability of the target through the eyes of the offender using the acronym VIVA: the *value* of the target, the *inertia* of the target, the *visibility* of the target and *access* for an offender (Felson 1998). Routine activity approaches provide a theory for crime analysis through which to deconstruct criminal events and understand situations where crime is more likely to occur. Felson and Clarke (1998) suggested the theory provides a robust explanation for burglary increases in western Europe and the USA throughout the 1960s and 1970s as the ownership of portable and desirable technology proliferated.

A further crucial component of analysis is to explore the decision-making process of the offender. The *rational choice perspective* starts with the premise that offenders seek to advantage themselves through their offending. This involves making decisions to commit crime, which are rational within the constraints of their time and ability (Cornish and Clarke 1986; Clarke 1997). Of course, there are inherent problems with assessing what is and is not rational (Tilley 1997). Nevertheless, the perspective has directed attention to the structure of choice and decision-making associated with offending. Rational choice theory is supported by a range of interview-based research that has indicated a decision-making process is involved in the commission of crime (Cromwell *et al.* 1991). As with routine activity, rational choice theory focuses on the circumstances of the offence, facilitating the analysis of offenders' motivations and *modus operandi* to understand how they might influence the pattern and frequency of offending.

Rational choice and routine activity theories suggest the distribution of crime is not random but varies in time and space (Sherman *et al.* 1989). Burglary, for example, is more concentrated in areas of low socioeconomic status (Bottoms and Wiles 2002). Crime pattern theory draws together a range of disciplines to explain this distribution of offending. For example, descriptive crime analysis might indicate the close proximity of an offender's home address to his or her offences; however, crime pattern theory enables us to interpret this pattern of crime further. Brantingham and Brantingham (1981,

1991) explored the extent to which offenders' daily life patterns influenced the location of their offences. They suggested that we all carry 'cognitive maps' of the places we live. The maps will include 'awareness spaces' – that is, the areas we know very well because we socialise, go to work or college or carry out daily chores in the locality. Understanding offenders' 'awareness spaces' through the process of detailed crime analysis is important because, in the main, criminal opportunities would intersect with *cognitively known areas* (Bottoms and Wiles 2002). This has been supported by research that indicates offenders tend not to travel long distances to commit offences (Wiles and Costello 2000). This work is also crucial for supporting the investigation of serious offences through 'geographic profiling', a strategic management information system that links psychological profiling with spatial analytical techniques (Rossmo 2000). While forming only part of a criminal investigation, geographic profiling aims to explore the location of crime, offender type, hunting style, targets, travel pathways, land use and demographics to provide further insight into the offender and the crime. The critical relationship between offending pattern and the residential location of the offender highlights the importance of mapping burglary and serious sexual assaults, and interpreting the emerging patterns in light of the theory to narrow the focus of police activity towards particular suspects.

Aside from focusing on the activity of the offender and the spatial distribution of offences, crime analysis can enhance the interpretation of crime by exploring patterns of victimisation. Repeat victimisation focuses on the repetitious nature of offending, which means a small number of victims, encompassing both people and property, experience a large proportion of crime (Farrell and Pease 2001). Explanations for repeat victimisation focus on the enduring vulnerability of the target to crime, or an initial offence increasing the likelihood of subsequent offences (Pease 1998). Research also highlights the temporal trends associated with repeat victimisation, which suggests when it does occur, it happens quickly (Robinson 1998).

Crime analysis, by exploring the spatial distribution and time series of repeat victimisation, may offer an insight into crime that cannot be gained from focusing on the offence or the offender. For example, exploring repeat victimisation may provide further understanding of geographical concentrations of crime, or hotspots (Farrell and Sousa 2001). Hotspots may reflect high levels of crime incidents per victim, rather than indicating multiple opportunities for offending (Farrell *et al.* 1996). Perhaps the most significant challenge is taking retrospective data and using it prospectively. Johnson and Bowers' (2004) study of burglary clusters suggested that shift over time meant that focusing activity on last month's maps of incidents may put deployments into the wrong area. Advocating a more predicative mapping model, based on the theory that burglary is communicable, Bowers *et al.* (2004) aim to offer a more meaningful and effective application of mapping technologies.

'Opportunity blocked': analysis, action and results

By understanding the proximal circumstances of offences, crime analysis can suggest 'tailor-made' interventions to prevent and reduce crime (Tilley 2002a).

Situational crime prevention focuses on developing interventions to disrupt the immediate circumstances of the offence. Clarke (1997) outlines four classifications for crime prevention. First, crime prevention aims to make committing crime more difficult through target-hardening, based on the rational choice perspective that offenders would be more likely to be attracted to an easy target. Secondly, crime prevention aims to increase the risks associated with crime. This may, for example, involve surveillance or controlling exits in shopping centres. Thirdly, crime prevention aims to reduce the rewards of offending through marking property or by making stolen items unusable after theft. Finally, crime prevention aims to remove the excuses for offending, acknowledging that a moral paradigm may be involved in offenders' rational decision-making. Such an approach provides the rationale for signs and posters that warn of prosecution and harsh sentences for crimes.

It is assumed that targeting the situation of offences may displace offending. Simply put, this involves offenders moving crime to another space, time, target, or causing them to adopt a different tactic to commit offences (Repetto 1976). Displacement must not become a 'catch-all' for unexplained increases and decreases in crime, not least because the theories discussed above would suggest that the displacement of crime is not inevitable (Clarke 1997; Weisburd *et al.* 2006). Indeed if displacement did occur, it would be difficult to detect through crime analysis as 'some displaced crime will probably fall outside the areas and types of crime being studied or be so dispersed as to be masked by background variation' (Barr and Pease 1990: 293).

The theories discussed above suggest crime analysis needs to take account of four critical generators of crime: the offender, the victim, the community, and the situation of offences (Tilley *et al.* 1999). Table 16.2 summarises the theories and their potential contribution to developing interpretation in volume crime analysis.

Conclusion

Crime analysis draws on a range of techniques to seek to explore the relationship between data to understand crime and thereby influence decision making around the nature of deployment. Influenced by developments in policing, such as problem-oriented and intelligence-led approaches in UK forces, its development has also been supported by the proliferation of technology that has increased the capacity of the police to store, retrieve and search data. Crime analysis is more than simply providing a descriptive account of crime through the use of maps, graphs and network charts. It seeks to interpret and explain data. This is not to undermine the value of analytical representations of crime but stresses the importance of supporting both the *cognitive* and the *technical* aspects of crime analysis within policing. The integration of theory and exploring the social context of crime data are crucial for advancing explanation in crime analysis. In seeking to fulfil its role, analysis faces the challenge of the quality of information and the willingness and ability to share information both within and across agencies. This combined with an emphasis on retrospective data, short-term peaks and

Table 16.2 A summary integrating theory into volume crime analysis

Theory	Definition	Analysis
Routine activities theory	Opportunities for crime are associated with the routine activities of everyday life. Three conditions are needed for crime to occur: a likely offender, a suitable target and the absence of a capable guardian. The acronym VIVA is used to assess the suitability of targets.	Focuses on the offender, offence and situation of crime. Provides an insight into opportunities for crime and how they might relate to offenders' lifestyles and daily activities. This may further explain crime patterns, increase the understanding of hotspots (where the three factors for crime regularly coincide) and enable the identification of potential 'hot products' that are desirable to steal.
Rational choice theory	Offenders seek advantages through crime and make decisions about offending that are rational within the constraints of time and ability.	Focuses on the offender and offence. Supports the analysis of approaches to crime and <i>modus operandi</i> . Interpreting decision-making processes from crime patterns and targets in detailed profiles of offenders may offer an insight into potential crimes that have been committed by the same person, or enable predictive crime patterns to be hypothesised.
Crime pattern approaches	A general term applied to the study of the interaction between the offender and his or her environment.	Focuses on the spatial and situational aspects of crime. Facilitates the interpretation of crime patterns by exploring the relationship between opportunity for crimes and offenders' awareness spaces. Also supports criminal investigations.
Repeat victimisation	When the same location, person, business, organisation, household or vehicle experiences more than one crime within a specified time frame.	Offers an insight into patterns of victimisation. Understanding the temporal and spatial distribution of repeat victimisation may provide the means to 'predict' patterns of victimisation.
Situational crime prevention	A process that aims to reduce crime by intervening in the proximal causes of offences.	Focuses on the situation of crime. A useful analytical recommendation that follows from understanding the opportunities and circumstances of offences.
Displacement	The process by which offenders seek alternative methods of offending when opportunities to commit crime are blocked. Displacement can be temporal, spatial, involve different tactics or be directed towards different targets.	Helpful for evaluation (results analysis). Important to consider the intended and 'unintended', positive and negative consequences of police interventions.

troughs in crime, and the ability to embed more proactive ways of working in an environment of high demand for service, creates a challenging environment for the analysts and the product they produce. However, the changing context of policing continues to emphasise the importance of information in both the development and reporting of policing interventions. For analysts and police officers to recognise, and work together to mitigate, both the structural and cultural inhibitors to develop its potential is as much part of the job as getting the interpretation of the problem right.

Notes

- 1 The views expressed by the author are not necessarily those of the Metropolitan Police Service.
- 2 It should be noted that other law enforcement agencies, security services and the private sector while sharing some core components will construct analysis differently to complement their business processes.

Selected further reading

Ekblom's (1988) early Home Office study, *Getting the Best out of Crime Analysis*, continues to provide a sound introduction; his broader writings, many of which are available online, offer a sound practical framework for asking the right questions. Clarke and Eck's (2003) *Become a Problem Solving Crime Analyst* is a great practitioner guide. Ratcliffe's *Strategic Thinking in Criminal Intelligence* (2004) and *Intelligence Led Policing* (2008) and Boba's (2005) *Crime Analysis and Crime Mapping* are useful texts. Readers seeking more technical understanding can consult a range of Guides published by the National Centre for Policing Excellence on ILP, NIM and other analysis. Alison's (2005) *Forensic Psychologist's Casebook* and Ainsworth's *Offender Profiling and Crime Analysis* (2001) provide good introductory discussions to psychology theories for crime. Felson's *Crime and Everyday Life* (1998) and Bottoms and Wiles' chapter 'Environmental criminology' in the *Oxford Handbook of Criminology* (2002) both provide an excellent introduction to the theory for analysis, while recent volumes by edited by Tilley (2002), *Analysis for Crime Prevention* and *Evaluation for Crime Prevention*, provide practical examples and useful theoretical discussions on the relationship between analysis, theory and research. As the technology advances quickly it may be helpful to consult websites, for example, the Crime Mapping Research Center (www.ojp.usdoj.gov/nij/maps) or the International Association of Crime Analysts (www.IACA.net) to review current developments.

References

- Ainsworth, P. (2001) *Offender Profiling and Crime Analysis*. Cullompton: Willan.
- Alison, L. (2004) 'From trait-based profiling to psychological contributions to apprehension methods' in L. Alison (ed.) *The Forensic Psychologist's Casebook*. Cullompton: Willan.
- Alison, L. (2005) 'From trait-based profiling to psychological contributions to apprehension methods', in L. Alison (ed.) *The Forensic Psychologist's Casebook*. Cullompton: Willan.

- Alison, L. and Barrett E. (2004) 'The interpretation and utilisation of offender profiles: a critical review of "traditional" approaches to profiling', in J. Adler (ed) *Forensic Psychology Concepts, Debates and Practice*. Cullompton: Willan.
- Alison, L. and Canter, D. (1999) 'Profiling in policy and practice', in L. Alison and D. Canter (eds) *Profiling in Policy and Practice*. Aldershot: Ashgate, 3–22.
- Alison, L., Smith, M. and Morgan, K. (2003) 'Interpreting the accuracy of offender profiles', *Psychology, Crime and Law*, 9 (2): 185–95.
- Alison, L., West, A. and Goodwill, A. (2004) 'The academic and the practitioner: pragmatists' views of offender profiling', *Psychology, Public Policy and Law*, 10 (1–2): 71–101.
- Audit Commission (1993) *Helping with Enquiries: Tackling Crime Effectively*. London: HMSO.
- Barr, R. and Pease, K. (1990) 'Crime placement, displacement and deflection', in M. Tonry and N. Morris (eds) *Crime and Justice: A Review of Research*. Vol. 12. Chicago, IL: University of Chicago Press, 196–216.
- Boba, R. (2005) *Crime Analysis and Crime Mapping*. Thousand Oaks, CA: Sage.
- Bottoms, A. (2000) 'The relationship between theory and research in criminology', in R.D. King and E. Wincup (eds) *Doing Research on Crime and Justice*. Oxford: Clarendon Press, 15–60.
- Bottoms, A. and Wiles, P. (1996) 'Understanding crime prevention in late modern societies', in T. Bennett (ed.) *Preventing Crime and Disorder: Targeting Strategies and Responsibilities. Cropwood Conference Series*. Cambridge: University of Cambridge, 620–56.
- Bottoms, A. and Wiles, P. (2002) 'Environmental criminology', in M. Maguire *et al.* (eds) *The Oxford Handbook of Criminology* (3rd edn). Oxford: Oxford University Press, 620–56.
- Bowers, K., Johnson, S. and Pease, K. (2004) 'Prospective hot-spotting: the future of crime mapping', *British Journal of Criminology*, 44: 641–58.
- Braithwaite, J. (1989) *Crime, Shame and Reintegration*. Cambridge: Cambridge University Press.
- Brantingham, P.L. and Brantingham, P.J. (1981) 'Notes on the geography of crime', in P.J. Brantingham and P.L. Brantingham (eds) *Environmental Criminology*. Beverly Hills, CA: Sage.
- Brantingham, P.L. and Brantingham, P.J. (1991) *Environmental Criminology* (2nd edn). Prospect Heights, IL: Waveland Press.
- Britton, P. (1997) *The Jigsaw Man*. London: Bantam Press.
- Buslik, M. and Maltz, M. (1998) 'Power to the people: mapping and information sharing in the Chicago Police Department', in D. Weisburd and T. McEwen (eds) *Crime Mapping and Crime Prevention*. Monsey, NY: Criminal Justice Press, 113–30.
- Canter, D. (1994) *Criminal Shadows: Inside the Mind of a Serial Killer*. London: HarperCollins.
- Canter, D. (2000) 'Offender profiling and criminal differentiation', *Legal and Criminological Psychology*, 5: 23–46.
- Canter, D. (2003). *Mapping Murder: The Secrets of Geographical Profiling*. London: Virgin.
- Canter, D. and Alison, L. (1997) *Criminal Detection and the Psychology of Crime*. The International Library of Criminology, Criminal Justice and Penology. Dartmouth: Ashgate.
- Canter, D. and Heritage, R. (1990) 'A multi-variate model of sexual offence behaviour', *Journal of Forensic Psychiatry*, 1: 185–210.
- Canter, P. (2000) 'Using a geographic information system for tactical crime analysis', in V. Goldsmith *et al.* (eds) *Analyzing Crime Patterns, Frontiers of Practice*. Thousand Oaks, CA: Sage, 3–10.

- Chan, J. (2001) 'The technological game: how information technology is transforming police practice', *Criminal Justice*, 1: 139–59.
- Clarke, R.V. (ed.) (1997) *Situational Crime Prevention, Successful Case Studies* (2nd edn). Albany, NY: Harrow & Heston.
- Clarke, R.V. and Eck J. (2003) *Become a Problem Solving Crime Analyst*. London: Jill Dando Institute of Crime Science.
- Coleman, C. and Norris, C. (2000) *Introducing Criminology*. Cullompton: Willan.
- Cope, N. (2004) 'Intelligence led policing or policing led intelligence: integrating volume crime analysis into policing', *British Journal of Criminology*, 44: 188–203.
- Cope, N. (2005) 'The range of issues in crime analysis', in L. Alison (ed.) *The Forensic Psychologist's Casebook*. Cullompton: Willan.
- Cope, N., Innes, M. and Fielding, N. (2001) *Smart Policing? The Theory and Practice of Intelligence-led Policing*. London: Home Office.
- Copson, G. (1995) *Coals to Newcastle? A Study of Offender Profiling*. Police Research Group Special Interest Paper 7. London: Home Office.
- Copson, G. and Marshall, N. (1999) 'Mind over matter', *Police Review*, 11 June: 16–17.
- Cornish, D.B. and Clarke, R.V. (1986) *The Reasoning Criminal: Rational Choice Perspectives on Offending*. New York, NY: Springer-Verlag.
- Craglia, M., Haining, R. and Wiles, P. (2000) 'A comparative evaluation of approaches to urban crime pattern analysis', *Urban Studies*, 37: 711–29.
- Cromwell, P., Olson, J. and Wester Avary, D. (1991) *Breaking and Entering: An Ethnographic Analysis of Burglary*. *Studies in Crime, Law and Justice* 8. Thousand Oaks, CA: Sage.
- Davies, A. and Dale, A. (1995) *Locating the Stranger Rapist*. *Police Research Group Special Interest Paper* 3. London: Home Office.
- Eck, J. (1998) 'What do those dots mean? Mapping theories with data', in D. Weisburd and T. McEwen (eds) *Crime Mapping and Crime Prevention*. Monsey, NY: Criminal Justice Press, 379–406.
- Eck, J., Gersh, J. and Taylor, C. (2000) 'Finding crime hot spots through repeat address mapping', in V. Goldsmith *et al.* (eds) *Analyzing Crime Patterns, Frontiers of Practice*. Thousand Oaks, CA: Sage, 49–63.
- Ekblom, P. (1988) *Getting the Best out of Crime Analysis*. *Crime Prevention Unit Paper* 10. London: Home Office.
- Ekblom, P. (1996) 'Towards a discipline of crime prevention: a systematic approach to its nature, range and concepts', in T. Bennett (ed.) *Preventing Crime and Disorder. Cropwood Conference Series*. Cambridge: University of Cambridge, 43–97.
- Ekblom, P. (2001) *The Conjunction of Criminal Opportunity: A Framework for Crime Reduction Toolkits*. London: Home Office.
- Ekblom, P. (2002) 'From the source to the mainstream is uphill: the challenge of transferring knowledge of crime prevention through replication, innovation and anticipation', in N. Tilley (ed.) *Analysis for Crime Prevention*. Monsey, NY: Criminal Justice Press, 131–94.
- Ekblom, P. (2004) *A Practitioners' Guide*. London: Home Office.
- Ericson, R.V. and Haggerty, K. (1997) *Policing the Risk Society*. Oxford: Clarendon Press.
- Farrell, G. and Pease, K. (2001) 'Why repeat victimization matters', in G. Farrell and K. Pease (eds) *Repeat Victimization*. Monsey, NY: Criminal Justice Press, 1–4.
- Farrell, G. and Sousa, W. (2001) 'Repeat victimization and hot spots: the overlap and its implications for crime control and problem-oriented policing', in G. Farrell and K. Pease (eds) *Repeat Victimization*. Monsey, NY: Criminal Justice Press, 221–40.
- Farrell, G., Ellingworth, D. and Pease, K. (1996) 'High crime rates, repeat victimisation and routine activities', in T. Bennett (ed.) *Preventing Crime and Disorder. Cropwood Conferences Series*. Cambridge: University of Cambridge, 276–96.

- Farrington, D. (2002) 'Developmental criminology and risk focused prevention', in M. Maguire *et al.* (eds) *The Oxford Handbook of Criminology* (3rd edn). Oxford: Oxford University Press, 657–701.
- Felson, M. (1998) *Crime and Everyday Life*. Thousand Oaks, CA: Pine Forge Press.
- Felson, M. and Clarke, R.V. (1998) *Opportunity Makes the Thief. Practical Theory for Crime Prevention. Police Research Series Paper 98*. London: Home Office.
- Gill, P. (1998) 'Police intelligence process: a study of criminal intelligence units in Canada', *Policing and Society*, 8: 339–65.
- Gill, P. (2000) *Rounding Up the Usual Suspects? Developments in Contemporary Law Enforcement Intelligence*. Aldershot: Ashgate.
- Godwin, M. and Canter, D. (1997) 'Encounter and death: the spatial behaviour of US serial killers', *Policing*, 20: 24–38.
- Goldblatt, P. and Lewis, C. (eds) (1998) *Reducing Offending: An Assessment of Research Evidence on Ways of Dealing with Offending Behaviour. Research Study 187*. London: Home Office.
- Goldsmith, V., McGuire, P., Mollenkopf, J.H. and Ross, T. (eds) (2000) *Analyzing Crime Patterns, Frontiers of Practice*. Thousand Oaks, CA: Sage.
- Goldstein, H. (1990) *Problem-oriented Policing*. New York, NY: McGraw-Hill.
- Grieve, J. (2004) 'Developments in UK criminal intelligence', in J. Ratcliffe (ed.) *Strategic Thinking in Criminal Intelligence*. Sydney: Federation Press.
- Groff, E. and La Vigne, N. (2002) 'Forecasting the future of predictive mapping', in N. Tilley (ed.) *Analysis for Crime Prevention*. Monsey, NY: Criminal Justice Press, 28–57.
- Grubin, D. (1995) 'Offender profiling', *Journal of Forensic Psychiatry*, 6: 259–62.
- Harries, K. (1999) *Mapping Crime Principle and Practice*. Washington, DC: National Institute of Justice.
- Hirschi, T. (1969) *Causes of Delinquency*. Berkeley, CA: University of California Press.
- Ianni, F.A.J. and Reuss-Ianni, E. (1990) 'Network analysis', in P. Andrews and M. Peterson (eds) *Criminal Intelligence Analysis*. Loomis, CA: Palmer Enterprises, 67–84.
- Innes, M. (2006) 'Reassurance and the "new" community policing', *Policing and Society*, 16: 95–8.
- Innes, M., Fielding, N. and Cope, N. (2005) 'The appliance of science?: The theory and practice of crime intelligence analysis', *British Journal of Criminology*, 45: 39–57.
- John, T. and Maguire, M. (2007) 'Criminal intelligence and the national intelligence model', in T. Newburn, T. Williamson and A. Wright (eds) *Handbook of Criminal Investigation*. Cullompton: Willan.
- Johnson, S. and Bowers, K. (2004) 'The stability of space-time clusters of burglary', *British Journal of Criminology*, 44: 55–65.
- Johnston, L. (2000) *Policing Britain*. Harlow: Longman.
- Kelly, R. (1990) 'The development of inferences in the assessment of intelligence data', in P. Andrews and M. Peterson (eds) *Criminal Intelligence Analysis*. Loomis, CA: Palmer Enterprises, 149–80.
- Maguire, M. (2000) 'Policing by risks and targets: some implications of intelligence-led crime control', *Policing and Society*, 9: 315–36.
- Maguire, M. and John, T. (1995) *Intelligence, Surveillance and Informants: Integrated Approaches. Crime Detection and Prevention Series Paper 64*. London: Home Office.
- Maguire, M. and John, T. (2006) 'Intelligence Led Policing, managerialism and community engagement: competing priorities and the role of the National Intelligence Model in the UK', *Policing and Society*, 16: 67–85.
- Manning, P. (1992) 'Information technologies and the police', in M. Tonry and N. Morris (eds) *Modern Policing. Crime and Justice*. Vol. 15. Chicago, IL: University of Chicago Press, 349–99.
- Manning, P. (2001) 'Technology's ways: information technology, crime analysis and the rationalizing of policing', *Criminal Justice*, 1: 83–104.

- Manning, P. and Hawkins, K. (1989) 'Police decision making', in M. Weatheritt (ed.) *Police Research: Some Future Prospects*. Aldershot: Avebury, 139–56.
- Martens, F. (1990) 'The intelligence function', in P. Andrews and M. Peterson (eds) *Criminal Intelligence Analysis*. Loomis, CA: Palmer Enterprises, 1–20.
- McGuire, P. (2000) 'The New York Police Department COMPSTAT process: mapping for analysis, evaluation and accountability', in V. Goldsmith *et al.* (eds) *Analyzing Crime Patterns, Frontiers of Practice*. Thousand Oaks, CA: Sage, 11–22.
- NCIS (2000) *The National Intelligence Model*. London: NCIS.
- NCPE (2005) *Guidance on the Management of Police Information*. London: ACPO.
- NCPE (2005) *Guidance on the National Intelligence Model*. London: ACPO.
- Ormerod, D. (1999) 'Criminal profiling: trial by judge and jury, not criminal psychologist', in L. Alison and D. Canter (eds) *Profiling in Policy and Practice*. Aldershot: Ashgate, 209–61.
- O'Shea, T. and Nicholls, K. (2003) *Crime Analysis in America: Findings and Recommendation*. Washington DC: US Department of Justice.
- Pawson, R. and Tilley, N. (1997) *Realistic Evaluation*. London: Sage.
- Pease, K. (1998) *Repeat Victimisation: Taking Stock. Crime Detection and Prevention Series Paper 90*. London: Home Office.
- Peterson, M. (1990) 'The context of analysis', in P. Andrews and M. Peterson (eds) *Criminal Intelligence Analysis*. Loomis, CA: Palmer Enterprises, 21–65.
- Peterson, M. (1994) *Applications in Criminal Analysis: A Sourcebook*. Westport, CT: Greenwood Press.
- Ratcliffe, J. (2000) 'Implementing and integrating crime mapping into a police intelligence environment', *International Journal of Police Science and Management*, 2: 313–23.
- Ratcliffe, J. (2002a) 'Intelligence-led policing and the problems of turning rhetoric into practice', *Policing and Society*, 12: 53–66.
- Ratcliffe, J. (2002b) 'Damned if you don't, damned if you do: crime mapping and its implications in the real world', *Policing and Society*, 12: 211–25.
- Ratcliffe, J. (2004) 'Crime mapping and the training needs of law enforcement', *European Journal on Criminal Policy and Research*, 10: 65–83.
- Ratcliffe, J. (2008) *Intelligence-Led Policing*. Cullompton: Willan.
- Ratcliffe, J. and McCullagh, M. (1999) 'Burglary, victimisation and social deprivation', *Crime Prevention and Community Safety*, 1: 37–46.
- Ratcliffe, J.H. and McCullagh, M.J. (2001) 'Chasing ghosts? Police perceptions of high crime areas', *British Journal of Criminology*, 41: 330–41.
- Read, T. and Oldfield D. (1995) *Local Crime Analysis. Crime Detection and Prevention Series Paper 65*. London: Home Office.
- Repetto, T.A. (1976) 'Crime prevention and the displacement phenomenon', *Crime and Delinquency*, 22: 166–77.
- Robinson, M. (1998) 'Burglary revictimisation: the time period of heightened risk', *British Journal of Criminology*, 38: 78–87.
- Rossmo, K. (2000) *Geographic Profiling*. Boca Raton, FL: CRC Press.
- Shaw, C. and McKay, H. (1942) *Juvenile Delinquency and Urban Areas*. Chicago, IL: University of Chicago Press.
- Sherman, L., Gartin, P. and Buerger, M. (1989) 'Hot spots of predatory crime: routine activities and the criminology of place', *Criminology*, 37: 27–55.
- Sherman, L., Gottfredson, D., MacKenzie, D., Eck, J., Reuter, P. and Bushway, S. (1998) *Preventing Crime: What Works, What Doesn't and What's Promising*. Washington, DC: National Institute of Justice.
- Sheptycki, J. and Ratcliffe, J. (2004) 'Setting the strategic agenda', in J. Ratcliffe (ed.) *Strategic Thinking in Criminal Intelligence*. Sydney: Federation Press.

'Interpretation for action?': definitions and potential of crime analysis for policing

- Taylor, B., Kowalyk, A. and Boba, R. (2007) 'The integration of crime analysis into law enforcement agencies', *Police Quarterly*, 10: 159–164.
- Tilley, N. (1997) 'Realism, situational rationality and crime prevention', in G. Newman *et al.* (eds) *Rational Choices and Situational Crime Prevention*. Aldershot: Ashgate, 95–114.
- Tilley, N. (ed.) (2002a) *Analysis for Crime Prevention*. Monsey, NY: Criminal Justice Press.
- Tilley, N. (ed.) (2002b) *Evaluation for Crime Prevention*. Monsey, NY: Criminal Justice Press.
- Tilley, N., Pease, K., Hough, M. and Brown, R. (1999) *Burglary Prevention: Early Lessons from the Crime Reduction Programme*. *Crime Reduction Series Paper 1*. London: Home Office.
- The Richard Inquiry (2004) London: The Stationery Office.
- The 9/11 Commission Report (2004) *Final Report on the National Commission on Terrorist Attacks upon the United States*. New York: Norton.
- Walsh, P. (2004) 'Project management', in J. Ratcliffe (ed.) *Strategic Thinking in Criminal Intelligence*. Sydney: Federation Press.
- Weisburd, D. and McEwen, T. (eds) (1998) *Crime Mapping and Crime Prevention*. Monsey, NY: Criminal Justice Press.
- Weisburd, D., Wyckoff, L., Ready, J., Eck, J., Hinkle, J. and Gajewski, F. (2006) 'Does crime just move around the corner? A controlled study of spatial displacement and diffusion of crime control benefits', *Criminology*, 44: 549–592.
- Wiles, P. and Costello, A. (2000) *The 'Road to Nowhere': The Evidence for Travelling Criminals*. *Home Office Research Study 207*. London: Home Office.
- Willis, J., Mastrofski, S. and Weisburd, D. (2007) 'Making sense of COMPSTAT', *Law and Society Review*, 41(4): 147–88.
- Wilson, P. and Soothill, K. (1995) 'Psychological profiling: red, green or amber?', *Police Journal*, 69: 12–20.