

Crime and Intelligence Analysis through Partnership (CIAP)

Final Report prepared for the College of Policing

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1 Background

The aim of the College of Policing (CoP) and Canterbury Christ Church University (CCCU) jointly funded *Crime and Intelligence Analysis through Partnership* (CIAP) project was to build capacity for the mutual exchange of knowledge and applied research skills between universities and law enforcement agencies in the area of crime and intelligence analysis. Funding was provided through the CoP Innovation Fund and CCCU's Higher Education Innovation Fund (HEIF, an initiative of the higher education funding body, Hefce). In addition to the CoP and CCCU, other partner organisations included ACPO Intelligence Portfolio, Kent Police, the Metropolitan Police Service (MPS), British Transport Police (BTP) and the University of Huddersfield, Crime and Policing Group.

The emphasis of the project was on the relationship between the academic community and crime and intelligence analysis; how this relationship could be developed and deepened with the express intent of better supporting the analytical and intelligence needs of operational policing. It is important to acknowledge at the outset that the project's aims did not include a comprehensive survey and analysis of the state of play of crime and intelligence analysis within policing in the UK. However, we did draw upon other published reports (e.g. HMIC, 2012) and unpublished research in this area (such as Holyer, 2012) that are concerned (at least in part) with the more general position of crime and intelligence analysis within law enforcement.

Further, it is important also to recognise the inherent ambiguities within the meaning of the term 'crime and intelligence analysis', and how these ambiguities affect our understanding. Although the operational requirements are set out reasonably clearly within descriptions of police structures such as the National Intelligence Model (NIM) our research (in common with other such studies) revealed both a plethora of policing roles that involved a crime and intelligence analysis (beyond those formally designated as 'analysts'), and numerous interpretations of the meaning of intelligence itself. For example, in terms of the former, the analysis of communications traffic (particularly of mobile phones) is often undertaken by SPoCs (not normally based within the analysis part of a police organisation) in response to specific operational enquiries.

The relationship between academic research, police crime and intelligence analysis, and operational policing has never been well defined. Indeed, in the past, some have pointed to the existence of an uneasy relationship between police and academic research by way of explanation (Laycock, 2001; Sollund, 2005; Dawson and Williams, 2009). Despite this, there are many examples of productive knowledge exchange between operational crime and intelligence analysis and the academic community although this tends to be at the level of police forces and often due to the enthusiasm of particular individuals. (For example, HMIC note how academic research into optimal foraging theory can positively affect crime analysis, HMIC, 2012, pp. 11-12).

The last 20 years has also seen the development of various frameworks and analytical models developed both in the USA with Problem-Oriented Policing (Goldstein, 1990) and UK with the development of the NIM (National Criminal Intelligence Service, 2000), practitioner focused Crime Reduction toolkits and later with Paul Ekblom's '5Is'. But the most well-known problem solving framework in UK operational analysis has undoubtedly been SARA (Scanning, Analysis, Response and Assessment). All of these tools and frameworks, however, commonly emphasise the need for good analysis and research in operational police work and performance monitoring.

To date there have been a host of academic publications directed at police and crime analysts. Although too numerous to list all of them here, arguably the two key UK publications are Ron Clarke and John Eck's seminal 'Become a Problem-Solving Crime Analyst in 55 Steps' (2003) and Karen Bullock and Nick Tilley's 'Crime Reduction and Problem-Orientated Policing' (2003). Both are memorable for having been written by academics for police consumption, making research more palatable for those either less academically minded or those with time pressures.

Outside of police service provision, analytical training is offered by some higher education establishments, and at a number of different academic levels, ranging from one day courses focusing on Continuing Professional Development (CPD) to Masters degrees (the Masters in Crime Science offered by the Jill Dando Institute of Crime Science at University College London being one of the most well-known, see <http://www.ucl.ac.uk/jdi/>). At the time of writing, other universities offering criminology and crime science degrees with a strong practitioner emphasis include; University of the West of England, Glasgow, Leicester De Montfort, Huddersfield, Northumbria, and the Open University.

Paul Dawson and Emma Williams, in one of the only academic papers to look directly at the relationship between academic research and crime analysts, make the important point that there appears to be a common 'general misconception between terms such as analysis and research' at an operational level, with analysis often referring to the production of analytical products for tactical issues, and research being the less defined output of those individuals that work with data to produce charts, graphs and statistics (2009, p.373). Indeed, a modern day 'analysis hierarchy' exists in many police services in England and Wales, with 'researchers' lowest down the pecking order, essentially collecting (for example) social networking and cell-phone data, for 'analyst' colleagues to analyse.

In sum, the current state of the relationship between police crime analysts and academia remains largely unknown and unquantified. The aim of this project was to look at the current interaction of university academic research in crime and intelligence analysis with police operational practice, especially around evaluation techniques, evidence-based policing and the ability to put it into practice. It is hoped that the findings will help in some way to develop a more defined and mutually beneficial relationship between police crime analysts and academic research.

We have based the remainder of this report on the structure recommended by the CoP in its guidance.

2 Description of funded work undertaken, outputs and objectives met

The research involved interviews and focus groups with over 40 individuals from BTP, Durham Police, Essex Police, Kent Police, the MPS and West Yorkshire Police. This included the ACPO portfolio holder for analysis, principal analysts and a number of intelligence analysts and researchers across the force areas.

The interviews aimed to explore respondents' perceptions of the academic input into current analyst training, analytical software, the perceived gaps where further academic knowledge may facilitate

their role and any areas of challenge within the organisation that might benefit from an enhanced relationship with the academic community.

2.1 Findings

This section of the report will outline the key findings identified from the research. The findings most relevant to the original research aims, relating to an enhanced collaboration with and role of academic knowledge within crime / intelligence analysis will be explored. However there are a range of other issues relating to the current picture of intelligence analysis within the context of policing available from the authors should the College of Policing require them.

The key findings will be divided up into four main areas; internal perceptions of the analyst role as 'professional'; intelligence training; internal structures and technical support for analysts. Each section will conclude with a summary of where the authors consider the links to academic knowledge to be most relevant. It is important to note that the issues presented here are not mutually exclusive nor exhaustive.

2.1.1 Sense of professionalism

In simplistic terms, evidence based policing (EBP) is about ensuring that the deployment of police resources are focused on the areas of need where they are likely to have the greatest impact. Crime and intelligence analysts are integral to intelligence-led and problem orientated approaches to operational delivery as they provide detailed information to officers about crime problems (Cope, 2003).

Within our research, local analysts felt that they should be fundamental to this process but their ability to move data collection into interpretative analysis was limited as a result of the way officers often perceive the input of their products.

"We're asked to provide data and the police officers want their decision-making and their data interpretation kept to themselves, so unless you come up with something amazing, then they're not that interested in your interpretation or your recommendations.... They want data from the analysts rather than analysis, unless it supports whatever their decision already is, in which case they'll use it but they'll ignore a contrary view" (Analyst).

The subsequent effect on analysts as a result of these issues caused analysts to question their own sense of professionalism as they did not feel considered as professionals in their own right by all in the organisation. Whilst the challenges of police culture(s) and the acceptance of an objective review of data have been considered previously by other researchers (Cope, 2003; Dawson and Williams; 2009) this is particularly pertinent at a time when the College of Policing is striving to make the police increasingly evidence based. Any top down directive over activity can inhibit a sense of officer professionalism in relation to their own discretion and experiential knowledge about their field (Chan, 2001). Analysts felt that some considered them as being part of this top down process and therefore could be reluctant to challenge officers' decisions when they rejected the evidence presented to them.

"Reporting the numbers is easy and if you're lazy you can just report the numbers and then police officers love to put their own interpretation on the data but the more challenging thing, and you need to have quite a lot of confidence that you know more than police officers, is to say these are the numbers, this is what's going on and my recommendations to you are to do x and y to make it better" (Analyst).

Principal analysts and strategic leads described the development of the Intelligence Professionalisation Programme. The aim being to provide a framework to professionalise the

analytical function within law enforcement agencies at a national level, standardise analytical training, develop the career pathways and training provision for analysts and perhaps more importantly, mainstream the use of intelligence and its vital role for officers at all levels of the police organisation.

Paradoxically local analysts seemed broadly unaware of the above processes being driven forward to develop their role as a profession. Therefore whilst the commitment was clearly there from the ‘top’, analysts described a sense of feeling undervalued and de-motivated. Moreover, senior analysts described how analysts are not encouraged to stay within the police field due to a lack of development and career structure.

2.1.2 Intelligence Training

Whilst many analysts felt that having access to the National Intelligence Analysis Training (NIAT) was an investment in them professionally, perceptions of the value of the training provided were inconsistent. Echoing the previous issues identified, we found criticism amongst analysts concerning the lack of practical application training for the actual role. A number of analysts interviewed had academic qualifications in relevant subject areas such as criminology. However due to the demand for largely descriptive data there was little scope for analysts to utilise this knowledge in their products.

One analyst described this succinctly when asked about the academic input into their training and development.

“Yes, nice in theory but where has it actually been applied? It’s all very easy to sit there in your ivory tower telling us how things can be done but let’s see how it works in practice. But actually some of it has been applied, and that’s really useful because you can say, look some of this does actually work when you put it into practice” (Analyst).

Paradoxically analysts believed that the training itself currently focuses on the delivery of descriptive products over analysis. Whilst the principal analysts felt that refreshing theoretical knowledge would enhance their critical thinking and enhance the products delivered there needs to be consideration of training in relation to moving the products into operational reports that utilise theory in a practical way. Principal analysts considered partnership working between individual forces, the academy and the College of Policing as being critical to delivering this.

Training was also linked to retention issues and principal analysts described the need to ensure that analyst’s feel invested in, and empowered to undertake, their job effectively. The lack of ongoing development was described by a number of the analysts interviewed:

“I think in terms of development and profession, I don’t see that there is any training at all” (Analyst).

In relation to EBP, analysts also described a lack of input regarding evaluation and review of police deployments and tactical decisions. Such feedback from the analysts is critical for organisational development and learning and given the issue of cost effectiveness in the current climate the role of the academic community is crucial here.

“The problem for an analyst in policing, when they start the job, that’s when they’ve got to decide whether they want results analysis. So the intel officer can collect that information as they go along and can answer it at the end. In the 13 years I’ve been in the job, I’ve been asked for results analysis like that twice” (Analyst).

2.1.3 Internal Structures

One impact of the application of new public management regimes to policing and other public sector agencies is the issue of how performance management is undertaken within the organisation (Guilfoyle, 2012; Loveday, 2006). Current internal structures such as performance meetings based on the ethos of Compstat (or similar) can compound the problems with analytical products being based on a figures and data review. Such issues not only compound the problem with development for analysts and indeed their products but they also at a more strategic level maintain the focus on short termism over long term problem solving. Therefore, whilst analysts believe their role to be essential within the process of EBP such improper use of their skills impacts both on their own sense of professionalism and also the effectiveness of the EBP cycle as their products remain at the data collection stage and unable to drive decision making at a more strategic level.

There were inconsistencies in the use of analysts across the force areas and in one sampled force analysts described a more analytical relationship with performance analysts whereby they would approach them for the data required to conduct more meaningful analysis.

"We would get the performance team to give us reported data as a starting point, especially when you are looking at strategic stuff...They will also give us data for our tactical assessment which is quite good, so we can look for change and we will use this data to form our analysis going forward looking at other things" (Analyst)..

This issue compounds the other factors described above as officers are less concerned with asking the right questions of their analysts. The focus on officers reaching targets to confirm their performance exacerbates the problem of requiring descriptive data to depict whether or not a crime type has gone up or down. Therefore analysts are in some instances utilised as performance analysts. The sense of competition that such structures can influence was articulated by one analyst.

"I think as well, we are quite performance focused in the police and it sets up silos of working...every unit needs to prove that they are better than another unit and each area of business needs to prove that they are the best" (Analyst).

This was also described in relation to the methodologies used to undertake analysis and the need for analysts to be more proactive when thinking about how to develop and enhance their products and within problem definition.

"The software packages definitely help, of course for analysts and researchers as well, but you can't do everything from behind a computer. You're talking about communities, multi-agency approaches, linking in with looking at quantitative research as well and actually really understanding what the problem is. So you're talking about partners" (Analyst).

2.1.4 Technical support for analysts

It was apparent during our research that the use of software to support crime and intelligence analysis was of vital importance and indeed, the job of an analyst would be impossible to perform without the technical support the software provides. However, as noted above, many analysts felt that the act of analysis was not simply one of automated 'number-crunching' of big data but instead inevitably and rightly involved more abstract and human-centred forms of enquiry and reasoning. For example, there were a number of observations made throughout this study surrounding the link between hypothesis-setting by analysts and the reasoning used by investigators in the field. As one analyst put it,

"... we need to be able to challenge the mindset of investigators that fixate on the usual suspects" (Analyst)

There were also important questions raised concerning the reliability and validity of data which might be used by analysts to build and test hypotheses. (A number noting the perennial 'GIGO' – 'Garbage

In, Garbage Out' problem in analysis). Perhaps inevitably, technical support for crime and intelligence analysis tends to involve the application of set automated routines to describe and analyse crime data and intelligence. Some interviewees (particularly those at principal analyst or equivalent levels) felt that the academic community could play more of a part in helping develop the forms of reasoning most appropriate to drawing inferences. One way of helping do this would be by inviting members of the academic community to join the appropriate forums on POLKA.

Most of the technical support available can be categorised under the headings of 'crime analysis' (primarily the identification of crime patterns, such as 'hotspots' or crime trends) or 'intelligence analysis' (for example, timelines and association charts showing linkages between members of an organised crime group) although there are a number of software suites that are either expressly promoted as performing both functions or can be adapted to do so. Our research found a relatively small number of software packages that were common to either crime analysis or intelligence analysis in the police forces we studied. These included the i2 Analyst's Notebook and iBase (both products of the IBM Corporation), Northgate xd (provided by Northgate Information Systems UK Ltd) and the MS Office suite of programs (notably Excel). In addition many analysts accessed law enforcement databases such as the PNC/PND, PI (prison intelligence), force-specific intelligence databases, commercial databases (e.g. for address look-up), open source data (such as Data.police.uk for crime data and API tools) and for presentation of crime data sometimes employed BusinessObjects (a product of SAP AG). Less often used were statistical packages such as SPSS and crime analysis software such as Crimestat or Rigel (often because of the difficulties involved in gaining permission to install and run the software – see later).

What surprised the research team was the widespread and frequent use of Excel for analytical purposes, including intelligence analysis. In some circumstances (principally telephone call analysis) Excel even appeared to be favoured over the alternative bespoke and expensive software available to analysts. In many cases this appeared to be as a result of a greater familiarity with Excel and its apparent flexibility and extensive user-support freely available. As one analyst explained:

"...charts can be great for some things, don't get us wrong but they can be totally impractical for others ...and a sequence of events in a five day period is .. better presented in an Excel document' (Analyst).

This apparent widespread use of Excel could be exploited in partnership with the academic community to develop the further capability of analysts. Many analysts for example seem unaware that add-ons to Excel were available, for example in order to enhance its use to draw statistical inferences (see for example, XLSTAT at <http://www.xlstat.com>).

We also encountered many examples of analysts creating their own software solutions to improve their analytically capability. For example, a number had written executable files to automate routines and templates were often shared within an organisation to speed up routines (e.g. for to help analyse mobile phone call frequencies and linkages). However, there was little evidence that these methods had been shared beyond a particular police force, despite their obvious utility for others. An obvious way that this might have happened would have been using blogs or restricted forums such as POLKA. However, the public web spaces supporting professional crime and intelligence analysis seem to have a short lifespan and the authors of this report were unable to assess the use of POLKA.

In the main, analysts were complimentary about the quality of the software they used as technical support for their role. The IBM product i2 Analyst Notebook was often cited as being a valuable piece of software, enhanced by a committed user-base and the responsive of the supplier. Analysts were also quick to explain that they realised that much of the capability of the software and many of the databases at their disposal were under-used. For example, the PNC has the capability to be queried using extended search techniques (QUEST) but this ability appears to be very under-utilised.

There were also a number of frustrations expressed by analysts and their line-managers:

- The IT infrastructure they work with can be out-of-date, slow and prone to failure. Some analysts expressed embarrassment at difficulties encountered when trying to share analysis with other forces in out-of-date file formats.
- Some analysts find some of the specialist software (particularly for generation of crime data maps) ‘clunky, buggy and prone to crashing’. However, they are constrained by organisational rules from exploring open source alternatives (such as GoogleMaps).
- Databases from different sources are difficult to link together (understandably, software vendors are more concerned with their own products rather than their interoperability with others).
- The difficulties surrounding gaining authorisation to use new software and then installing and running the software. The needs for maintaining the security of police IT systems is fully understood by analysts but the current restrictions are tending to stifle professional development in terms of assessing the value of particular analytical approaches.
- Training on new software (or even simply updates of existing software) can be expensive and abstract staff from duties.

Growing areas of analytical work include mobile phone data analysis (as one analyst explained, “*every job we work on right now involves mobile phones*”) and open sources of intelligence, particularly online. The latter are proving particularly difficult for analysts as for example, offenders turn towards using internet-based messaging services such as WhatsApp that are more difficult to analyse when compared to conventional SMS. The growing volume of data available, and the increasing demand on analysts in terms of the need for timely operational intelligence is also posing problems and triage methods for managing demand do not appear to be widespread.

As part of the project we are piloting the use of open source software to enhance the capability of crime and intelligence analysis. This involves the use of geographical profiling techniques as a potentially additional analytical tool to support operational policing. At the time of writing (May 2014) data was being collected and analysed to evaluate the use of Profiler software (see <http://pages.towson.edu/moleary/Profiler.html>) as an example with Kent Police and results are expected in the summer of 2014. An evaluation will be shared with the College of Policing at that time.

3 Next Steps (including feedback on lessons learnt)

This section will outline the key recommendations arising from the research. It is important to note however that there are already a range of change programmes being developed and implemented across different force areas regarding the use of crime and intelligence analysts. Therefore it would be worth considering any local evaluations regarding the outcomes of these changes alongside the findings from this research. Local force areas are driving forward these changes within the context of austerity and severe budgetary cuts both in relation to analyst resources and local training. The authors of this research would also point out the need for the academic community to be mindful of the financial constraints and be adaptable to the needs of their customers in this context.

Research (Sklansky, 2008; Bradford and Myhill, 2012) suggests that in order for officers to commit to change there needs to be a sense of participatory engagement or organisational justice. Indeed communications about their role within any change process needs to be two way. Any form of evidence-based policing (EBP) could be conceived by officers as a top down directive which inhibits their sense of professionalism and their ability to utilise their discretion.

Therefore our recommendations are focused on three main areas:

- collaboration between the needs of the police and what we might call the ‘evidence-based stakeholders’ (the academic community and more locally, crime analysts);
- developing training for analysts through academic knowledge exchange;
- enhancing the technical support available to analysts.

3.1 Evidence-based Policing

EBP is a key strand of work within the College of Policing’s vision for the professionalization of the police service. A important aspect of EBP is the link with higher education.

3.1.1 Core police training (both at initial and post-qualification levels) itself should include an element of EBP theory, as this research has found that the effectiveness of crime analysts’ work is limited by a lack of understanding. This, in part, is due to their customers’ understanding of evidence based practice within the delivery of operational and strategic decision making and the lack of clarity in terms of role description.

3.1.2 There is a need to develop research programmes into what might facilitate the embedding of an evidence based approach to operational policing. We have identified much evidence of good practice in terms of analysis conducted for strategic reasons (e.g. monitoring crime and disorder patterns) and when commissioned for specific tactical reasons (e.g. understanding the nature of a particular organised crime group). However, there appears to be an urgent need for ‘real time’ crime and intelligence analysis at the operational level. There is a critical need to further understand the inhibitors and indeed the perceived facilitators to making this process more effective (for example, the absence of triage procedures). This should involve engagement with officers about their needs of research and analysis and a willingness of the academic community to consider this in reports and research papers. Raising the awareness of EBP in officers and indeed the importance of it would facilitate them becoming intelligent consumers of analytical work.

3.1.3 The above research would enhance the training delivered to analysts in relation to their concerns about current packages not providing them with the skills required to ensure their products are practical and operationally useful. Indeed the further positive consequence of this would be a potential increase in analysts’ sense of professionalism as they develop products more in line with operational need and in conjunction with their customers.

3.1.4 The research would advocate the development of modular training dependant on specific analytical roles. This would facilitate development programmes for staff and promote a consistent approach to roles across the country. This might include the theoretical background to a type of analysis and consideration to how this can be related at a practical level for, and with, police officer involvement.

3.2 Training and development

3.2.1 The role of analysts in evaluations and results analysis needs to be enhanced. Whilst this may need some wider more strategic change around the current methods used to measure performance internally in some forces this is critical to understanding efficiency and driving forward organisational change and learning. The academic community could facilitate this learning through delivering evaluative skills to analysts whilst recognising the need for shorter team methods that the academy themselves are used to.

3.2.2 In our limited study we found a perception amongst analysts that the ‘disruption’ aspects of intelligence-led policing under the NIM tend to be downplayed by operational police in favour of ‘detection’. Obviously, it is not a case of ‘either/or’ but operational training could perhaps better reflect the importance of good intelligence used to disrupt or dissuade offenders.

3.2.3. We recommend that a structured career pathway be considered by the CoP in order to increase the level of professionalism felt by many crime analysts and halt the high attrition rate to other private and public sector areas. A large number of analysts in this study stated that colleagues had left to apply their skills in the private sector (e.g. banking).

3.2.4. Arguably the greatest service that academics can provide crime analysts is to make training and research which focuses on the bigger picture of crime, criminal behaviour and crime reduction, both more accessible and more available to them. Many of those in this study reported that often they were so focused on day-to-day local crime that wider trends and patterns which would be useful, went unnoticed.

3.3 Technical support

The academic community is well-placed to support the technical needs of crime and intelligence analysts. Indeed, in May 2014 the Intelligence Futures Group (IFG) was formed with the support of ACPO and based with Liverpool Hope University with the express intention to bring together ‘academic, practitioner and entrepreneurial expertise to tackle some of the enormous challenges to effective intelligence posed by Big Data’ (Liverpool Hope University, 2014).

3.3.1 The analyst community should be further helped to spread good practice in technical support (e.g. with both specialist software and commonly available packages such as Excel) and to share in-house solutions. The academic community can play a part in helping assess the reliability and validity of these bespoke approaches, particularly in terms of any CJS evidential requirements. Greater awareness of the availability of ways of enhancing the statistical sophistication of popular software such as Excel (e.g. for aoristic crime analysis) should be encouraged and fostered.

3.3.2 The academic community could provide more academic support in terms of the forms of reasoning used in crime and intelligence analysis, the advantages but also limitations of common heuristics, hypothesis testing, statistical inference and Bayesian probability understanding. This could perhaps be facilitated by opening up membership of parts of POLKA to the academic community.

3.3.3 We recommend greater academic involvement in identifying more cost-effective use of technical support. For example, we observed mobile phone cell site analysis being undertaken based upon data provided (at considerable cost) by telecommunications providers, whereas it is entirely possible that the same intelligence could already be recovered from data already recovered from the suspect’s smartphone.

3.3.4 Knowledge exchange between the academic and analyst communities might help in meeting the urgent need to develop better specialist software for communications analysis and open source intelligence (such as social networking). Funding is potentially available to support this (for example, through HEIF, European funding such as Horizon 2020 etc).

4 Moving the recommendations forward

It is not for the authors of this report to advise the College of Policing about how these recommendations might be driven forward at a practical level. There is a plethora of work already being developed on research in policing, EBP, education in policing and crime analysis and it is within the context of these other areas of planned work that these recommendations need to be considered.

Such discussion would need to include input from those involved in analytical training, the College itself and we would suggest police analysts also. Some areas of these recommendations may be relatively easy to move forward such as assisting analysts with reviews, results analysis and evaluation

advice but at a more strategic level there may be plans to include this in a national training package or modular training plan for policing analysts. Other areas of the findings are more complex and without knowledge of other programmes of work which map onto these areas suggesting ways forward would not be strategic or indeed, joined up.

In addition to the above there have been discussions about utilising 'hub' areas where certain academic institutions attach themselves to certain forces with specific specialisms for example depending on area need. This may again fundamentally link into the recommendations outlined in this report and we would suggest they are considered at a strategic and national level.

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