

Chapter 8 – Forensic science understanding by police managers: new opportunities to re-think its involvement in policing

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Abstract

The conception of forensic science by police managers may hinder its potential to be proactively implemented in policing models.

While police chiefs are the main managers in policing, this chapter also underlines their role in the provision of forensic science. A recent survey of high-ranking officers of various police forces in Quebec showed that police managers tend to focus mainly, if not exclusively, on the ability of forensic science to serve justice. It is therefore argued that the police managers' conception of forensic science may hinder its potential to be proactively implemented in policing models. This situation should be addressed, as a more holistic application of forensic science could offer relevant insights to policing, including threat identification and resource allocations.

Police management and policing

Police management is defined as a set of individual, collective and organizational practices with the aim of producing useful knowledge to ensure the satisfaction of staff members and the performance of the organization in terms of cohesion and policing (Roberg et al., 2002). To attain those goals, modern law enforcement agencies are increasingly moving toward a more proactive approach to address offending, disorder and crime. Consequently, it seems that community policing, problem-oriented policing and intelligence-led policing are gradually becoming standard ways of administering the police - at least in its organizational rhetoric (National Academies of Sciences, Engineering, and Medicine, 2017). As “[a] number of writers have drawn attention to the increased reliance on science and technology for the successful performance of contemporary

policing” (Ludwig et al., 2012, p.53) we postulate that forensic science has a role to play in these modern forms of policing. Therefore, the understanding of forensic science contributions among police senior managers ought to be questioned.

In charge of policy, they act as strategic planners who define short-, medium- and long-term goals and objectives in order to meet expectations and needs of their stakeholders (state, counties, cities) and other partners such as community groups. They are also in charge of the financial, material and human resources allocation within the organization they lead (Aepli et al., 2011; Lynch & Lynch, 2005). Police managers therefore certainly have powers and responsibilities that influence the quality and use of forensic science (Guéniat, 2017). Indeed, they assign tasks and objectives to crime scene units and crime labs and define the conditions that guide their involvement and standards. A recent publication revealed the underestimation by police managers of the scope and possibilities of forensic science, hence limiting its exploitation and potential involvement in law enforcement and policing (Mousseau et al., 2019). Although limited to the Canadian Province of Quebec, this study does not “identify specific reasons why such a perception from police leaders would be exclusive to Quebec” (p. 530).

Indeed, those results are in line with the findings of previous studies over the last decades in the United Kingdom, which indicated that crime scene examiners were essentially considered (including by themselves) as "technical assistants" in charge of collecting evidence (Ludwig et al., 2012; Williams, 2004). For Quebec police senior managers, crime scene units are viewed essentially as support units for criminal investigations. They therefore tend to associate forensic science to a reactive (i.e. on request) and somewhat auxiliary process initiated by the commission of crimes and other types of incidents requiring investigation (e.g car accidents). Many police managers admitted having neither tight relationships with forensic laboratories or research

institutions, nor dedicated protocols or standards to assess the performance of their crime scene units (see Mousseau, 2019).

In the eyes of police managers, forensic science appears to be a complementary and powerful resource to the work of investigators, but mainly dedicated to court, focused on the exclusion of bystanders and the identification of suspects, who could not be identified by other so-called conventional investigation methods. However, according to a body of research, only a small ratio of criminal cases is solved with the help of forensic science, which plays a minimal role in resolving homicide and even burglary cases in the United States, England, Australia, France and Quebec. Rather, human sources (witnesses, informants) and police activities (patrol intervention, surveillance) seem to be the factors contributing to the elucidation of homicide cases (Baskin & Sommers, 2010; Brodeur, 2010; McEwen & Regoeczi, 2015).

In the police managers view, forensic science is strongly associated with supporting the Court decision-making process. In this context, they seem to ignore governmental and academic controversies about the implementation and practices of forensic science (Margot, 2011; NAS, 2009; PCAST, 2016; Roux et al., 2012). The contribution of forensic science in the investigative process is found limited over the past decades, despite abilities to answer and raise questions about a perpetrated crime (Bitzer et al., 2017; Jackson et al., 2006; Kruse, 2015), and the potential to link cases through traces, the best example being burglary series (Bond, 2007; Coupe & Griffiths, 1996). To process traces is not a guarantee of investigative and judicial success per se. Beside that, the efficiency of forensic science can also be challenged since few traces are collected from crime scenes (e.g. physical evidence is collected in less than a third of the assault and burglary cases reported to the police), and only a tinier fraction ends up into court. Obviously, many traces remain unexploited and sleep in investigative files or databases, whereas these traces

hold relevant information on prolific offenders, criminal activity and new threats (Laurin, 2012; Robertson, 2012; Strom & Hickman, 2010).

Traces, as weak signals, constitute many missed opportunities to elicit forensic intelligence useful to support policing (Raymond & Julian, 2015), as will be discussed below. In this regard, managerial (e.g. quality management) and academic efforts (cognitive science, analytics, forensic interpretation) miss out more often than not the potential contribution of forensic science to policing since their main focus is on a better support of justice decisions. Although traces are available to be used in a greater scheme of inferences than systems are able to figure out (Ribaux et al., 2017), operational practitioners are able to deploy abundant and imaginative schemes that may take them into account, but they are not necessarily solicited and remain under the radar of academic studies.

It must be acknowledged that this problem is not limited to forensic science. It is systemic inside the complex policing system, difficult to frame itself coherently through various and different organizations that compose the security and justice apparatus (Brodeur & Shearing, 2005). For instance, databases expansion, including their interconnection upgrade, cannot alone provide a more efficient impact on security, if the efficiency criterion is strictly limited to the jurisdictional answer in court (Jeuniaux et al., 2015; Ribaux & Hicks, 2013).

Forensic science as a provider of policing intelligence: some examples

Forensic intelligence is “the accurate, timely and useful product of logically processing forensic case data” (Ribaux et al., 2003, p.49). This concept relies on the analogy that similar criminal activities will leave traces that are likely to be – at least partly – similar, while distinct activities will mostly produce distinct traces. This systematic comparison of traces can contribute to the

study of crime patterns and serial crimes (Ribaux, Baylon, Lock, et al., 2010; Ribaux, Baylon, Roux, et al., 2010; Ribaux et al., 2006).

Using forensic science in an intelligence perspective is beneficial for supporting decision-making at strategic, operational and tactical levels for law enforcement agencies (Bell, 2006; Ribaux, 2014; Ribaux et al., 2017). It even becomes useful at a macroscopic level as a tool for managers and researchers through the development of scientific knowledge. Since traces are, by definition, dependent on the criminal activities at their origin, using them in a criminological perspective creates knowledge on “forms of crime, modus operandi, typologies of crime situations and problems” (Free translation) (Baechler, 2018, p.143). Forensic science can contribute to the understanding of particular crime systems, criminal trajectories and the evolution of certain offending behaviors, including new criminal trend detection (crime epidemiology), thus becoming an interesting tool for the detection of innovations used by offenders and for resource allocation (Rossy et al., 2017).

Roux and colleagues (2015) pointed out that forensic science should focus on the trace and its potential contribution to security and policing rather than on the specialisation of laboratory techniques and the mere presentation of evidence to the Court. In order to remedy the widespread underutilization of traces, forensic science should be extended to a proactive role of detection and resolution of problems faced by law enforcement agencies and other actors in the field of security. These problems here refer to disturbing and/or criminal activities which, by their frequency or their gravity, threaten social order and the security of the community (Goldstein, 1990).

The scientific literature is also increasingly recognizing that traces can be exploited in a proactive perspective of operational and strategic intelligence, by participating in the definition of problems

and objectives, in the resource prioritisation and allocation, as well as in the development of standards and strategies regarding crime prevention (Bruenisholz et al., 2016; Ribaux et al., 2017).

For example, Fortin (2014) was interested in digital traces not to identify offenders, but to better understand child pornography cyber behaviors as a whole in order to propose an optimization of tools to fight against predators. He developed a method based on digital traces to decipher the interactions of criminals on the Web. It is interesting to note that this approach is fundamentally similar to the one already implemented by using physical, biological and image traces to assess the social and economic structure of crime, the mobility and interaction of criminal groups, and the emergence of new trends (Rossy et al., 2013).

This approach relying on the use of traces to gain knowledge about a “criminal ecology” is indeed experiencing some success in:

- understanding the structure and extent of criminal networks as well as distribution routes through the analysis of seized illicit drugs specimens (Esseiva et al., 2007; Morelato et al., 2013; Ouellet & Morselli, 2013);
- identifying prolific authors through the comparison of shoemarks helping to decide where and when to allocate investigative resources (Ribaux et al., 2003; Rossy et al., 2013);
- detecting links between forged and counterfeit documents revealing the activity of criminal networks, such as human trafficking rings, and inviting to focus on the traffickers instead of the victims (Baechler et al., 2012; Baechler & Margot, 2016);
- refuting criminological and police hypothesis of watertight separations between street gangs, when firearms traces support the sharing of weapons between gangs (Braga & Pierce, 2004; Hannam, 2010);

- mitigating methodological biases in the evaluation of spatial patterns of serial offenders' criminal activity through the use of DNA evidence for intelligence purpose (Lammers, 2013; Lammers et al., 2012; Palmbach et al., 2014).

This perception of social reality by traces does not interest only investigators or social researchers (through the emerging interdisciplinary concept of traceology (Rossy, Décary-Héту, Delémont, & Mulone, 2017)), but also authorities in charge of policing, including economy, public health and prevention, as illustrated by four last examples:

- The assessment of the legal response to public health and economic harm caused by counterfeit medicines concluded that the legal measures were not applicable. The establishment of forensic monitoring was proposed, which initiated the mobilization of the Swiss agencies and relevant international agencies (Dégardin et al., 2014).

- The estimation of drug addiction habits and the identification of new substances using wastewater analysis provided also an assessment of the effectiveness of police operations, all aimed at optimizing the resources of prevention and control available (Been et al., 2016).

- The assessment of the doping trade magnitude through the study of online doping market on biological markers and digital traces highlighted the problem being more significant than what was perceived by the laboratories in charge of security and health problems (Marclay et al., 2013; Pineau et al., 2016).

- The call for awareness-raising amongst European web hosts about their responsibility in the area of counterfeits through the combined analysis of physical and chemical traces arising from the production of watches (on the watches themselves) as well as digital traces linked to distribution websites, which led to favorable developments to protect this art craft (Hochholdinger et al., 2019).

The common key to these strategies lies naturally in the identification of patterns. However, the detection and recognition of these patterns can hardly occur without the transformation of a reactive criminal justice strategy into a proactive security approach. This transformation, in turn, makes it possible to anticipate the means to be implemented in face of criminal innovations. Such a paradigm shift has certainly some consequences on traditional policing, addressing also communities, public health, industry or commerce.

The adoption of such a proactive forensic pathway on serial crime and prolific offenders could look locked by operational or even “pathological” obstacles in law enforcement agencies (Sheptycki, 2004), but forensic data beholds interesting qualities for democratic rights respect (Grossrieder & Ribaux, 2017). For instance, there is no need of coercive measures (house search, arrest, etc.) to collect traces available in public area or at victims’ homes at their request. The use of forensic data for crime understanding and policing has an undeniable potential. But this use must be well regulated and ethically justified to avoid being perceived - rightly or wrongly - as an expansion of governmental intervention and surveillance (Dahl & Sætnan, 2009).

Back to Quebec practice with some positive forecast

The tendency to focus on a low diversity of traces, typically DNA and fingerprints, which emerges from the police senior managers' interviews conducted by Mousseau et al. (2019), is consistent with the more general lack of knowledge of the concept of forensic intelligence (Crispino et al., 2015).

However, three interviewees (over 18) attributed to forensic science a proactive role similar to the concepts on which forensic intelligence is based. They suggested that forensic science might be useful in identifying a particular modus operandi, in detecting a crime series, in discovering new techniques used by offenders and in acquiring knowledge on offenders' habits. Practically,

these police managers would ask their crime scene officers to intervene more frequently and systematically on different cases where links are anticipated, i.e. when those cases could be connected to the activity of a serial offender. Still, their primary rationale for such strategies remains first and foremost built on other types of information and intelligence than forensic science, based for instance on the analysis of spatiotemporal and digital data. It should thus be noted that these three interviewees only very briefly mentioned this extension of the role of forensic science, appearing rather as the result of a thought emerging from the ongoing interview than an entrenched perception (Mousseau et al., 2019).

Nevertheless, such an opening suggests that basic and/or continuing training dedicated to the various roles of forensic science and to the possibilities offered by the discipline should be developed to supplement the knowledge of police decision-makers. To maximize the scope of their reflections on this subject, success story examples showcasing the usefulness to policing might be privileged, including ones in the proactive fight against volume crimes.

With proper forensic science training and, why not, a forensic scientist attached at the right level of command, police senior managers could have a leading role in supporting and extending the use of forensic science for criminal intelligence and more generally policing.

Conclusion

The present analysis, corroborated by a survey of Quebec police managers, supports that police managers as well as some other practitioners and researchers do not perceive the full potential of traces in a holistic approach. Indeed, by concentrating their attention mainly, if not exclusively, on the ability of forensic science to serve justice, they tend to restrict forensic science to a set of scientific disciplines used in a laboratory context, without a clear understanding and a real

reflection of its potential within a broader security challenge (Crispino et al., 2011; Kelty et al., 2013; Pietro et al., 2018).). They thus seem little informed about the demonstrated usefulness of traces in a proactive perspective that goes beyond the investigation of singular cases, and in the knowledge acquisition on volume crimes. Forensic intelligence expand to the exploitation of the whole variety of digital traces. Further, most police forces have been struggling with the challenges caused by the digital transformation of society. In this context, forensic intelligence provides an additional avenue to exploit the large variety of commonly encountered digital traces. As a result, forensic intelligence may provide a framework to police organizations to design and integrate policing strategies, methods and tools that are adapted to an increasingly digitalised society (see Ribaux et al., chapter 11).

Reducing forensic science to an ancillary service to the justice system deprive police managers of an effective perception tool complementary to their traditional methods of policing, to unveil actual or emergent threats on their fellow citizens, and rationalize the allocation of resources to remedy them.

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