

Report of Dr Itiel Dror
Specialist in the field of Human Cognition: Perception, Judgement and Decision Making

DPP v. Patrick Hutch

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Specialist Field	Human Cognition: Perception, Judgement and Decision Making
On instruction of	Solicitors John Feaheny & Company
Subject matter	<p>A murder occurred on the 5th of February 2016. Two Garda detectives identified one of the culprits as being Patrick Hutch. The identification was solely based on a photograph from the scene, showing a man disguised as a woman. A number of cognitive factors in making this identification make its accuracy questionable. These factors include cognitive bias of the two Garda detectives, difficulty in making the identification based on a photograph of a man in disguise (as reflected also by the identification evidentiary data itself), and the manner in which the identification took place, which violates basic good practices (as well as the Garda's own identification procedures). In my opinion, each of these factors is problematic, but taken together, and their interactions, make the identification biased and unreliable.</p>

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1. Introduction

1.1. The author

I am Dr Itiel Dror, the Principal Consultant at Cognitive Consultants International Ltd., and an Honorary Senior Researcher at the Centre for the Forensic Sciences at University College London (UCL). I am a British citizen, born in 1961, married and a father of four. Further details are available at my webpage, at: <http://www.cci-hq.com/dr.-itiel-dror.html>. My e-mail is: Itiel@cci-hq.com and my phone contact is: +44 (0)7515561660.

I received my PhD in psychology from Harvard University (USA) in 1994, specialising in human cognition. I have been selected for research fellowships at the US Air Force, the Japanese Frontier Research Program, and I have been appointed as a lecturer at Miami University (USA) prior to moving to the UK where I was a Senior Lecturer at Southampton University before moving to University College London (UCL). I am on the board of editors of the journal *Science & Justice*, *Pragmatics & Cognition*, and the *Journal of Applied Research in Memory & Cognition*, and was on the board of editors of the journal *Forensic Science Policy & Management* and the *Journal of Experimental Psychology: Applied*. I have had research grants from a variety of agencies and countries, including the UK Research Councils, the Nuffield Foundation, and the British Academy (in the UK), the National Institute of Justice, National Institute of Standards and Technology, U.S. Air Force and FBI (in the United States), and the Australian Research Council. These research projects include: forensic reasoning, accuracy and reliability of forensic decision making, forensic expert error as a function of visual complexity and cognitive difficulty, cognitive suitability for conducting forensic examination, and forensic decision making on suitability for identification judgments.

My research on cognitive bias has been cited by the Court of Appeal (in the UK) and various courts in other countries, as well as by expert groups and inquiries into cognitive bias in forensic work. I have been commissioned both by the defence and the prosecution as an expert witness on cognitive bias of forensic examiners, including working for the prosecution to reject a motion by the defence to exclude evidence due to cognitive bias. I have recently published a paper on these issues with a U.S. State Supreme Court Judge, which appeared in the *Judges' Journal*, and I have been asked by Sir Walport (the UK Government Chief Scientific Adviser) to include a chapter on cognitive bias in his Annual Report. Furthermore, I have also been invited to train lawyers (both prosecution and defence) on bias in expert decision making. In addition to lawyers, I have also been invited to provide training to the Senior Judiciary in the UK (as well as judges in the United States and other countries).

1.1.1. Academic research. My research focuses on understanding the information processing underlying human cognition, perception, judgement and decision making. Using experiments in which I examine human performance, computer simulations, and neuroscientific data, I develop theoretical models of cognitive processes.

Specifically, my academic research examines how factors, such as context, expectation, time pressure, emotional state, and motivation affect peoples' perception, judgement and decision making. My research focuses on the interactions between the data itself and the psychological driven processes, and how these are mediated by expertise. Specifically, how cognitive factors shape expert perception and judgements.

My academic research has been published in over 100 peer reviewed scientific articles and numerous scientific presentations (as well as having been covered by top outlets, such as Science, Nature, and The Economist). Below is a short list of selected publications (a full list is available in my 54-page CV):

- Dror, I. E. & Stevenage, S. (eds.) (2000). Facial Information Processing: A multidisciplinary perspective. (276 pp.) John Benjamins, Amsterdam.
- Dror, I.E. & Fraser-Mackenzie, P. (2008). Cognitive biases in human perception, judgment, and decision making: Bridging theory and the real world. In K. Rossmo (Ed.), Criminal Investigative Failures (pp. 53-67). Taylor & Francis Publishing.
- MacLean, C. & Dror, I.E. (2016). A Primer on the Psychology of Cognitive Bias (pp. 13-24). In A. Kesselheim & C. Robertson (Eds.), Blinding as a Solution to Bias. Elsevier.
- Dror, I. E. & Stoel, R. (2014). Cognitive forensics: human cognition, contextual information and bias (pp. 353-363). In the Encyclopedia of Criminology and Criminal Justice. Springer.
- Dror, I. E., Kukucka, J., Kassin, S., & Zapf, P. (2018). When expert decision making goes wrong: Consensus, bias, the role of experts and accuracy. Journal of Applied Research in Memory and Cognition, 7 (1).
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- Dror, I. E., Kassin, S. M., & Kukucka, J. (2013). New application of psychology to law: Improving forensic evidence and expert witness contributions. Journal of Applied Research in Memory and Cognition, 2 (1), 78-81.
- Dror, I.E. (2016). A Hierarchy of Expert Performance. Journal of Applied Research in Memory and Cognition, 5 (2), 121-127.
- Dror, I.E. (2016). Cognitive and Human Factors (pp. 40-49). In M. Walport (Ed.) Forensic science and beyond: authenticity, provenance and assurance - evidence and case studies. UK Government Office for Science.
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- Dror, I. E. (2013). Practical solutions to cognitive and human factor challenges in forensic science. Forensic Science Policy & Management, 4, 105-113.
- Dror, I. E., Kukucka, J., Kassin, S., & Zapf, P. (2018). No one is immune to contextual bias. Journal of Applied Research in Memory and Cognition, 7 (2).
- Kukucka, J., Kassin, S., Zapf, P., & Dror, I. E. (2017). Cognitive Bias and Blindness. Journal of Applied Research in Memory and Cognition, 6 (4), 452-459.

- Dror, I. E. & Bucht, R. (2011). Psychological perspectives on problems with forensic science evidence. In B. Cutler (Ed.), *Conviction of the Innocent: Lessons from Psychological Research* (pp. 257-276). American Psychological Association Press.
- Edmond, G., Tangen, J., Searston, R. & Dror, I. E. (2015). Contextual bias and cross-contamination in the forensic sciences: The corrosive implications for investigations, plea bargains, trials and appeals. *Law, Probability, and Risk*, 14 (1), 1-25.
- Stoel, R., Berger, C.H., Kerkhoff, W., Mattijssen, E.T., & Dror, I. E. (2014). Minimizing contextual bias in forensic casework (pp.67-86). In K. Strom & M. Hickman (Eds.), *Forensic Science and the Administration of Justice*. SAGE Publishing.
- Fraser-Mackenzie, P.A.F., Bucht, R.E., & Dror, I.E. (2013). Forensic Judgment and Decision-Making. In P. H. Crowley & T. R. Zentall (Eds.), *Comparative Decision-Making Analysis* (pp. 385-415). Oxford University Press.
- Kassir, S. M., Dror, I. E., & Kukucka, J. (2013). The forensic confirmation bias: Problems, perspectives, and proposed solutions. *Journal of Applied Research in Memory and Cognition*, 2 (1), 42-52.
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- Dror, I. E. & Cole, S. (2010). The vision in 'blind' justice: Expert perception, judgment and visual cognition in forensic pattern recognition. *Psychonomic Bulletin & Review*, 17(2), 161-167.
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- Dror, I.E., Charlton, D., & Peron A. (2006). Contextual information renders experts vulnerable to making erroneous identifications. *Forensic Science International*, 156 (1), 74-78.
- Dror, I.E., Peron, A., Hind, S., & Charlton, D. (2005). When emotions get the better of us: The effect of contextual top-down processing on matching fingerprints. *Applied Cognitive Psychology*, 19(6), 799-809.
- Dror, I. E., Morgan, R., Rando, C. & Nakhaeizadeh, S. (2017). The bias snowball and the bias cascade effects: Two distinct biases that may impact forensic decision making. *Journal of Forensic Sciences*, 62 (3), 832-833.

1.1.2. Practical experience. I have over 20 years of practical experience, which is relevant to this case. In the UK I have worked for the UK Identity and Passport Services on face recognition and fraud detection via facial images in passport applications. Police Forces (such as Greater Manchester Police, London Metropolitan Police, Surrey & Sussex, Bedfordshire, Hertfordshire & Cambridgeshire, and Hampshire Constabulary --in the UK, and NYPD, LAPD, Boston and San Francisco Police, the FBI and others in the United States, as well as police forces in the Netherlands, Finland, China, Brazil, Australia, and other countries) have

all commissioned my services to examine and train police and forensic experts to make better judgements, identifications and sound decisions, and specifically how to avoid cognitive bias.

Internationally, my expertise on decision making and potential error has led to overseas commissions with a variety of organisations, such as INTERPOL, the US Department of Justice, and the US National Institute of Standards and Technology. As well as being commissioned by defence and prosecution in a variety of countries as an expert on cognitive bias, including US Federal Courts, and including working with the prosecution against a motion by the defence to exclude forensic evidence on the basis of cognitive bias.

I have also been commissioned to scientifically review the Standard Operating Procedures (SOPs) of forensic laboratories. I have examined the workings of dozens of forensic laboratories, and worked closely with forensic examiners. My studies have identified potential weaknesses in forensic work, and have made recommendations how to minimise erroneous identifications. Indeed the FBI revised their SOPs to adopt my recommendations. The UK judiciary enquiry into the erroneous forensic identification in the McKie case has cited my research, as well as the US National Academy of Sciences report into forensic science, the forensic report by the US President's Council of Advisors, and the UK Forensic Regulator guidance on cognitive bias.

My research findings and recommendations for best practices to minimise cognitive bias have been adopted by the UK Forensic Science Regulator (see Guidance on Cognitive Bias Effects Relevant to Forensic Science Examinations), as well as the US National Commission on Forensic Science (see their document "Ensuring That Forensic Analysis Is Based Upon Task-Relevant Information").

1.2. Background of the case

The defendant has been identified by Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty. Their identification was based on a photograph of a man in disguise, wearing a wig, glasses, make-up, and dressed like a woman. The photograph of the culprit was not identified by 80 to 100 Garda, including some who knew the defendant. Only Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty identified the defendant (i.e., approximately 97% negative identifications vs 3 % of positive identifications). Additionally the photograph was further circulated electronically to hundreds of Garda who viewed the image, but none of them identified the defendant. Hence, the identification of Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty is actually below 1%, vs negative identification of over 99%.

2. The Issues to be Addressed in this Case

The objective of my investigation and of this report is to ascertain the reliability and biasability of the identification of the defendant by Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty. Specifically my aim is to examine the role of contextual influences and bias in their identification, taking into account the cognitive factors involved.

The core issue to be addressed was *whether cognitive and psychological influences, such as confirmation and motivational biases, played a role in the identification of the defendant.*

3. Scientific Findings Relating to this Case

3.1. Established principles underlying human cognition

Scientific research into human perception and cognition is well established by decades of rigorous behavioural experimentation, studies of the human brain, and computer simulations. All of these converge to provide scientific insights into perception, judgment and decision making (e.g., Dror and Thomas, 2005; Kosslyn and Koenig, 1995).

Underlying perception and judgement is information processing (e.g., Lindsay and Norman, 1977; Marr, 1982; Rumelhart and McClelland, 1986). Information comes to us from the outside world via sensory input (vision, hearing, touch, etc.). As information is received, it is processed; for example, we try to make sense and identify it, interpret and assign it meaning, compare it to information already stored in memory, etc. One of the most fundamental and established cornerstones of human cognition is that people do not passively receive and encode information. *The mind is not a camera*. We actively interact with the incoming information in a variety of ways.

What we see and our identification decisions do not only reflect the pure and raw data from the input provided by the external world, but to a large degree it is a product of how we interact with it and actively interpret it. *Perception is far from perfection* (Dror, 2005) because our perceptions and judgements are influenced by a variety of cognitive processes and biases that are not dominated by the actual data.

In this regard it is important to distinguish between *bottom-up data driven processes vs. top-down processes that are guided and driven by factors that are unrelated to the actual data provided by the external world* (see Figure 1). The existence and power of such top-down processes in shaping the identification of visual patterns has been demonstrated time and again in a variety of different studies using a variety of different scientific methodologies, all confirming subjective effects on perception and identification (e.g., Humphreys, Riddoch, and Price, 1997; McClelland and Rumelhart, 1981; Zhaoping and Guyader, 2007; Balcetis and Dale, 2007). Top-down influences include, among other things, contextual information, expectation, what we already know (or think we know), hope, motivation, state of mind, etc. These mediate and often distort and bias how we perceive, interpret information, and our judgements and decision making. Furthermore, *these influences and biases are particularly potent when decisions are subjective and involve interpretations, and when the incoming information is ambiguous* (as when identifying a person in disguise). Our perception, judgments, and decision making are a result of how such biases impact how we process the incoming bottom-up information, and how these interact with top-down influences.

As a result of the automaticity of these effects, we tend to believe that the information we receive through our senses is an accurate reflection of the world, uncontaminated by our preferences, preconceptions, beliefs and interpretations (what is termed naïve realism). The inability to recognise the extent to which prior experience and context biases and shapes our judgments and decisions has been labelled the ‘curse of knowledge’ (Camerer, Loewenstein, and Weber, 1989). Hence, we are unaware of the biases and top-down influences, they impact our judgements without us being conscious of their powers and the role they play in our decision making.

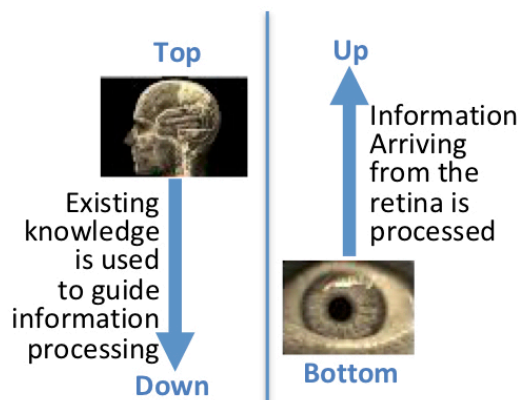


Figure 1: Information gets into the brain, the 'input', the 'data', what is known as "Bottom-up information". In contrast, there is also information already existing in the brain (e.g., experiences, knowledge, expectation, biases, motivation), what is known as "Top-down information". Our perceptions, judgements and decision making are a product of how these top-down and bottom up elements interact and influence one another.

In the case DPP v. Patrick Hutch, the photograph of the culprit, disguised as a woman, is the data, the bottom-up information. In contrast, the knowledge of the case, the police theory, the knowledge and expectation of Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty, and their prior dealings with him are the top-down influences and biases how they perceived the image in the photograph, how they interpreted it, and their conclusions as per the identification of the defendant. Furthermore, the fact that the photograph identification is extremely difficult because of the disguise, further, and substantially, increases the powers and influence of the top-down biases in making the identification --See details in Section 5 of this report.

Before analysing and ascertaining if such a bias existed, I will illustrate how top-down processing influences can interfere with perception and judgement. I will then specifically show that it has a profound effect on how police perceive evidence and draw conclusions, as in this case. I will further document research and criminal cases in which these biasing influences have resulted in erroneous identification. It is important to emphasise that these biasing influences are unconscious. Thus, well-intended, competent and dedicated police detectives are unknowingly susceptible to such effects. However, there are established scientific methods and best practices to minimise such cognitive bias. I will review these and examine if these were followed in the case at hand (Section 5).

The examples presented below are intended for illustration purposes only, so as to present and explain top-down processes to lay people.

Figure 2, below, presents the letters A, B, and C.



Figure 2: The letters A, B, and C.

Figure 3, below, presents the numbers 12, 13, and 14.



Figure 3: The numbers 12, 13, and 14.

However, a comparison between Figure 2 and Figure 3 will reveal that the visual pattern in the centre of both figures is identical. This visual pattern is likely to be perceived and interpreted as the letter B in Figure 2, but as the number 13 in Figure 3. The reason for this is that the identical bottom-up information is influenced by the top-down contextual information. The important point here is that the effect of the top-down process results in different perceptions and decisions based on the exact same data. Hence, *judgment was influenced by the context, and different contexts can produce different (and even conflicting) conclusions*. Such influences are most powerful when the judgement and decision involve subjectivity and interpretation.

This illustration is based only on a *perceptual context* (the surrounding characters). However, context has many shapes and forms. When *context is of a higher cognitive nature* (such as expectation, motivation, frame of mind, target/suspect-guided bias, etc.) the power of top-down processes to interfere and bias identification is substantially increased. Target/suspect-guided and other influences on perception and identification are scientifically established and proven. For example, Balci and Dunning (2006) show that perception is dependent on what people are motivated or want to see. Their study demonstrated that people's *identification of the image was dependent on target-guided motivation* (for details, see Balci and Dunning, 2006).

In face perception, judgement and decision making, the same cognitive principles apply. For example, examine the two faces presented in Figure 4 and rate how similar they are to one another.



Figure 4: How similar are the two faces?

Research demonstrates that your judgment and decision of these faces would vary depending on if you were told that they are genetically related (e.g., a daughter and mother) or that they are total strangers (see Bressan and Del Martello, 2002, for details). That is, you would rate the faces as more similar if you believed and expected that they are genetically related –same faces, different judgment, all because of these beliefs and expectations. Thus, the same

bottom-up information, same data, same evidence, would result in different conclusions because of the bias caused by the top-down contextual influences (see Figure 1).

The research presented above is relevant to the present case because of the circumstances in which Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty identified the defendant Patrick Hutch means that their identification was not only based on the photograph itself (see Section 5 of this report). A targeted top-down process can cause problems in detecting and seeing visual features that are available and apparent in the actual bottom-up data (e.g., Zhaoping and Guyader, 2007; Balcetis and Dale, 2007). It has been proved that experts in visual pattern recognition are also susceptible to such top-down interferences and that these can (and have) caused erroneous matches and identifications. These cognitive top-down information processing mechanisms are scientifically well researched, established, and documented. In the interest of brevity, I have provided brief illustrations of the issues with some examples and some references, however, many more are present in the scientific and applied research literature.

3.2. Proven biases in perception and judgement

How do the mechanisms of top-down processing actually interfere with perception and judgement? Section 3.1 details the underlying concepts and principles. In this section I elaborate on the end results of these processes (again, for the sake of brevity of the report, I do so with minimal explanations and references, but there is a whole literature establishing these findings –basic finding on human cognition and identification).

Why is it that when I want or expect to see someone (for example, when I go to pick someone up in the arrivals hall at the airport), or alternatively, when I am want to avoid or afraid of someone, I tend to misidentify people as my target and 'see them everywhere'? Top-down processing (see Section 3.1 and Figure 1) can interfere and contaminate our perception and judgement. These biases and distortions arise from a long and well-studied list of cognitive and psychological phenomena (for a review, see Evans, 1989; Nickerson, 1998; Gilovich, Griffin, and Kahneman, 2002; Kahneman, Slovic and Tversky, 1982; Hogarth, 1980; Nisbett and Ross, 1980). These phenomena, such as confirmation bias, cognitive dissonance, self-fulfilling prophecies, motivated reasoning, hindsight bias, and others, are all relevant to this case. These established cognitive and psychological phenomena all cause people to conduct a biased identification.

Cognitive bias arises when we no longer examine data purely by itself, evaluating it by its own merit without external influences. When we examine data in light of external influences, such as a 'target' we have in mind, we unavoidably and unconsciously perceive and judge the data, the actual evidence, differently (as in this case, the photograph of the culprit). When presented with such a target, or motivation, we interact differently with the evidence. This is manifested in a variety of ways, for example:

- Our cognitive search for an identification motivates the examination of the data, and is more likely to notice and focus on characteristics that validate and conform to the target match. Thus, the way we search and allocate cognitive attention to the data is selective and biased.
- The target confirming data is emphasised and weighted highly.

- Most notably when data is not clear (and therefore ambiguous and open to different interpretation –as in when someone is in disguise), the existence of a target will make people interpret the data in ways that are consistent with the target.
- We tend to avoid and not notice data that conflicts and contradicts our target.
- Target disconfirming data that is noticed is ignored.
- Data that does not fit the target and cannot easily be ignored is dismissed and explained away.
- Weighting of target disconfirming data is low.

These and other manifestations of bias are well researched and documented by many scientific studies (e.g., Tversky and Kahneman, 1974; Zhaoping and Guyader, 2007; Balcetis and Dunning, 2006; Ditto and Lopez, 1992; Evans, 1989; Koriat, Lichtenstein, and Fischhoff, 1980; Nickerson, 1998; Hogarth, 1980; Nisbett and Ross, 1980; Cordelia, 2006; Haselton, Nettle, and Andrews, 2005; Kahneman, Slovic and Tversky, 1982; Kunda, 1990; Edwards and Smith, 1996; Gilovich, Griffin, and Kahneman, 2002 –and there are many more!).

The criminal justice system has in many ways adopted, and taken on board, these and other cognitive and psychological findings to improve criminal investigations (e.g., Ask and Granhag, 2005; Risinger and Loop, 2002; Stelfox and Pease, 2005), and specifically identifications (DOJ, 1999; Wells and Olson, 2003; Turtle, Lindsay, and Wells, 2003; Charman and Wells, 2006). A clear case is the way in which line-ups are conducted. Rather than biasing eyewitnesses by presenting them with the suspect (the target), eyewitnesses are presented with a range of targets that include the suspect as well as numerous decoys. The line-up procedures have been drastically improved by taking into account issues of bias and other cognitive and psychological influences (e.g., Wells and Olson, 2003; Turtle, Lindsay, and Wells, 2003; Charman and Wells, 2006).

3.3. Expert bias in real world domains

Are experts immune from influences and biases? The short answer is 'no', experts across domains are susceptible to such biases. Indeed erroneous identifications because of bias have lead in the medical and military domains to incorrect medical diagnosis and military friendly fire (Dror, 2011).

Even in more scientific and objective forensic disciplines bias impacts experts. For example, there is clear evidence how knowing contextual information about the case, having a 'target'/suspect, motivational issues, and other influences have led to erroneous matching identification and wrong decisions by expert forensic examiners. These have occurred in the most reliable and well established forensic domains: DNA (e.g., Thompson, 1995; Dror and Hampikian, 2011) and fingerprint identification (e.g., Stacey, 2004; Dror and Charlton, 2006); for a review, see Dror (2016).

How can competent, well trained, and qualified dedicated experts, in the most established forensic domains, make errors? The answer is top-down influences, such as targets, motivations, expectations and other external influences that interfere and bias the objective

perception and evaluation of visual patterns. This is not only supported by research, but has been documented in real criminal cases.

Take for example the US Federal Bureau of Investigation's (FBI) erroneous identification of Brandon Mayfield as the Madrid bomber. Senior fingerprint experts matched the latent print to a Muslim convert who had a military background, and was on the 'target list'. The identification was further verified by two additional senior FBI fingerprint experts. Even an independent expert appointed by the court on behalf of the defence matched the print to Mayfield. All experts concluded with 100% certainty that it was Mayfield's print (see Stacey, 2004).

After the incorrect identification was exposed by coincidence, the FBI's report on this error, as well as a report by the U.S. Justice Department's Office of the Inspector General (OIG), concluded that confirmation bias played a role in the erroneous identification. The existence of a target and motivation caused experts to erroneously match the fingerprints.

Scientific studies demonstrate and establish how these biases work and that they can produce erroneous identification. For example, the motivation to identify evidence connected to a serious crime influences how information is processed. In a laboratory experiment naive participants were presented with background stories and photographs of crime scenes, and they were then asked to match fingerprints associated to the crime (Dror, Peron, Hind, and Charlton, 2005). The same pair of fingerprints was more likely to be matched and identified when it was presented within a context of a serious crime.

Furthermore, in two empirical field studies data was collected covertly from fingerprint experts during their routine everyday work in the fingerprint bureau. In these two separate studies the experts were presented with fingerprints within a context that a target print was (or was not) a match. Unknowingly to the experts, they were actually presented with a pair of prints that they themselves had previously examined in real criminal cases years ago and then judged them as matches (or as non-matches --in the cases they previously judged them as a match they were now re-introduced within a context that they are not a match, and those who were judged in the past as non-match were now re-presented in a context that they are a match). The prints themselves (the bottom-up information) were exactly the same as those they judged in the past, except that their context (the top-down information) was repackaged so as to suggest that the prints did (or did not) match (Dror, Charlton, and Peron, 2006; Dror and Charlton, 2006; see their meta-analytic analysis in Dror and Rosenthal, 2008; and a review in Dror, 2016).

The findings were that the experts were susceptible to bias. Bias does not only impact laypeople. These findings are not limited to forensic fingerprinting, but are also apparent in other well-established forensic domains, such as DNA (see Dror and Hampikian, 2011), as well as other domains, such as forensic anthropology (Nakhaeizadeh, Dror and Morgan, 2014).

Not only is the conclusion susceptible to cognitive bias, but also the perception and observation of what data is in the evidence is also highly impacted by cognitive bias. For example, the observation of minutia in fingerprints is affected by contextual information, as

well as whether or not there is sufficient information to make a comparison and match (Dror, Champod, Langenburg, Charlton, Hunt and Rosenthal, 2011; Fraser-Mackenzie, Dror and Wertheim, 2013). A research study by Earwaker, Morgan, Harris, and Hall (2015) further demonstrates that even the observation and perception of evidence is biased by contextual information and other top-down processes. In their study Earwaker, Morgan, Harris, and Hall showed that evidence with insufficient data and not suitable for matching was observed and judged as sufficient when they were presented within the context of a serious crime (i.e., murder). Because of this cognitive bias, evidence that was not sufficient for matching was nevertheless judged to be adequate for identification (for details, see Earwaker, Morgan, Harris, and Hall, 2015).

Thus, there is clear scientific evidence, as well as documented real criminal cases, that demonstrate how highly skilled experts are effected by context, motivation, having a 'target'/suspect in mind and other top-down cognitive influences. These can (and have) lead to errors in identification decisions.

3.4. Expert police identification decisions

Identification decisions are not easy to make within the context of crime (e.g., Burton, White and McNeill, 2010; Kemp, Towell and Pike, 1997; Bruce, Henderson, Greenwood, Hancock, Burton and Miller, 1999). Indeed, wrong identifications is the number one leading cause of wrongful conviction (e.g., Garrett, 2012).

However, if the identifications are made by trained, experienced, expert police detectives (rather than civilian laypeople who are eyewitnesses), would the identifications be more reliable and accurate? The answer is clearly that research does not show that (there is, however, some evidence that police are better at remembering details of the crime, but not in making identifications).

This has been well established by research (see below), as well as documented in criminal cases where innocent people have been wrongfully convicted, with police officers making an erroneous identification of the culprit (for example, the cases of Stephan Cowans, Scott Fappiano, Steve Barnes and Jose Pallares, for details see Innocence Project, 2004, 2006, 2008a, 2008b).

The research on the ability of trained, experienced, expert police detectives has shown that although police may think they are better at making identifications, the data does not show that. "Police officers are at least as likely as the average eyewitness to falsely identify an innocent person" (Vredeveltdt and van Koppen, 2016, p. 252), and in fact, when examining the entire literature in this area, the conclusion is that "there is virtually no evidence that police officers are better at person identifications—if anything, they may be more likely to falsely identify an innocent person" (Vredeveltdt and van Koppen, 2016, p. 255). Further research showing that trained, experienced, expert police detectives are not better than civilian laypeople in making identifications is supported by a variety of studies, such as Ainsworth (1981), Stanny and Johnson (2000) and Verinis and Walker (1970). Furthermore, even highly trained experts in facial identification, passport-issuing officers, who have specialist experience and training specifically in facial identification are no better than non-expert laypeople (White, Kemp, Jenkins, Matheson, and Burton, 2014).

This is very relevant to this case, as the identification of the defendant is by Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty, which may lead to a wrong impression that as police detectives they are better at making identifications. It is also important to note that their identification is based on a photograph of the culprit, while he is disguised.

Furthermore, the Garda Crime Investigations Techniques Manual itself is clear about this. In Chapter 6, it states: "The Court acknowledged that identification evidence of this type may cause difficulties where the witness making the identification from the video is a police officer or other person in authority because of the danger of prejudice to the accused arising from the occupation of the witness". Hence, being a police officer does not make them superior in the ability to make identifications, but can in fact introduce biases. This finding is also directly supported by research, e.g., Verinis and Walker (1970).

3.5. Factors that determine identification difficult and likely to lead to more errors

Facial identification is not a simple task. Even under optimal viewing conditions faces of different people may be similar, and may result in erroneous identifications (e.g. Bruce, Henderson, Greenwood, Hancock, Burton and Miller, 1999; White, Kemp, Jenkins, Matheson, and Burton, 2014), see Figure 5 for an example. Brewer, Weber and Semmler (2005) state that "Numerous laboratory and field experiments attest to the often poor performance of eyewitnesses in identification tests—a matter that becomes of particular concern when it is appreciated that, in many cases, the only evidence against a suspect is an identification made by an eyewitness" (page 177).



Figure 5: Identification is not easy. Two different people, even when images are presented in comparable conditions (similar lighting, perspective, size, etc.), can still be erroneously identified, even by experts (taken from White, Kemp, Jenkins, Matheson, and Burton, 2014).

Indeed, wrongful identification is the leading factor in false conviction (Garrett, 2012). For example, the case of Richard Jones who was released from jail after serving 17 years (Phillips, 2017; Woods, 2017). Indeed, the identification error was a result of a difficult match, because the real culprit was similar to the person who was wrongly identified, see Figure 6.



Figure 6: Wrongful conviction of an innocent person based on a false identification. Indeed, both the culprit and the wrongfully convicted were quite similar (Phillips, 2017; Woods, 2017).

Thus, face identification errors happen even in optimal conditions. However, identification can be an even more challenging and difficult task, when conditions are not optimal. In such situations the rate and likelihood of false identifications is substantially higher (e.g., when the images vary substantially owing to changes in viewing conditions, a person's appearance, etc.).

One of the factors that make identification extremely difficult and challenging, and hence much more prone to mistakes, is when people intentionally disguise themselves –as is the case at hand, when the culprit put on make up, a wig, dressed like a woman –thus intentionally disguising his identity.

Indeed, research has shown, time and time again, that disguise makes identification more difficult, and results in significant higher false identifications (e.g., Cutler, Penrod and Martens, 1987; Patterson and Baddeley, 1977; Brewer, Weber and Semmler, 2005; Read, Vokey and Hammersley, 1990). Brewer, Weber and Semmler (2005) state that disguise is one of the two “variables that seem to be the most important” in determining identification performance (page 184).

Given so many studies on identification, Shapiro and Penrod (1986) condensed the extensive literature by examining and conducting a comprehensive meta-analysis, combining the findings of over 100 identification studies. They concluded that disguise was indeed one of the variables that yielded the largest effect size (i.e., impact) for false alarms (i.e., wrong identifications). This is partially because disguise detracted from identification performance as a consequence of the increased mismatch between the images (page 145), and they concluded the disguise was among the factors that had the “largest impact on identification accuracy” (page 151).

Read (1995) specifically demonstrated reduced identification accuracy when the appearance was altered by changes to hair style and the presence of glasses. Which is exactly variables that were manipulated by the culprit in this case –see Figures 7, 8 and 9.

4. Best Practices to Minimise Bias in Identifications

Given the vulnerability to bias, including expert bias, official governmental and professional bodies have developed best practices and procedures to provide countermeasures to biases. For example, the UK Forensic Science Regulator (2015) has issued Guidance on "Cognitive Bias" (FSR-G-217). The Guidance stipulates, among other things, that:

- "avoid post-comparison rationalisation or circular reasoning where the decision maker begins with what they are trying to end with."
- "The problem is that as it is a subconscious bias it is unlikely that an individual will know either way and therefore it is wise that all practitioners understand the issue and take proportionate steps to mitigate against it."
- "The consequences of cognitive bias may be far-reaching; investigators may be influenced to follow a particular line of enquiry or interpretation of a finding that may be incomplete, or even wrong."
- "it is essential to guard against these [biases] in forensic science, where many processes require subjective evaluations and interpretations."
- "they [the analyst] should not seek other information beyond what is required to conduct the analysis or evaluation, in order to protect their impartiality."
- "If it is not practical to mitigate or control the main forms of cognitive bias then the following may occur: A. An incorrect conclusion may be made."

Similar conclusions and recommendations have been adopted by the US National Commission on Forensic Science (NCFS, 2015), President Obama's Council of Advisors on Science and Technology (PCAST, 2016), the National Academy of Sciences (NAS, 2009), and many other professional and governmental bodies in the US as well as other countries.

The issue of bias, and procedures to minimise it (above), relate to highly trained forensic experts making scientific identifications. These problems, and the need to follow procedures to minimise bias, increase many folds when considering making facial identifications by police officers and witnesses. Indeed, identifications procedures exist in police forces all around the world, as they are critical to follow to minimise mistakes in identifications, e.g., Eyewitness Evidence: A guide for law enforcement (DOJ, 1999). Ireland is no exception; An Garda Síochána has a clear and specific visual identification procedure.

These procedures are aimed to help prevent wrong identification, and are so very important to follow given that identifications are fraught with errors, and is the number one leading cause of wrongful convictions (e.g., Garrett, 2012; see Section 3.4 about wrongful identifications made by police officers).

The procedures combat a variety of biases and top-down influences (many of them summarised in Section 3). However, there are additional biases and vulnerabilities specific to identifications, that I specify below:

4.1. Post identification feedback

After making an identification it is important not to provide any feedback, as this distorts their –what is technically called– “metacognition”. Metacognition refers to understanding their own performance, e.g., their certainty and confidence in the identification. How such feedback contaminates identifications is so very well documented and robust that it has been termed as the “post identification feedback effect” (see Stebley, Wells and Douglass, 2014), and impacts court decisions all over the world, e.g., the US Supreme Court.

Stebly et al. (2014) state that a “lesson of the post-identification feedback effect is that the only way to know how certain the witness was at the time of the identification—to avoid the appearance of reliability without reliability itself—is to ask the witness about certainty at the time of the identification and prior to the contamination of post-identification influences” (page 16). If not, the fact finder (judge or jury) cannot ascertain the identification, and cross examination is ineffective, as the identifier’s metacognition (e.g., about their certainty and confidence in the identification) has been influenced and biased by the post identification feedback.

Any post-identification feedback contradicts best practices (e.g., “provide no information from other sources” DOJ, 1999). If such post-identification feedback is given, then the confidence and certainty of the identifier is no longer reliable as it has been influenced and biased (as explained in Section 3, and forensic guidelines above, such effects impact the identifier without them being aware of it).

In the case at hand, post-identification feedback was given, and the confidence and certainty in the identification was not ascertained and documented during the identification itself (see details in Section 5.2.4). This leads to the next best practice of documentation.

4.2. Documentation

Formal documentation of the identification is very important, as it enables the fact finder to ascertain its credibility. If there is no documentation, then there is no good account of how the identification took place, and practically impossible to determine its credibility and reliability, as we do not really know what transpired (recalling, later, informally and without documentation how the identification was conducted is not accurate in general –and especially if post-identification feedback was given, see above—and therefore its is not acceptable not to document the identification and doing so is contrary to best practices). Indeed, best practices of documentation include (e.g., from Eyewitness Evidence: A guide for law enforcement (DOJ, 1999): “Documentation of the procedure provides an accurate record of the results obtained from the witness. Policy: The person conducting the procedure shall preserve the outcome of the procedure by accurately documenting” it (page 20). “Document the results of the procedure in writing, including the witness’ own words regarding how certain he/she is of any identification” (page 20) --this is very important, see 4.1, above. The Garda’s own procedures (Chapter 6) require that “all the circumstance” be considered in order to “feel satisfied beyond reasonable doubt of the correctness of the identification” –this cannot be achieved without proper documentation.

In this case, there is little-to-no documentation of how the identification took place. The needed (and missing) documentation of the identification does not only record the

identification that was made and how, but also documents information about the number of non-identifications that were made, which is critical information in ascertaining the positive identifications.

This was not done in this case, and 80-100 Garda (some of who knew the defendant) did *not* identify him. These data are crucial, as it allows to evaluate Garda Brady and O'Flaherty's identification of the defendant in light of many non-identifications --see Sections 5.2.3 and 5.2.5.

Contemporaneous documentation of the identification is needed to ascertain the credibility and reliability of the identification, and therefore it is a cornerstone of best practices and identification procedures.

4.3. Danger of relying on identifications

Since identification of culprits by eyewitnesses and police is so unreliable, one must be careful on relying on such identification. This caution is substantially increased if the identifications are the only evidence against the suspect. As clearly stated in the Garda visual identification procedure (Chapter 6), "The Irish Supreme Court recognised in *People (Attorney General) v Casey (No.2)* [1963] IR 33 (SC) that owing to the special nature of identification evidence, juries ought to be warned at the close of the trial that positive identifications have in the past proved erroneous, even where made by more than one witness, and that for reasons general to identification evidence and specific to the circumstances of each case, special caution must be exercised when deciding whether or not to accept a witness's identification. Kingsmill Moore J. referred throughout to the need for a strong direction in any case where the identification is challenged and the prosecution's case against the accused depends "wholly or substantially on the correctness of such identification".

Fact finders should be careful not to give more credibility to police identifications (as explained in Section 3). And should also be aware that the dangers of identification being erroneous are substantially higher when a disguise is used (again, I refer the reader to Section 3, to avoid redundancies). Finally, the danger of mistaken identifications increased with having a top-down 'target'/suspect, and a difficulty and biased identification. All of these have taken place in the case at hand (details in Section 5).

4.4. Identifications must be done individually to avoid co-witness effects

Identifications should be done individually, each examining the photographs by themselves, so as to avoid being biased by the decisions made by others. Research has shown that in a situation in which witnesses viewed another witness making an identification they often conformed to the identification decision made by the first person (e.g., for general conformity effects, see Asch, 1952 and 1956, classic findings; for specific effects on eyewitness identifications, see Carlucci, Kieckhafer, Schwartz, Villalba, and Wright, 2011). Furthermore, hearing another identification causes a hindsight bias effect. Such a bias occurs when an identifier does not see the identification, but the impact of the other person's identification causes the other person to 'see it too' in the 'hindsight' of hearing the identification made by the other person. Such hindsight biases have been shown to have a very broad impact (Pohl, Bender, Lachman, 2002), and have been demonstrated to impact

medical expert diagnosis (Arkes, Wortman, Saville, Harkness, 1981), as well as legal decision making (Harley, 2007). Furthermore, they have been well documented and specifically shown to impact visual identification of faces (e.g., Harley, Carlsen, Loftus, 2014).

To avoid such a bias, it is important that each person does the identification individually, by themselves, with no other persons making the identification present in the room. It is even recommended that the persons administering the identification should be blind to who is the suspect, the context of the crime, etc. (e.g., DOJ, 1099).

Other issues, such as a ‘target’/suspect driven bias identification, are covered in previous sections of the Report, and to avoid repetition, I refer the reader to Section 3.

5. My Investigation

5.1. *Materials*

In addition to the scientific literature and reports (detailed in the previous sections) I have examined the following case materials:

- Letter of Instruction form Solicitors, John Feaheny & Company - 25.01.2018
- Statements of D/Garda Fergal O'Flaherty; D/Garda Jonathan Brady; D/Sgt Partick O'Toole; Garda Michael Ryan; D/Sgt Mark Watters; D/Inspector David A Gallaher.
- Transcripts of trial -17.01.2018
- Transcript of trial -18.01.2018 and 19.01.2018
- Transcript of trial - 22.01.2018
- Transcript of Evidence of D/Garda Jonathan Brady in bail application - 21.12.2016
- Photograph used in the identification of the suspect.

5.2. *Examination and analysis of the evidence*

The defendant is identified by two Garda detectives. My examination of this identification was aimed to ascertain its credibility and reliability, and specifically whether it was vulnerable to cognitive bias.

From reviewing the materials, it is clear that:

1. The two Garda detectives, Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty, based their identification on a photograph of the culprit taken at the scene (see Figure 7). The photograph is of high quality, but the culprit disguised himself in a number of ways, e.g., put a wig on, glasses, make up, dressed as a woman (see Figures 8 and 9 for close-ups images of the disguised culprit).
2. The defendant who was identified, Patrick Hutch, and his family, were well known to Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty. They knew his personal history, as well as, had recent interactions with him.
3. There is no formal documentation on how the identification was made at the time of the identification, nor the results.
4. That Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty received post-identification feedback.

5. Some Garda officers who knew the suspect were not able to identify him as the person in the photograph.
6. Best practice identification procedures were not followed.
7. That the identification was not made individually and Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty were both in the identification room simultaneously. Furthermore, that there were some interactions between them about making the identification while they were in the room.

The materials also strongly suggest that:

8. That Garda themselves know the identification was not done properly, and would have done it differently and properly if they knew an identification would be suggested.

Let me elaborate on these, and determine their potential biasing effects on the identification. However, before that, I must emphasise and re-iterate, I am in no way suggesting that Detective Garda Jonathan Brady or Detective Garda Fergal O'Flaherty intentionally were biased in making the identification. Rather, I am exploring whether they were susceptible to unconscious cognitive bias that affects identification without their awareness (as detailed and documented in the earlier sections of this report).



Figure 7: The photograph of the culprit.

5.2.1. Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty, based their identification on a photograph of the culprit. But the culprit disguised himself quite well in a

number of ways, e.g., put a wig on, glasses, make up, dressed as a woman. This, of course makes the identification much more difficult and challenging.

From a cognitive bias point of view, bias (as a top-down process) is much more powerful, has more leeway to impact the identification, when the culprit is hard to identify (the bottom-up process) –See Figure 1.

The difficulty in identifying a disguised culprit is obvious when examining the photograph (even with close-up images, see Figures 8 and 9), and has been demonstrated in research (many are cited and detailed in Section 3.5, which is dedicated to this issue, including Read's (1995) research, which specifically demonstrated reduced identification accuracy when the appearance was altered by changes to hair style and the presence of glasses).



Figure 8: A close-up of the culprit, who is clearly in disguise.

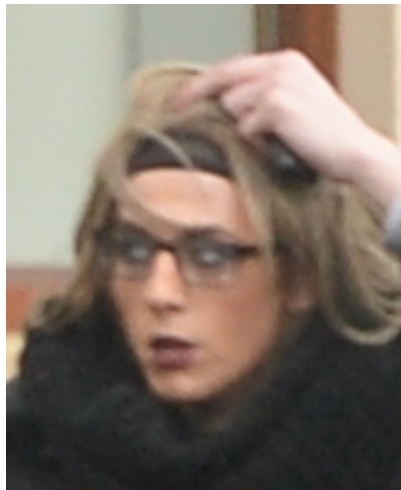


Figure 9: A further close-up of the culprit, who is clearly in disguise.

5.2.2. Patrick Hutch, the defendant who was identified, was known to Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty. They knew his personal history, as well as, had recent interactions with him. This puts him as a potential 'target', a top-down expectation, that the photograph may be him, and that biases their identification of the photograph itself (the bottom-up information).

This, by itself, is relatively a weak bias, even though its strength increases given the ambiguity of the photograph due to the disguise (see 5.1.1, above). However, this bias gets to be more substantial and impactful if the defendant was a suspect in the case, causing a target/suspect driven bias. There is clear evidence to that effect. E.g., in the trial transcripts of 17.01.2018, Detective Garda Jonathan Brady stated that "We certainly have an interest in some of the Hutches". Furthermore, even though he has no convictions, Patrick Hutches has 37 entries into PULSE. That very much suggests that the defendant was 'in their mind', and goes beyond just having interactions with him (as was the case, when both Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty were the two lead investigators on the shooting of Hutch in Aug 2014).

This suspect/target driven bias of the identification is apparent (i.e., rather than the evidence, the photograph, driving the identification, it was the suspect; working backwards from the suspect to the evidence, rather than from the evidence to the suspect). This Garda bias against the defendant is further reflected when Detective Garda Kevin Keyes clearly states in the trial transcripts of 17.01.2018, that "the reasons why the Hutches would have been persons of interest is fairly self evident I think, you wouldn't have to be a master detective to work that out" –again, reflecting how the Garda police had been biased when examining the photograph, so as to find a member of the Hutch's family.

There is further evidence that the defendant was a target suspect in some Gardas's mind, e.g., they accessed Patrick Hutch's PULSE the day before, as well as on the day of, the identification (see transcripts of trial of 17.01.2018 and 22.01.2018).

5.2.3. There is no formal documentation on how the identification was made, nor the results. That is clear from the confusion about what transpired and how the identification took place.

Formal documentation during the procedures (not informal free recall later) is best practice and a fundamental cornerstone of doing identifications properly (e.g., DOJ, 1999). This is also recognized in the Garda's own procedure, making a critical point that to determine the credibility and reliability of the identification, the fact finders need to evaluate the identification in light of all the circumstances –this cannot be done without a proper and thorough account of how the identification was made (the Garda's own procedure, Chapter 6, states that “after careful examination of such evidence *in the light of all the circumstances* and with due regard to all the other evidence in the case, they feel *satisfied beyond reasonable doubt of the correctness of the identification*, they are at liberty to act upon it” (emphasis added). Without the documentation and the confusion about what actually transpired, the Garda do not provide the circumstances of the identification, as stipulated by their own procedure.

The lack of documentation is reflected by so much confusion regarding how the identifications were done. Trial transcripts reveal that the first written statements provided by Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty were extremely similar, but did not have details of how the identification was actually made. When follow-up statements were made by these Garda Detectives, as well as, a statement included by Garda O'Toole and Ryan there are inconsistencies in what they state. Also, these statements do not match closely to what Garda Brady stated in the bail hearing which was the first statement made about the identification procedure. Such inconsistencies have also been noticed by the judge, who intervenes and states that the statements “are clearly different, they're (other accounts) clearly different to his recollection” (see transcripts of trial of 18+19.01.2018, page 42). Other examples regarding the confusion about what happened in the identification would be whether Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty made the identifications while in the room together, what was said, and what transpired.

5.2.4. Detective Garda Jonathan Brady and Detective Garda Fergal O'Flaherty received post-identification feedback. This is clear and not disputed. Detective Garda Jonathan Brady knows that Detective Garda Fergal O'Flaherty identified the defendant, and visa versa. As detailed in previous sections, this contaminates and biases their meta-cognition. Their confidence and certainty of their identification of the suspect cannot be ascertained –it has been impacted by the received post-identification feedback.

Even if such post-identification feedback is given (which is contrary to best practices), the fact finder could have ascertained their certainty and confidence through the documentation taken during the identification –but this has not been done, see Section 5.1.3, above. Indeed, that is one of the reasons why procedures stipulate the documentation, including “Document the results of the procedure in writing, including the witness' own words regarding how certain he/she is of any identification” (DOJ, 1999). Now, with no proper documentation, and post-identification feedback, fact finders cannot ascertain their true confidence and certainty of the identification, *due to bias by the information obtained in the post-identification feedback*. Please note that in this case contemporaneous documentation during the identification were *not* made, as they should have. The trial transcripts of 18+19.01.2008 state that Garda Detective/Sgt O'Toole developed a contemporaneous note, but that is *not the case*, since this was done following the event (long after the identification took place –not during, contemporaneously) –this seems to be the only formal record of the identification

process. As revealed in the trial transcripts of 18+19.01.2008, this long delay in documenting the identification and its lack in details is in sharp contrast to how Detective/Sgt O'Toole wrote a detailed report documenting the physical photo evidence.

5.2.5. Some Garda officers who knew the defendant were not able to identify him as the person in the photograph. Even without proper documentation, it is clear that there was a huge effort by the Garda to identify the culprit, and that accordingly they showed the photograph to many (they estimate 80-100 Garda), some of who knew the defendant (see, e.g., in trial transcripts that Detective Inspector Gallagher states that no record was kept of the negative responses to the photographs (he estimates 80-100 people looked at the image prior to Garda Detectives Brady and O'Flaherty), and Mountjoy precinct did not keep any records of the number of negatives identifications, which is important as Mountjoy is one of the precincts that has the greatest number of officers who know the defendant).

Nevertheless, only two identified him, approximately 3%, in light of 97% non-identification. A rate of 3% is within many studies' erroneous positive identification data, and if you take into account that the culprit in the photograph had a disguise, then such a low positive identification rate reflects very low credibility and potential bias.

The photograph was further circulated electronically to hundreds of additional Garda who viewed the image, but none of them identified the defendant. Hence, the identification of Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty is actually below 1%, vs negative identification of over 99%.

5.2.6. Garda identification procedures were not followed. For example, in the rules for photographic identification procedures it states that "Only one witness at a time should be permitted to view the photographs and no attempt should be made to influence the judgement of any witness". In contrast to this recommendation Garda Jonathan Brady states that "Judge, I'm sure if it was envisaged that either of us would make an identification, it would have been arranged so neither of us were in each other's company" (from the transcript of evidence of Detective Garda Jonathan Brady in bail application of 21.12.2016).

Another example, Chapter 6 of the Garda procedure states that identification parades should be "supervised by an independent Garda (that is, one not concerned with the actual investigation)" however it seems that Detective Garda O'Toole was not such a neutral Garda, not concerned with the actual investigation.

5.2.7. Given the lack of documentation and confusion, one cannot determine how the identifications were made. It is clear that the identifications were not made individually and that Detectives Garda Jonathan Brady and Garda Fergal O'Flaherty were in the room simultaneously (see above, Section 5.2.6). Given that, their identifications may have biased one another. First, if they both looked at the photograph together, then even if the formal identification decision was done separately, an informal comment is often made, and may have well been made in this identification –but without documentation, there is no way of knowing. Second, even if there was total silence between the Garda detectives, body gestures and non-verbal communications give a strong hint about the identification made by one another (especially that the defended was already a 'target' (see Section 5.2.2). Finally, either

way, post-identification feedback was given (see Section 5.1.4), which biases the Garda detectives confidence and certainty in their identification decisions –thus precluding from the fact finder to ascertain the credibility and reliability of the identification. There are many questions and doubts about the identification procedure of the defendant, and much of the identification is clouded with cognitive bias.

5.2.8. Garda themselves seem to know that the identification was not done properly. They state that they would have done it differently and properly if they knew an identification would be suggested (see the statement above (Section 5.2.5) from Detective Garda Jonathan Brady).

These, at the very least, are BIG warning signs of cognitive bias. If we consider that identifications are vulnerable and susceptible to error to begin with (see Sections 3 and 4), and add to that flawed identification process and questionable execution of best practices, identification of a culprit in disguise, having a ‘target’ in mind that biases and drives the identification, and further factors that are detailed above, give rise to bias in the identification, making it very questionable and unreliable.

5.3. *Conclusions*

The identifications were tainted with cognitive bias. This is due to the way the identification was carried out, as elaborated above, and the difficult nature of identifying a disguised culprit. Such identifications are cognitively biased, unreliable and violate guidance for best practices stipulated by police forces all over the world, including Garda itself.

6. Summary and Conclusions

Witness memory is unreliable to begin with, even in pristine conditions. The fact that the identification was done by Garda detectives does not give more credibility to the police identification. One has to be very careful, as such identifications are the number one leading cause of wrongful convictions.

The disguise of the culprit increases the ambiguity of the image and when ambiguity increases, there is a greater opportunity for bias to impact the identification.

The defendant who was identified was known to Detectives Garda Jonathan Brady and Garda Fergal O’Flaherty. They knew his personal history, as well as, had recent interactions with him.

Identification procedures were not followed, nor other best practices. The identification was flawed in a number of ways detailed in this report.

Each of these issues detracts from the reliability and credibility of the identification of the defendant. Taken together, they point out to a biased identification, and further seriously question and undermine the identification.

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8. Statement of Compliance and Statement of Truth

Statement of Compliance

I understand my duty as an expert witness to the court. I have complied with that duty. This report includes all matters relevant to the issues on which my expert evidence is given. I have given details in this report of any matters which might affect the validity of this report. I have addressed this report to the court.

Statement of Truth

I confirm that insofar as the facts stated in my report are within my own knowledge I have made clear which they are and I believe them to be true, and that the opinion I have expressed represents my true and complete professional opinion.



Signature

Date: 1 February 2018