Recasting the Reliability Theatre:

Investigating the grounds for the admissibility of expert evidence in criminal trials

By

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Abstract

The introduction of special rules to enhance the common law test for admissibility of expert evidence represents an attempt to regulate uncertainty rather than an effective strategy to reduce the risk of wrongful convictions.

This thesis contends that the reliability test for the admission of expert evidence into criminal proceedings in England and Wales, as introduced via the Criminal Procedure Rules 2014, is not fit for purpose. By focusing on the procedure behind the reform, it will illustrate that the intense focus on 'sufficient reliability' by the legal community is a misinterpretation by the Law Commission of the original recommendations made by the House of Commons Science and Technology Committee in 2005. It will be illustrated that the reliability test was predicated on a consultation document that lacked clarity and precision and that remains unsupported by demonstrable data or evidence.

Viewed from a risk response perspective, this thesis will argue that the reform was in fact driven by the outrage surrounding a cluster of high-profile successful appeals rather than flowing from a strong evidence-based enquiry. Consequently, the new enhanced reliability test will not improve on the current common law assessment and may even serve to introduce problems of interpretation leading to greater uncertainty and legal challenge.

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Act 2:

[1] Peter Sandman, 'Biography' (*Peter Sandman Risk Communication,* 18 June 2014) <http://www.psandman.com/bio.htm> accessed 16 May 2019.

Alphabetical List of Commonly Used Abbreviations

ALTE	Acute Life-Threatening Event
'The Caddy Review' (The Caddy Report)	'A Review of the Science of Low Template DNA Analysis ' Led by Professor Brian Caddy
CCRC	Criminal Cases Review Commission
CESDI	Confidential Enquiry into Still Births and Deaths in Infancy
CONI	Care of Next Infant Scheme
CrPR	Criminal Procedure Rules
CPS	Crown Prosecution Service
DCA	Department of Constitutional Affairs
EWCA Crim	England and Wales Court of Appeal (Criminal Division)
FearID	Forensic Ear Identification Project
FRE	Federal Rules of Evidence
FSAC	Forensic Science Advisory Council
FSR	Forensic Science Regulator
FSS	Forensic Science Service
'The Goudge Report'	'Inquiry into Pediatric Forensic Pathology in Ontario' Commissioner: Hon. Justice Stephen Goudge
HCSTC	House of Commons Science and Technology Committee
'The Kennedy Report'	'Sudden Unexpected Death in Infancy: A Multi-Agency Protocol for Care and Investigation'. Chaired by Baroness Helena Kennedy QC
LCN	Low Copy Number DNA profiling
LTDNA	Low Template DNA profiling
MSBP	Munchausen Syndrome by Proxy
NAHI	Non-Accidental Head Injury

Sandman equation	Risk = Hazard + Outrage (R = H + O)
SBS	Shaken Baby Syndrome
SIDS	Sudden Infant Death Syndrome
SUDI	Sudden Unexpected Death in Infancy

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Prologue

Exposition

It is well recognised that expert evidence performs a vital function within the criminal justice system. Not only is it utilised in both the investigation and prosecution of crime, especially within offences of a more serious nature, it is of equal importance to a defendant when faced with the possibility of legal sanction. Therefore, expert evidence frequently occupies a pivotal position within the construction of a case for the criminal trial process and also within subsequent appeals against conviction. As a result, this evidence is often thrust into the spotlight, receiving commendation in the event of a successful prosecution or vilification when a conviction is overturned by the Court of Appeal.

The admissibility of this evidence into the criminal trial is predominantly governed by the common law,[1] holding a unique position as the principal exception to the 'opinion rule'. This rule states that a witness can be allowed to testify as to matters of fact, but their opinion evidence is generally held to be inadmissible.[2] However, as the exception, experts are allowed to present their evidence in the form of a professional opinion subject to a judicial assessment as to its admissibility. The fundamental question considered by the judge in this assessment is whether the expert opinion is 'necessary' in order to assist the court on matters that fall outside their ordinary knowledge or understanding. Once this condition of necessity has been satisfied, three further requirements must be fulfilled before the evidence can be admitted into trial. These are witness impartiality, evidentiary reliability and the relevant expertise of the expert.

In England and Wales, the duty of impartiality was incorporated into The Criminal Procedure Rules by an amendment in 2006[3] whilst the Australian case of *R v Bonython*[4] has been acknowledged as the guiding common law principle for the remaining requirements. Within

[1] Section 78(1) of The Police and Criminal Evidence Act 1984 may also be used to exclude prosecution evidence where the probative value of the evidence is outweighed by its potential prejudicial effect on the jury.

[2] Due to potential lack of probative value, risk of being inadmissible evidence and usurping the role of the fact finder.

[3] The Criminal Procedure (Amendment No.2) Rules 2006 [33.2].

[4] [1984] 38 SASR 45.

the *Bonython* judgment, King LJ outlined two questions that must be decided by the judge in order to satisfy their admissibility assessment of the expert evidence. These questions dealt with the subject matter of the opinion (including the 'necessity' requirement) and then the competence of the expert witness. These two questions were divided into three limbs as follows:-

(1) "whether the subject matter of the opinion is such that a person without instruction or experience in the area of knowledge or human experience would be able to form a sound judgment on the matter without the assistance of a witness possessing special knowledge or experience in the area, and
(2) whether the subject matter of the opinion forms part of a body of knowledge or experience which is sufficiently organized or recognized to be accepted as a reliable body of knowledge or experience, a special acquaintance with which by the witness would render his opinion of assistance to the court".
(3) "whether the witness has acquired by study or experience sufficient knowledge of the subject to render his opinion of value in resolving the issues before the court".

Of importance to this thesis is the second limb of *Bonython* involving the judicial assessment of the reliability of the expert evidence proffered. The position in English law is that expert evidence will be held inadmissible if it lacks 'prima facie reliability'.[5] On the other hand, some well-established theories or methods may pass into evidence on the basis that judicial notice is taken of their reliability.[6] In the absence of specific guidance for judges on how to interpret a 'reliable body of knowledge or experience' the courts have repeatedly ruled that all other expert evidence need only be 'sufficiently well-established to pass the ordinary tests of relevance and reliability'[7] for it to be admitted into the criminal trial. It has thus been posited

[5] For example: *R v Ciantar* [2005] EWCA Crim 3559.

[6] 'Not all scientific evidence, or evidence that results from the use of a scientific technique, must be screened before being introduced into evidence. In some cases, the science in question is so well established that judges can rely on the fact that the admissibility of evidence based on it has been clearly recognized by the courts in the past' *R v Trochym* [2007] 1 SCR 239 [31].

[7] Colin Tapper, *Cross and Tapper on Evidence* (9th ed, Butterworth & co. 1999) 523 as cited in *R v Luttrell* [2004] EWCA Crim 1344 [37].

that the courts have adopted a laissez-faire approach to the admissibility of this evidence.[8] Further concern surrounds the fact that expert evidence may have a particularly persuasive effect on jurors which in turn may encourage them to defer to an expert opinion without sufficient scrutiny of the evidence or an appreciation as to its limitations.[9] These issues have subsequently stimulated academic debate regarding how admissibility decisions should be structured to ensure the reliability of the evidence adduced.[10] Fuelling this debate have been some high-profile cases where unreliable expert evidence has been held to be responsible for convictions being declared unsafe on appeal.

Indeed, it was the recent successful appeals of *Sally Clark*[11] and *Angela Cannings*[12] that featured in the 2005 House of Commons Science and Technology Committee (HCSTC) report 'Forensic Science on Trial'.[13] This inquiry was primarily concerned with the implications of privatising the Forensic Science Service which at the time represented the largest supplier of expert evidence to the criminal justice system.[14] However, the HCSTC nevertheless devoted some time to consider the use of forensic evidence in court due to their concern regarding 'the lack of safeguards to prevent such miscarriages of justice from occurring'.[15]

In its report the HCSTC concluded that theses miscarriages of justice were the result of failures within the criminal justice system rather than the fault of the expert alone[16] and suggested various actions that should be taken in order to improve the use of expert evidence within

[8] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No 190, 2009) [3.14].

[9] *ibid* [2.4]-[2.8].

[10] For example, Mike Redmayne, 'Expert Evidence and Criminal Justice' (OUP 2001) Chapter 5; William E O'Brian, 'Court scrutiny of expert evidence: Recent decisions highlight the tensions' (2003) 7 E&P 172.

[11] *R v Sally Clark* [2003] EWCA Crim 1020.

[12] *R v Angela Cannings* (2004) 1 W L R 2607.

[13] (HC 96-ii, 2005)

[14] *ibid* 13

[15] HCSTC (n13) [187].

[16] HCSTC (n13) [168]

criminal trials.[17] However, they agreed that the absence of a clear protocol to guide judicial assessments of expert evidence reliability was indeed unsatisfactory.[18]

Nevertheless, they recognised that judges alone were not best placed to decide issues of scientific validity and that it would require scientific input to guide their decisions. They thus recommended that a Forensic Science Advisory Council be established in order to facilitate a 'gate-keeping test for expert evidence.'[19] In response to this issue raised within the HCSTC report, the Law Commission entered a consultation process aimed at 'addressing the problems surrounding the admissibility and understanding of expert evidence in criminal proceedings'.[20] Based on the judgment from the seminal case of *Daubert v Merrill Dow Pharmaceuticals Inc.*[21] handed down by the United States Supreme Court, they proposed that a more structured judicial gate-keeping function should be introduced in a statutory format and to this end a draft Bill was put forward in their final report.[22] Although the statutory approach was never realised, there was however a reform to the judicial reliability assessment actioned through a Criminal Practice Direction[23] and it is the process underlying this Law Commission reform that provides the structure for this thesis.

In 2012 legal historian Professor Paul Mitchell expressed concern that little attention is given to the context and processes that inform any given legal change.[24] He asserted that although the mechanisms of legal reform are well known, there remains minimal study into where the ideas underlying these changes originate. Consequently, there remains a widespread failure to appreciate the influences involved or the interactions between different actors within this process. Often assumptions are made about these factors, or the complexity of the legal change is underestimated. As a result, analyses of the substantive nature of any reform

[17] HCSTC (n13) 87-89.

[18] HCSTC (n13) [173].

[19] *ibid*

[20] Law Commission No. 190 (n8).

[21] 509 US 579 (1993).

[22] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011) 146.

[23] *Criminal Practice Directions Amendment No.2 2014* [2014] EWCA Crim 1569 [33A.5]

[24] Paul Mitchell, 'Patterns of Legal Change' (2012) 65 Current Legal Problems, 177.

provide only a partial picture thereby being unable to fully explain why some reforms succeed whilst others fail. Therefore, Mitchell argued that inquiry as to how and why the law is changing at any given point in time is vital not only for an immediate appreciation of a specific change but also for increasing understanding of law itself. It is this perspective that provides the essence for my thesis.

In concentrating on the 2011 Law Commission report 'Expert Evidence in Criminal Proceedings in England and Wales'[25] the chapters that follow will interrogate the mechanism underlying their subsequent reform to the laws of evidence. This thesis is thus not intended to question the value of the Law Commission nor is it concerned with a historical interrogation of their reports over time. Rather it is hoped that this intense, targeted analysis, may serve to reveal information pertinent to the wider reform agenda. Therefore, this thesis is not merely a critique of one report that has no greater implication for the criminal justice system outside that of its immediate environment. To believe so would be to underestimate the importance of a sustained interrogation such as this. In reacting to Mitchell's call for a better understanding of the processes behind legal reform, my thesis firstly expands upon his original work by studying a legal change outside that of the private law sphere.[26] It thus contributes towards an understanding of the various influences underpinning legal change within the wider domain. However, of critical importance, is the fact that despite the central role of the Law Commission in initiating legal change, the standard methodology adopted across their prolific reform agenda has never been subject to any critique. This omission not only leaves a void in understanding the necessity and appropriateness of any subsequent recommendations but also fails to challenge the assumption that the Law Commission methodology is in fact fit for purpose.

My thesis is therefore unique in that it uses a specific example from the Law Commission agenda in order to begin this interrogation. In doing so it is hoped that the findings within this thesis will encourage further research and analysis of their other reports in order to establish the rigor of the underlying process and the suitability of any reform.

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[25] The Law Commission No.325 (n22).

[26] 'I shall use examples from English private law, but the themes I identify can be applied more widely.' Mitchell (n24)

Sitting alongside the other sources of legal development,[27] the Law Commission represents a highly influential body for introducing statutory change. Charged with keeping the law under review to ensure that it remains 'fair, modern, simple and cost effective'[28] it speaks directly to Government, making recommendations when it believes reform is necessary. An appreciation of the weight given to the findings of this advisory body can be found in the fact that since its inception in 1965 only 31 of its 235 (13%) reports have been rejected outright by the Government of the time.[29] The longevity of this organisation coupled with the acceptance rate of its recommendations indicates that the process underlying this method of legal change is worthy of examination thereby pointing directly to the importance of my thesis.

With many Law Commission reports available for study the one chosen for my thesis represents an attempt to divert a well-established common law assessment into one dictated by statute. This attempt to control judicial discretion represents a paradigm shift in legal development which will in turn feed into other common law jurisdictions. Thus, its effect will potentially have a reach further than just our domestic courts.

There is also a consensus that reliance upon expert scientific and medical evidence by the criminal justice system is increasing,[30] especially with the development of new forensic

[27] Such as common law, legislation and academic writing. Mitchell (n24).

[28] The Law Commission, 'The Law Commission' <www.lawcom.gov.uk/> accessed 08 September 2020.

[29] The Law Commission, 'Implementation Table' <www.lawcom.gov.uk/our-work/implementation/table/> accessed 08 September 2020.

[30] 'Legal proceedings now often rely significantly on scientific testimony (…)' Susan Haack, 'Irreconcilable differences? The Troubled Marriage of Science and Law' (2009) 72 LCP 1;
'In more than 40 years since the publication of those reports, the number of forensic crime laboratories has increased almost fourfold and employs more sophisticated scientific techniques to examine and interpret physical clues. The increased reliance on forensic evidence can be attributed to a number of factors (…)' Joseph L. Peterson, Matthew J. Hickman, Kevin J Strom and Donald j. Johnson, 'Effect of Forensic Evidence on Criminal Justice Case Processing' (2013) 58 (S1) J Forensic Sci S78;
'[E]xpert testimony is being used increasingly in criminal litigation; the techniques used may also be becoming more complex.' Mike Redmayne, *Expert Evidence and Criminal Justice* (OUP 2001) 127.

methodologies.[31] However, as scientific discovery advances in both method and sophistication it can introduce problems for the criminal justice system that sometimes struggles to correctly understand or apply this expanding expert knowledge base. There is thus a tension between the two institutions of science and law as they develop and change at dissonant speed and with differing agendas. The fact that expert evidence is likely to continue to be a challenge to the laws of evidence in the future further justifies interrogating the processes underlying legal change around this area. This will help us to understand the effectiveness, or not as the case may be, of the reform as it invoked against a continuum of forensic scientific discovery. As such this thesis does not concern itself with theoretical considerations as to correlation between both law and science and their truth-finding function. Instead, it imports the distinction of autonomous disciplines as found within a variety of academic literature[32] and indeed as adopted within the Law Commission report itself.[33]

In addition, the substantive nature of the reform has stimulated critique from the academic community, which is far from unanimous as to its potential effectiveness.[34] My thesis is not

[31] For example: Ultra-sensitive DNA profiling techniques and photographic hand comparison methods both of which will receive mention within this thesis.

[32] For example, '[T]he core of my argument will be that there are deep tensions between the goals and values of the scientific enterprise and the culture of the law.' Haack (n30) 2;
'[T]here remain apposite and acute concerns regarding the status of science utilized by the law, in particular forensic science and its interplay with criminal law.' C McCartney, 'Legal Rules, Forensic Science and Wrongful Convictions' Encyclopedia of Criminology and Criminal Justice (Gerben Bruinsma & David Weisburd (eds), Springer 2013) 2915.

[33] 'Of particular importance in this context is the approach which should be adopted for scientific, or purportedly scientific, evidence tendered for admission in Crown Court jury trials.'
The Law Commission No.190 (n8) [1].

[34] 'However, it seems to us that while the reform proposals may encourage trial judges to pay greater attention to issues of reliability in admissibility decisions, they are neither likely to discourage the prosecution from seeking to introduce unreliable expert opinion evidence, nor to prove effective in preventing juries from being presented with such evidence.' Gary Edmond & Andrew Roberts, 'The Law Commission's Report on Expert Evidence in Criminal Proceedings' (2011) 11 Crim L. R. 844-845;
'Fortunately, or so I shall argue, the common law already provides the basis for a more rigorous approach: were the judges so minded, they could use their existing powers to achieve very similar results to those

intending to follow this pattern of criticism. Rather it will add to the conversation by attempting to expose any hidden assumptions, influences and interactions that may have provided the driving force for this legal change thereby filling a gap that the current literature has failed to identify.

Turning now to the report in question 'Expert Evidence in Criminal Proceedings in England and Wales'. This was published in 2011 following a three-month consultation process.[35] It originated as a direct response to concerns that the current judicial admissibility test for expert evidence was being administered in a way that was deemed to be too laissez-faire.[36] These concerns, however, are not just a recent phenomenon, spanning several decades as techniques have become more sophisticated or novel. In common with the Law Commission proposal, this unease has previously arisen due to the fear of wrongful convictions being caused by unreliable expert evidence entering the criminal trial process due to insufficient judicial scrutiny. Thus, over the years some successful appeals have provoked a backlash against the technologies employed, the theories expounded, or the expert witnesses called at the original trial. They therefore become categorised as 'high-profile' miscarriages of justice cases that have on occasion prompted a number of reviews, reports and inquiries both here and abroad, to consider the role of this evidence in the convictions being declared unsafe on appeal.[37] In response they have also stimulated academic, scientific and legal commentary aimed at analysing the problems and suggesting appropriate remedies.

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envisaged by the Law Commission.' T Ward, 'Expert Evidence and The Law Commission: implementation without legislation?' (2013) Crim L R, 7, 561;

'This paper considers the possible evolution of the common law in light of these amendments, the challenges associated with adopting such a novel approach to reform and the potential opportunities for the improvement of expert evidence in criminal proceedings that the changes were intended to create'. Michael Stockdale & Adam Jackson, 'Expert Evidence in Criminal Proceedings: Current Challenges and Opportunities' (2016) 80 J Crim L, 5.

[35] 7 April to 7 July 2009.

[36] The Law Commission No.325 (n22) [3.14].

[37] For example, Rt Hon. Sir John May, 'A report of the inquiry into the circumstances surrounding the convictions arising out of the bomb attacks in Guildford and Woolwich in 1974' (London, HMSO 1994);

'The Royal Commission on Criminal Justice Report' (CM2263, London, HMSO 1991);

However, these calls are far from unified in their recommendations with several theoretical and practical solutions proffered. Some commentators have recommended a more robust and critical judicial assessment of this evidence to address the 'incredibly liberal' or 'laissez-faire' approach of the judiciary to the sufficiently reliable standard as required before expert evidence can be admitted into the trial process.[38] Whilst these commentators support the formalisation or codification of the sufficiently reliable test, others have argued against this process, providing comparative evidence from international jurisdictions to indicate that, when used alone, this test makes little difference in practice.[39] Despite the interest and concern that this subject creates there remain only few of the opinion that the common law rules, properly applied are adequate, and that no further action should be taken to interfere with the test in its current format.[40] Therefore, the subject of judicial assessment mechanisms has a long history culminating in the latest Law Commission reform at the centre of this thesis. This historical backdrop highlights the importance of research around this area in order to contribute to further understanding of this unsettled topic. Also, the direct influence on the Law Commission of the judgment flowing from the USA Supreme Court decision *Daubert v*

Professor Brian Caddy, Graham Taylor and Adrian Linacre, 'The Review of the Science of Low Template DNA Analysis' (2008) <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/117556/Review_of_Low_Template_DNA_1.pdf> accessed 11 July 2017;

Rt. Hon Stephen Goudge, 'Inquiry into Pediatric Forensic Pathology in Ontario' (*Ministry of the Attorney General*, 1 October 2008) <www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html> accessed 28 April 2017.

[38] For example, Mike Redmayne, 'Expert Evidence and Criminal Justice' (OUP 2001) Chapter 5;

William E O'Brian, 'Court scrutiny of expert evidence: Recent decisions highlight the tensions' (2003) 7 E&P 172.

[39] 'Our findings suggest that admissibility standards, including the first generation of reliability-based standards, seem to make little, if any, difference to (traditional) admissibility decision-making and practice.' Gary Edmond, Simon Cole, Emma Cunliffe, and Andrew Roberts, 'Admissibility Compared: The reception of incriminating expert evidence (i.e., forensic science) in four adversarial jurisdictions' (2013) 3 U. Denv. Crim. L. Rev. 31.

[40] See Adam Wilson [1.51] & Deidre Dwyer [1.78], 'Expert Evidence Consultation Responses' (Law Commission, 2011) <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 11 February 2021.

Merrill Dow Pharmaceuticals Inc[41] points to a longer reach for this thesis. This seminal judgment gave rise to a protocol for assisting the judiciary in their assessment of sufficient reliability. Having gained wide acceptance within its own jurisdiction, it has also exerted an influence over academic debate and admissibility decisions across a greater sphere. Consequently, the interrogation of the process behind the Law Commission reform that follows is not just pertinent to the criminal justice system of England and Wales but attaches itself to the wider international stage.

On studying the Law Commission proposal, it is apparent that facilitating a risk reduction strategy is central to their reform agenda. This is indicated by the issue of risk permeating throughout their consultation document,[42] the responses received,[43] and the final report.[44] Hence the underlying aim of the final report and recommendation was to reduce the risk of unreliable expert evidence being allowed to enter and thus pervert the criminal trial process.

[41] 509 US 579 (1993).

[42] For example, The Law Commission No.190 (n8): 'Importantly, reducing the risk of incorrect acquittals and convictions on the basis of unreliable evidence will reduce the risk of a loss of public confidence in the criminal justice system' [C.25]; '[W]hich suggests that there is at least a significant risk that some such evidence is insufficiently reliable to be admitted' [2.26]; 'Given the risks associated with expert evidence in criminal proceedings (…)' [4.25]; 'The risk of juries basing their verdicts on unreliable expert evidence as a result of an insufficient inquiry into evidentiary reliability at the admissibility stage (…)' [C.3]; 'Given the importance of expert evidence in criminal trials, this lack of uniformity and the concomitant risk of unreliable evidence being admitted raises real concerns' [C.6].

[43] For example, Responses (n39) Criminal Bar Association: '[E]xpert evidence in criminal proceedings (…) has contributed to a number of miscarriages of justice and risks continuing to do so (…)' [1.71];
General Medical Council: '[T]he proposed test (…) would reduce the risk of unreliable evidence being placed before a jury' [1.147];
Andrew Roberts: 'He concludes by saying that in order to provide a 'satisfactory attempt' at addressing the risk of miscarriages of justice caused by unreliable expert evidence (…)' [1.26].

[44] For example, The Law Commission No.325 (n21): 'This should result in expert evidence of higher quality being tendered for admission in all criminal proceedings and therefore reduce the risk that unreliable evidence will be placed before juries' [1.28]; '[T]he likelihood that the current safeguards associated with the trial process are insufficient, and the risk that juries may simply defer to ostensibly reputable experts (…)' [1.24].

In order to facilitate this risk reduction, the report recommended that the current common law test for admissibility should be both strengthened and placed on a statutory footing.[45]

As the Law Commission reform represented a 'risk response' strategy, this thesis will view the process underlying this legal change through the lens of a risk response analysis. This simple, yet effective mechanism, as detailed below, will be used to interrogate not only the evidence provided by the Law Commission but also the unseen influences that may have driven this reform agenda. Justification for this approach can be found in academic concern that scrutiny of the ever increasing development of risk management strategies often exposes the fact that they do not have sufficient justification.[46] Difficult questions with which to test the adequacy of the measures introduced are avoided because of an underlying presumption that such an institutional response is necessary.[47] As a result, a risk may be founded on nothing more than a presumption of a causal relationship that is open to interpretation.[48] This in turn may lead to an over exaggeration or dramatisation of the risk, that may then fall prey to 'social construction and political manipulation'.[49] The adoption of the risk response perspective can be further justified in that it provides an effective structure with which to assemble the analytical information into a clear and coherent argument. Thus, in shedding some light on the process behind this legal change, it is hoped that this will provide a small step towards stimulating more critical analyses of legal risk response strategies. This in turn may inform and guide those involved within the criminal justice system thereby helping to encourage reforms that are appropriate, targeted and effective.

Although the need for statute was eventually rejected by the Government[50] the recommendations contained within the Law Commission report were nevertheless

[45]The Law Commission No.325 (n22) [3.34].

[46] David Denney, *Risk and Society* (Sage Publications 2005) 191.

[47] 'Awkward questions as to the usefulness and efficacy of risk management are not asked, since the need for such institutional activity is presumed to be a moral imperative' *ibid.*

[48] Denney (n46).

[49] Denney (n46).

[50] The Ministry of Justice, The Government's Response to the Law Commission Report: Expert Evidence in Criminal Proceedings in England and Wales (Law Com No 325) (*Ministry of Justice,*2013), 5

incorporated into a *Criminal Practice Direction*[51] within the Criminal Procedure Rules.[52] As they represent the current state of guidance for the judiciary when evaluating the reliability of expert evidence, one would expect the Law Commission to have presented a robust analysis of the situation, coupled with a clear appreciation of the specific issues requiring redress. However, as the thorough analysis of this reform agenda conducted throughout the following chapters will illustrate, this has not been the case. Firstly, the resulting reform does not represent a response arising from a dialogue between science and law. Rather it is a purely legal answer to the complex issues surrounding expert evidence. Furthermore, it will be shown that, alongside this disjunct, the guidance has been developed within an informational vacuum lacking both data and research to support the reform. This in turn raises the question as to whether the reform will not only be ineffective but that it may in turn introduce unforeseen problems for the laws of evidence in the future.

Secondly, the Law Commission have focused their attention on a small group of high-profile appeals, primarily concerned with those situations involving expert evidence used to establish a criminal cause for infant death. As the relevant chapters will illustrate, this is a complex and controversial area thus requiring detailed input from the medical field in order to establish its true evidential role within the criminal trial process. In attempting to address the uncertainties around this evidence from a discrete legal perspective the Law Commission has effectively put the legal cart before the scientific horse and in doing so has failed to distinguish between jury understanding, unreliable expert evidence and an unreliable expert. Finally, when considering these high-profile appeals, the Law Commission has concentrated on the perceived unreliability of the prosecution expert evidence alone and in doing so has failed to view its liability within the context of the whole trial.

In addition, they make the unsupportable assumption that any expert evidence used in defence of the individual at appeal is necessarily more reliable than that adduced for the

<https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/260369/govt-resp-experts-evidence.pdf> accessed 05 December 2020.

[51]Criminal Practice Directions (n23) [33A.5]-[33A.6].

[52]The Criminal Procedure Rules 2014 Part 33 Expert Evidence 06 October 2014.

prosecution at trial thereby using this evidence to support their central claim without any further interrogation. As a result, the notion of innocence pervades their analyses leading to some definitional confusion between wrongful conviction, miscarriage of justice and those verdicts declared as unsafe by the Court of Appeal.

This tendency for legal commentators to ignore the quality of scientific evidence used to acquit was first documented by Professor Gary Edmond in 2002.[53] Edmond recognised that conventional analyses of miscarriages of justice often suffer from this 'conceptual disparity or asymmetry'.[54] Consequently, the prosecution experts and their evidence are assumed to be problematic and unreliable whereas the evidence used to reveal a miscarriage of justice is presented in the form of 'idealised images of the science and scientists' involved.[55] These assumptions are then readily accepted thereby leaving the reliability of the defence evidence unchallenged. Thus, Edmonds encouraged legal commentators to adopt a more symmetrical methodology within their analyses of miscarriages of justice 'in order to avoid what is sometimes described as the sociology of error'.[56]

In choosing this asymmetric methodology, the Law Commission have singled out the prosecution expert evidence as the blameworthy factor underlying these successful appeals. Consequently, they have failed to appreciate that the criminal trial is a complex system that not only makes causation hard to expose but, in this instance, may permit an exaggeration as to evidential weight.[57] Interestingly, research has indicated that the study of the 'slippery, controversial and indistinct'[58] notion of error is not a useful parameter for the design of safer

[53] Gary Edmond, 'Constructing Miscarriages of Justice: Misunderstanding Scientific Evidence in High Profile Appeals' (2002) 22 Ox J Legal Studies 1, 53.

[54] *ibid*.

[55] Edmond (n52).

[56] 'The sociology of error is a classically asymmetrical approach to understanding the sciences. It involves attempts to locate the social reasons behind failed knowledge (the so-called error) without applying the same types of descriptions to attempts to understand what is understood as "proper" or "reliable" scientific knowledge. Instead, these later knowledges are supposed to be fully explained by their (isomorphic) relation with nature or reality.' Edmonds (n53) 55.

[57] This issue will be returned to in chapter 8.

[58] '"Those found responsible have been sacked": some observations on the usefulness of error.' Richard I Cook and Christopher P Nemeth, (2010) 12 Cogn Tech Work 87, 89.

operations, albeit in complex systems other than law. It has been posited that attempts to assign causation for an error to an individual within an institution is not only difficult but also allows the wider organisation to distance itself from their role in the mistake.[59] As these issues are directly pertinent to both the criminal justice system and to this thesis they will be discussed further in the relevant chapters. Thus, in answer to Edmonds request, and in contrast to the conventional method adopted by the Law Commission, this thesis will approach the chosen high-profile miscarriage of justice cases with a more symmetrical methodology in an effort to test the veracity of the Law Commission's claims of unreliability.

Timeframe

The timeframe for this thesis begins at the end of 1990s with the convictions of *Mark Dallagher* for the murder of an elderly lady in 1998 and that of *Sally Clark* for the murder of her two infant children in 1999. However, this is not an arbitrary historical starting point as the Law Commission support their proposal for reform by referencing four successful appeals as examples of wrongful convictions caused by unreliable expert evidence. Chronologically, the appeal of *Dallagher* represents the first in this series and is therefore fundamental in driving this reform. The successful appeal of *Clark* against her conviction in 2003 is important not only because it is again chosen by the Law Commission in support of their reform but also because it signalled the start of another Government review into concerns surrounding the use of expert evidence in court.[60] As a result of this review the HCSTC published their final report 'Forensic Science on Trial' in 2005.[61] In a similar vein to the House of Lords report a decade earlier[62] the HCSTC recognised that blame for these miscarriages of justice did not rest solely in the hands of the expert witness.[63] However, in contrast to the earlier report they

[59] *ibid.*

[60] Primarily commissioned to investigate the impact of Government plans for the closure of the Forensic Science Service it nevertheless considered some of the concerns raised as to the use of forensic science in court. This followed not only the successful appeal of *Sally Clark* but also that of *Angela Cannings*. Both of these cases will be discussed in detail in Act 1 of this thesis.

[61] HCSTC (n13).

[62] House of Lords Select Committee on Science and Technology 5th Report (1993) Forensic Science.

[63] '[S]ome of the blame for what went wrong belongs to the wider criminal justice system.' *ibid* 14; 'These cases represent a systems failure.' HCSTC (n13) [170].

stopped short of concluding that the errors identified were firmly rooted in the past.[64] Whilst the earlier report concerned itself primarily with remedying the image problem associated with forensic science at the time,[65] 'Forensic Science on Trial' closed by expressing extreme concern as to the 'lack of safeguards to prevent such miscarriages of justice from happening (…)'[66] and the apparent failure of the criminal justice system to keep pace with the increasing use and complexity of forensic science evidence.[67] As a result the report put forward 'a number of recommendations (that they believed) could improve the quality and treatment of expert evidence and decrease the potential for miscarriages of justice due to flawed expert evidence'.[68]

The acknowledgement that the issues with forensic evidence ran deeper than a mere image problem directly influenced the Law Commission to produce their consultation document 'Expert Evidence in Criminal Proceedings in England and Wales' in 2009.[69] This consultation process culminated in the final report published in 2011,[70] which laid out recommendations within a draft bill[71] to guide judges in their assessment of whether expert evidence proffered for trial was sufficiently reliable to be admitted.[72]
In doing so it aimed to bring 'clarity, certainty and consistency'[73] to this area of evidence law. Although this thesis is located within this specific chronological framework, it may

[64] '[W]hatever may have been the case in the 1970s, the quality of public forensic science services in the United Kingdom today is high and rising' ;
'Our witnesses point to (…) an assurance that the scientific mistakes of the 1970s could not be repeated.' House of Lords Select Committee (n62) [1.31].

[65] 'However, it is clear to us that forensic science has an image problem. We hope that this report will help to establish the true picture'. House of Lord Select Committee (n62) [1.33]

[66] HCSTC (n13) [189].

[67] *ibid.*

[68] HCSTC (n13) [189].

[69] The Law Commission CP190 (n8).

[70] The Law Commission No.325 (n22).

[71] The Law Commission No.325 (n22) 146-158.

[72] The reliability factors were eventually incorporated into the Criminal Procedure Rules by way of a Practice Direction. See Appendix A.

[73] The Law Commission No.325 (n22) 171.

occasionally be necessary to introduce data and commentary outside of these parameters in order to explain or enhance points raised throughout the course of the analysis.

Risk Response

As introduced above, the Law Commission report under review here represented a response to the risk that wrongful verdicts were being caused by the admission of unreliable expert evidence into criminal trials. Risk response strategies are ubiquitous as a means of responding to the myriad of risks that can be found throughout the normal processes and functioning of everyday events.[74] The aim of these strategies is to reduce a perceived risk to a level that will ultimately be tolerated by the institution concerned or the public at large. Researchers within the social sciences have produced interesting work regarding the construction of risk from a variety of dimensions such as 'values, knowledge, rationality, power and emotion'.[75] This research represents a valuable contribution to understanding the social and organisational dynamics within different societies and how the concept of risk is socially constructed. However, my thesis stakes its claim in a different area, by using risk as a lens through which to study the process behind the introduction of the enhanced reliability test for expert evidence.

The traditional approach to risk response strategies as utilised by risk assessors, scientists and actuaries, was to define the risk in a purely technical format by adopting an objective calculation whereby risk was considered equal to:

> the magnitude of potential consequences (level of impact) x the likelihood of these consequences to occur (level of probability).[76](M x P)

[74] For example, construction, banking, environmental health, public health, software and security to name but a few.

[75] Jenns O Zinn, *Social Theories of Risk and Uncertainty: An Introduction* (Blackwell, 2008) 13.

[76] 'Qualitative Risk Analysis' (perseus-net.eu 2012) <www.perseus-net.eu/site/content.php?artid=2204> accessed 08 January 2020;

See also Rolf Schmidt, 'Risk = Hazard + Outrage'(2001) 33 Zurich Risk Engineering's Magazine on The Peter M. Sandman Risk Communication Website <www.psandman.com/articles/zurich.pdf> accessed 04 January 2017.

However, over time, experience and research supported the view that this functional, technical approach often did nothing to dispel public anxiety even when the risk was reduced substantially.[77] It was also appreciated that the fear expressed, and the calculated level of risk were not always proportional, with some very small risks invoking great anxiety and vice versa.[78] Subsequently it was realised that as well as risk response strategies, effective communication was equally important to protect corporate reputations or quell public unease. A pioneer in this area was Professor Peter Sandman who in 1987, reframed the definition of 'risk' as being comprised of two components - the objective, technical 'hazard' and the subjective, non-technical interpretation that reflects the fear or anxiety inherent in public perception, which he labelled 'outrage'.[79] His contribution to the newly emerging field of 'risk communication' was thus neatly summarised in the equation:

Risk = Hazard + Outrage.

Importantly however, Sandman recognised that the factors are not equally weighted, with outrage being the issue that has a greater impetus for effecting the nature and force of a risk response programme.[80] When the outrage factor is high there is a tendency for regulatory bodies to react strongly even when there is little data to support that the actual level of the objective risk is equally high.[81] Research into this area has resulted in the development of 'The

[77] Freakonomics, 'Risk = Hazard + Outrage: A conversation with Peter Sandman' (2011) <http://freakonomics.com/2011/11/29/risk-hazard-outrage-a-conversation-with-risk-consultant-peter-sandman/> accessed 10 May 2018;
Brandon B Johnson & Peter M Sandman, 'Outrage and Technical Detail: The Impact of Agency Behavior on Community Risk Perception' (1992) New Jersey Department of Environmental Protection on The Peter M. Sandman Risk Communication Website <www.psandman.com/articles/outrage.pdf> accessed 11 February 2021.

[78] Peter M Sandman, *Responding to Community Outrage: Strategies for Effective Risk Communication* (American Industrial Hygiene Association 1993) Chapter 1 <http://petersandman.com/media/RespondingtoCommunityOutrage.pdf> accessed 04 January 2018.

[79] *ibid.*

[80] Peter M Sandman, 'Risk = Hazard + Outrage: Coping with Controversy about Utility Risks (Engineering News)' *(Peter Sandman Risk Communication*, November 2000) <www.psandman.com/articles/amsa.htm> accessed 04 January 2018.

[81] 'The engine of risk response is outrage'. Peter Sandman, 'Biography' (*Peter Sandman Risk Communication,* 18 June 2014) <http://psandman.com/bio.htm> accessed 10 May 2018.

Social Amplification of Risk Framework'[82] which recognises that risk 'signals' can be communicated and amplified via several mechanisms with the media, pressure groups and opinion leaders being the most relevant to this thesis. Because of this heightened response overregulation may occur with measures being introduced, often at great cost, that give the perception of addressing a specific hazard whilst doing little to reduce the risk in practice.[83] This effect is well documented in counter-terrorism security, being known colloquially as 'security theatre'.[84] In borrowing this concept from the security industry, this thesis will apply the underlying principle to the Law Commission reform. Subsequently it will be argued that the changes introduced to the judicial reliability assessment by this reform produce an equivalent effect to that described above thereby creating nothing more than a 'reliability theatre'. As a result, the enhanced reliability test is likely to make little practical difference to the reliability of expert evidence adduced within criminal trials.

Why Use Sandman's Equation?

The unique contribution of Sandman to the understanding of risk response and communication has been described by some authors as 'groundbreaking'[85] and has subsequently furnished him with a worldwide reputation within this field. Therefore, his opinion on a diverse range of risk related subjects is endorsed by a broad spectrum of

[82] Roger Kasperson , Ortwin Renn, Paul Slovic, Halina S. Brown, Jacque Emel, Robert Goble, Jeanne Kasperson, Samuel Ratick,
'The Social Amplification of Risk: A Conceptual Framework' (1988) 8(2) Risk Analysis 177.

[83] Rolf Schmidt, 'Risk = Hazard + Outrage' (2001) 33 Zurich Risk Engineering's Magazine <www.psandman.com/articles/zurich.pdf> accessed 04 January 2017.

[84]'Security theatre - the practice of investing in countermeasures intended to provide the feeling of improved security while doing little or nothing to achieve it'. Bruce Schneier, *Beyond Fear: Thinking Sensibly About Security in an Uncertain World* (Copernicus Books 2003) 38.

[85] John Tilston, *NIMBY! Aligning regional economic development practice to the realities of the 21st century* (2nd edn, John Tilston and Associates 2012 25.

publications such as peer-reviewed journals in science,[86] medicine[87] and risk research,[88] national and international media outlets[89] and business communications.[90] Direct reference to his equation can be found in World Health Organisation reports[91] and books on subjects

[86] Kai Kupferschmidt, 'High-profile cancer reviews trigger controversy' (2016) 352 Science, 1504.
Declan Butler, 'Tamiflu comes under fire' (2014) 508 Nature 439.

[87]David Burgess, Margaret Burgess and Julie Leask, 'The MMR vaccination and autism controversy in United Kingdom 1998–2005: Inevitable community outrage or a failure of risk communication?' (2006) 24 Vaccine 3921;
J Lanard, 'Talking to the Public about a Pandemic: Some Applications of the WHO Outbreak Communication Guidelines' (2005) 78 YJBM 373.

[88] Anat Gesser-Edelsburg and Yaffa Shir-Raz, 'Science vs. fear: the Ebola quarantine debate as a case study that reveals how the public perceives risk' (2017) 20 (5) J Risk Res 611.

[89] Peter Sandman, 'Why We're Vilifying BP (Response to *London Evening Standard*) (*Peter Sandman Risk Communication*, 04 June 2010) <https://www.psandman.com/articles/deepwater3.htm> accessed 30 March 2021 *;*
P Farhi, 'Media goes overtime on Ebola coverage, but not necessarily overboard' *Washington Post* (Washington, 6 October 2014). <https://www.washingtonpost.com/lifestyle/style/media-goes-overtime-on-ebola-coverage-but-not-necessarily-overboard/2014/10/06/d65e92fc-4d8a-11e4-8c24-487e92bc997b_story.html> accessed 30 March 2021;
Peter Sandman, 'BP's Communication Response to the Deepwater Horizon Spill (BBC interview)' (*Peter Sandman Risk Communication*, 05 May 2010) <www.psandman.com/articles/deepwater.htm> accessed 04 January 2018;
Peter Sandman, 'Official Ebola Risk Communication: Don't Scare the Children (Interview for *Wall Street Journal)*' (*Peter Sandman Risk Communication,*13 October 2014) <https://www.psandman.com/articles/articles.htm> accessed 04 January 2018;
Peter Sandman, 'Health Check (Interview for BBC World Service)' (*Peter Sandman Risk Communication,*10 May 2009) <www.psandman.com/media/BBC-11May09.mp3> accessed 04 January 2018.

[90] K Silverstein, 'Can Donald Trump Learn Anything From Businesses That Have Been Under Fire?' *Forbes Magazine* (New York, 05 March 2017) at <https://www.psandman.com/articles/articles.htm> accessed 16 May 2018;
E Whitman, 'Zika Virus In The US: How The Outbreak Became A Public Relations Mess' *International Business Times.* (London, 06 September 2016).

[91] World Health Organisation, '*Health and Environment: Communicating the Risks*' (World Health Organisation 2013)1.

such as environmental law,[92] information security,[93] public health nursing[94] and economic development practice.[95] Hence, the use of the equation across this diverse range of topics has established it as an industry standard in risk communication and subsequently provides a strong endorsement for its application in explaining and influencing risk response strategies worldwide. However, whilst Sandman's theory has been applied to the various fields described above, the equation has never been utilised as a means of explaining the process of legal reform within this area of criminal evidence law.[96] Objections as to the use of the term 'outrage'[97] are duly noted here but so too is the absence of any obvious criticism regarding the fundamental premise of the equation. Whilst this thesis does not intend to claim that the Sandman equation is either the only or best theory for analysing a risk response strategy its power nevertheless lies in its general acceptance, its adoption as an industry standard and in its inherent simplicity. It will thus perform a useful function within my thesis as a heuristic device for articulating and explaining the response of the Law Commission to

[92] S Wolf & N Stanley, *Wolf and Stanley on Environmental Law* (6th edn, Routledge 2014) 535.

[93] David Lacey, *Managing the Human Factor in Information Security* (John Wiley & Sons 2011) Chapter 4.

[94] L Louise Ivanov & Carolyn Blue, *Public Health Nursing: Leadership, Policy & Practice* (Delmar Cengage Learning 2008) 438.

[95] Tilston (n63).

[96] It is recognised however, that risk management is central to other areas of the criminal law such as law enforcement and crime prevention policy making;
See David Denney, *Risk and Society* (Sage 2005) chapter 8 and H.M Government '*Prevent* duty guidance' to address the 'risk of radicalisation'.

[97] Some commentators have argued that 'true outrage is a relatively rare phenomenon' thereby preferring to adopt the word 'concern'. William Leiss, 'Searching for the public policy relevance of the risk amplification framework' *The Social Amplification of Risk* (N Pidgeon, R Kasperson & P Slovic (eds), Cambridge UP 2003) 355 whilst others have argued that it is too readily associated with a purely emotional response. Sandman (n56) 7; Others still are uncomfortable with its 'built-in ambiguity in that it applies to both the circumstances that provoke the public's response and the response itself. When an agency misleads a community, and the community explodes, both the agency's misbehavior and the community's reaction are called "outrage"'. Sandman (n78) 7;
Whilst these arguments against the use of the term 'outrage' are duly noted, this thesis will nevertheless furnish it with a meaning consistent with that proffered by Sandman. It will thus be used to represent a strong, yet justified, emotion. Sandman (n78) 7.

the risk associated with the use of unreliable expert evidence in criminal trials.[98] In order to facilitate this risk response analysis, this thesis will engage with the wealth of information and research surrounding the use of expert evidence within criminal trials throughout the chapters that follow. It will thus subject the relevant cases, documentation, scientific research and opinion, all published and available to critique and analysis. Although the current direction of legal research may have shifted more towards the acquisition of new knowledge via the collection and presentation of empirical data,[99] the analytical perspective adopted here has nevertheless remained a core and dominant method of legal research over time.[100] Importantly, this method is an efficient way of exposing the deficits underlying the process behind the introduction of the Law Commission reform.

By scrutinising the Law Commission proposal from the risk response viewpoint, this thesis will seek to argue that the Law Commission failed to appreciate the influence that public outrage may have exerted on their perception of the risks involved and the requirement for reform. As a result of this omission, it will conclude that the enhanced reliability test may be nothing more than 'reliability theatre' providing little more than 'window dressing'[101] for the current

[98] There is however a difference between the guiding principles of the criminal law and the other areas of environmental and medical risk. 'Typically, public health is adversely affected under a false negative for environmental risk while liberty is adversely affected under a false positive for criminal law'.
T Page, 'A Generic View of Toxic Chemicals and Similar Risks' (1978) 7 Ecology L Q, 207, 234.
Whilst this difference is noted it is believed that it does not directly impact on the analytical approach of this thesis.

[99] Terry Hutchinson & Nigel Duncan, 'Defining and describing what we do: Doctrinal legal research' (2012) 17(1) Deakin L R 83.

[100] *ibid* 85.

[101] Whilst legal formalisation through codification of the law is considered by some to be an effective method for 'enhancing the predictability and transparency' of the common law, it has also been criticised as being nothing more than 'window dressing highly decoupled from actual practice'. This is due to the necessary reliance on informal practices to support the application of the formal rules.
See Bruce G Carruthers, 'Institutional dynamics: When is change "real" change?' Arthur M. Sackler Colloquia of the National Academy of Sciences <http://sackler.nasmediaonline.org/2011/dynamics/bruce_carruthers/bruce_carruthers.html> accessed 21 June 2016.

common law admissibility regime.[102] It will further argue that the Law Commission misunderstood the calls for reform, concentrating instead on a purely legal response aimed at restoring confidence in the criminal justice system following the appellate decisions in a selection of cases. This eagerness to initiate a purely legal response served to exacerbate the lack of coherent communication between the legal and scientific communities when attempting to address an issue that straddled both fields. It will also be illustrated that this disjunction between the legal and scientific communication channels represents a reoccurring problem. Consequently, the opportunity to affect a conjoined and targeted response to the specific reliability issues surrounding Low Copy DNA Profiling had been previously squandered.[103] Overall, it will be argued that the enhanced admissibility test for expert evidence is an overregulation that will do little to enhance reliability assessments and may well add an unwelcome rigidity to the common law. This in turn may invite unforeseen future problems for the laws of evidence. Either way there is the danger that it is an inappropriate and ineffective response to the risk associated with unreliable expert evidence. The value of this thesis is therefore to be found in the advantage of reframing this legal development through use of a specific analytical tool in order to gain an appreciation of the disparate and possibly unrecognised elements that may have initiated and then driven this change. Whilst this thesis deals only with a specific area of reform, it is nevertheless the desire of this work

[102] It is also worth noting that adherence to the enhanced test rests upon the knowledge and application of the Criminal Procedure Rules and the associated practice direction. Research conducted within the domestic courts has previously revealed that the Criminal Procedure Rules were 'irrelevant in some courts' or that the judiciary lack familiarity with them in the first instance;

'The detail of the CPR is a desert to 95% of the Bar and a very large proportion of the judges.' 'I've never looked at them; don't even know where they are'.

P Darbyshire, 'Judicial case management in ten Crown Courts' (2014) 1 Crim L R 30, 35.

However, The Lord Chief Justice's Report in 2017 (London, The Judicial Office, 2017) is more hopeful; '[i]t is good to be able to note that use of the Criminal Procedure Rules and Practice Directions are now generally acknowledged to be essential to the proper conduct of appearance in the courts.' How this optimism relates to actual judicial practice is outside the scope of this thesis, but it would appear to be in direct contrast to the previous report in 2010 where it was found that 'the Rules are honoured more in the breach than in compliance.' 'The Lord Chief Justice's Review of the Administration of Justice in the Courts' (The Stationary Office, 2010) 11.

[103] See chapter 6.

that its findings will advance knowledge as to the presence of unseen influences that may drive future legal change across any number of areas. Subsequently, it may encourage those initiating reform to question whether a proposed change is likely to be effective or indeed even necessary as well as drawing attention to the potential for any problematic sequelae that may be introduced by the intended mechanism of a reform. It is hoped that in highlighting the communication void between the scientific and legal fields will serve to stimulate a more coherent response across these disciplines thereby providing a small contribution to the production of future necessary, robust and effective legal reform in this area.

Structure

I have chosen to deliver the chapters of this thesis within a framework loosely mimicking the structure of a dramatic production. The reason for this decision can be justified as follows.
The theatrical nature of the criminal trial in its adversarial format is well recognised and needs no further explanation. Thus there is this initial thread connecting the drama of the courtroom with a stage performance and this provides the structural foundation. Crucially however, the central argument that will be developed over the course of this thesis is that the Law Commission reform of the 'sufficiently reliable' standard for expert evidence is a piece of 'reliability theatre' rather than an effective strategy to reduce the risk of unreliable expert evidence causing wrongful verdicts. Therefore, the presence of this dominant theatre theme builds upon the dramatic nature underpinning the criminal trial process. Finally, the theme that weaves its way throughout the narrative is that the Law Commission has placed 'the legal cart before the scientific horse'. This is based on the traditional idiom meaning that things are being performed out of sequence with priorities being incorrectly assigned.[104] This too continues the theatrical connection being a structure frequently adopted in classic

[104] Peter Richard Wilkinson, *The Concise Thesaurus of Traditional English Metaphors* (Routledge, 2008) 171.

Shakespearean drama.[105] Following this prologue, this thesis will be divided into three Acts, which in turn will reveal the plot, guiding it to its final conclusion.

The first Act of this thesis will begin with in-depth analyses of the four convictions declared unsafe upon appeal. However, the cases analysed are not dictated by personal selection but rather reflect those chosen by the Law Commission. By mirroring the process at the heart of the Law Commission proposal, the appellate judgments of these cases will receive further detailed and more symmetrical analyses to reflect their centrality within this reform. One further point of explanation regards the fact that the four chapters in Act 1 vary in length. This is a direct reflection of both the complexity of the expert evidence and its position within the wider evidential framework. Despite these differences in duration the chapters sit in contrast to the very cursory attention given to the reference cases by the Law Commission thereby indicating that the evidential issues involved should not have been dismissed or explained with such brevity.

Whilst it is the aim here to provide a deeper context to the reference cases it must also be appreciated that the information that can be drawn from appellate judgments alone is bound by certain limitations which will be considered within this work. Nevertheless, my critical inquiry into the role of the expert evidence as a cause for the convictions to be declared unsafe upon appeal mirrors the route chosen by the Law Commission in both the selection of the cases and the use of the appellate judgments as the basis for the discussion. Another important limitation is to be found in the responses received to the Law Commission consultation process. It is important to note that they primarily represent the views of

[105] Shakespeare has been noted for 'the deformation of nature and sequence' across a number of his plays thus attracting the title "Shakespearean preposterous" by some academics. See Patricia Parker, 'Preposterous Events' (1992) 43(2) Shakespeare Quarterly 186;
'The word 'preposterous' entering the English language in the 'sixteenth century, derived from the classical Latin *praeposterus*, which is made up of *prae*, before, plus *posterus*, coming after, so meaning something reversed (and hence nonsensical)'. 'World Wide Words' <www.worldwidewords.org/weirdwords/ww-pre1.htm> accessed 20 September 2018;
Shakespeare also specifically referred to the phrase in King Lear 'May not an ass know when the cart draws the horse?' Act 1, scene iv. Of specific relevance to this thesis, this phrase has been used to describe the Government guidelines issued in response to Shaken Baby Syndrome- a topic that will be returned to in chapter 5.

stakeholders in the criminal justice system rather than being representative of the opinions in the wider population.[106] This observation is pertinent when considering some of the policy objectives outlined within the Law Commission proposal with regard to juror understanding.[107] Those involved with policy making or reform must therefore be aware of the possible motivation behind the desire of these stakeholders to effect change, or not, as the case maybe.[108] Nevertheless, the responses provide a useful overview of the arguments both for and against the Law Commission proposal and importantly, they provided the impetus for the introduction of the legal reform.

Following on from these case analyses, Act 2 will then consider the environment at the time of these prosecutions that may have encouraged an over reliance on expert evidence. If so, then the expert evidence was subsequently thrust into a central role in the trial process bearing much of the evidential weight required to drive the prosecutions. This pivotal and isolated position singled out this evidence as the focus for the appeals that followed. This Act will then continue to consider the reviews, reports and policy changes that formed the backdrop to the Law Commission reform in order to appreciate the adaptations that had already been made to the criminal justice system following the successful appeals discussed previously. Importantly, this will include some of the key recommendations from the HCSTC report 'Forensic Science on Trial'[109] that provided the impetus for the Law Commission intervention. Aside from providing some context for questioning whether a generic change to the judicial admissibility assessment was in fact necessary, this chapter will also begin to explore whether the recommendations within the HCSTC report were correctly interpreted. This Act will then conclude by focusing on the specific forensic technique of Low Copy Number DNA Profiling (LCN). Arising out of increasing scientific doubt regarding the reliability of this

[106] '[S]takeholders — people who have a financial or other specific interest in the issue.' Nick Pidgeon, 'The Understanding of Risk' (2005) 18 FST Journal 7, 14.

[107] This matter will be addressed in chapter 6.

[108] *ibid* 'Stakeholders have their own agendas and that needs to be borne in mind when considering both their views and their involvement with dialogue processes.'

[109] HCSTC (n13).

expert evidence[110] the legal nadir for LCN was finally reached when judicial discomfort[111] resulted in its suspension from the criminal trial process.[112] Following a review into the methodology it was reinstated for use within the criminal justice system in 2008, one year prior to the Law Commission consultation. However, in parallel to this consultation and the subsequent reform, the shoots of a common law 'sufficiently reliable' test had already started to grow from a series of appeals involving LCN.[113] Therefore questions surrounding the reliability of LCN are embedded within the framework of this thesis and to exclude it from any further discussion would leave this work incomplete. Consequently
chapter 6 will be tasked with conducting a critical analysis of the report that flowed from the review of the methodology that ultimately facilitated its return as expert evidence.
Following on, Act 3 will turn its attention to the Law Commission proposal itself, using the risk response analysis to interrogate whether the hazard of unreliable expert evidence causing wrongful convictions was clearly defined and adequately measured. This will be achieved by considering the nature of the language adopted by the Law Commission alongside an examination of some of the data available to them at the time pertaining to unreliable expert evidence contributing to wrongful convictions. The Finale concludes this thesis by turning directly to the Sandman equation and the element of 'outrage'. Building on the previous chapters it will be argued that this indeed could have been a powerful hidden force driving

[110] 'Because of inherent limitations, several investigators have urged caution in the practice and interpretation of LCN typing'. Bruce Budowle and others, 'Validity of Low Copy Number Typing and Applications to Forensic Science' (2009) 50 (3) Croat Med J 207.

[111] See comments of Weir J in *R v Hoey* [2007] NICC 49.

[112] '[T]he Association of Chief Police Officers (ACPO) wrote to Chief Constables on 21 December 2007 recommending that the police should operate an interim suspension on the use of LCN DNA analysis in criminal investigations in England and Wales. This decision by ACPO was taken following discussion with the Crown Prosecution Service (CPS)'. 'Review of the use of Low Copy Number DNA analysis in current cases: CPS statement' (*CPS,* 2008).

[113] '[A] series of cases largely arising out of the use of Low Template DNA has established the requirement that the court can only admit expert evidence if it is reliable'
Lord Thomas of Cwmgiedd, Lord Chief Justice of England and Wales 'Expert evidence. The future of forensic evidence in criminal trials' (2014) Criminal Bar Association, Kalisher Lecture, [19].
These cases were *R v Reed & Reed* (2010) 1 Cr App R 23, *R v Broughton* (2010) EWCA Crim 549, *R v Weller* (2010) EWCA Crim 1085, *R v C* (2010) EWCA Crim 2578 and *R v Dlugosz* (2013) 1 Cr App R 32.

the reform but one nevertheless not openly recognised by the Law Commission. Attention will be given to the fact that without a strong evidence base to support the need for a change to the laws of evidence in this area, a reform driven by outrage will be nothing more than a 'reliability theatre'. Whilst it was never the main thrust of this thesis to interrogate the substantive nature of the Law Commission guidelines, the final chapter will nevertheless briefly consider whether the application of a legal reply to questions about scientific reliability is putting the legal cart before the scientific horse. In doing so, it will be contemplated whether this will in fact introduce unforeseen problems for the criminal justice system in the future. Therefore, this thesis reaches its conclusion in the hope that it will not only serve to stimulate discussion around the need for this important reform but also provide a platform from which to launch further research and debate as the guidelines begin to be applied in practice. Although the Law Commission recommendations now represent the current guidance for the judiciary, my interrogation of the underlying process will reveal that perhaps the reform is not as convincing as might initially be believed. So, despite broad support for the introduction of this legal change[114] and the commonly held belief in its effectiveness, it may indeed prove to be nothing more than an unnecessary distraction for the common law.

[114] 'There was very broad (but not universal) support for a new reliability test for expert opinion evidence along the lines proposed in our consultation paper.' The Law Commission No.325 (n22) [3.11].

Act 1: The Actors

At the heart of the Law Commission proposal lies their key objective. That is to reduce the risk of wrongful convictions and wrongful acquittals caused by jury reliance on unreliable expert evidence admitted too readily into the criminal trial process.[1] Core to this enquiry is the presentation of four examples of cases resulting in convictions being quashed upon appeal. These are used by the Law Commission to demonstrate the role of unreliable expert evidence in causing wrongful convictions thereby supporting their proposed reform.

As these are the actors that have been given centre stage at the 'reliability theatre', it is not unreasonable to expect that thorough case analyses would have been performed before choosing to enact legal reform. These analyses could then be used to help determine the liability attaching to the role of the expert evidence within the trial process and the judicial assessments as to its reliability. Despite the Law Commission supporting the fundamental principle that the reliability of all expert evidence should be equally assessed,[2] their analyses of the chosen reference cases are notable for their paucity of detail and for their asymmetrical methodology by focusing on the prosecution expert evidence alone.

Effectively this allows the expert evidence to be taken out of context thus making it easier to blame the expert as being the causative agent within the miscarriage of justice. As a result, the Law Commission reform has been based on privileging the undisputed truth of the expert evidence adduced for the defendant over that of the prosecution.[3] Furthermore, in ceasing their investigation once the first perceived human error is encountered enables the Law

[1] 'Avoiding miscarriages of justice, whether wrongful acquittals or wrongful convictions, is, in our view, a policy objective which does not need further justification.'
The Law Commission, *The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales - A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [C14].

[2] '[W]e recommend that the same approach to admissibility should be adopted whether it is the accused or the prosecution who wishes to adduce expert evidence. Inherently unreliable but impressive-looking expert evidence, particularly pseudo-science, should not be placed before the jury whether the tendering party is the prosecution or the accused.' *ibid* [6.55].

[3] G Edmond, 'Constructing Miscarriages of Justice: Misunderstanding Scientific Evidence in High Profile Criminal Appeals' (2002) 22 Oxford J Legal Studies 1, 53, 60.

Commission to distance the workings of the wider criminal justice system from its role within these verdicts.[4] Whilst the issue of systemic failing will be returned to in a later chapter, this Act will start by filling the analytical void created by the Law Commission by conducting detailed critical analyses of the chosen cases. Not only will these be more probing than those conducted by the Law Commission, but they will also start to address the asymmetry inherent in their approach. It is important to note that these analyses are not being performed merely to satiate the academic appetite for symmetry but rather to provide the necessary groundwork for the assessment of the Law Commission proposal by revealing any flaws or limitations within their argument. Nevertheless, it is recognised that increasing the analytical symmetry may initially invite the allegation that these analyses are in fact adding support to the accusation that unreliable expert evidence is pervading the trial process. However, as this first Act plays out it will become apparent that the methodology adopted by the Law Commission has subsequently failed to recognise three crucial factors present in their chosen cases. Firstly, they fail to appreciate the complexity of the evidential fields in these notorious cases; fields that are heavily debated and that hold little of the evidential certainty so desired by the law. Secondly, they neglect to differentiate between expert evidence and expert testimony thereby missing the opportunity to consider other procedural solutions that may be more appropriate for handling expert evidence of this kind. Finally, they invite consideration as to the potential influence of some of the other types of prosecution evidence adduced. Whilst there is no specific data to suggest that the other forms of evidence discussed had a disproportionate influence on the jury, it will be shown that they have nevertheless attracted academic rebuke for their capacity to introduce unfounded bias or prejudicial effect.

Therefore, whilst what follows within this Act may at first appear to be a loosely connected set of case commentaries, they will in fact perform a very important function. It will be shown that when the reference cases are subjected to this higher level of scrutiny, they do not in fact provide cogent support for the Law Commission proposal that the admission of unreliable expert evidence goes to the heart of these convictions. Thus, whilst the cases analysed are

[4] '"Those found responsible have been sacked": some observations on the usefulness of error' (2010) Cogn Tech Work 12:87.

valuable in their own right, they are also an important bedrock for the argument to be developed over the course of this thesis – that is that the Law Commission reform is an inappropriate risk response that has created a mere 'reliability theatre'. Furthermore, these analyses will also provide a basis for the temporal context of the Law Commission reform thereby helping to expose what influenced the law to change at this point in time.

However, prior to conducting these detailed individual cases analyses it is first important to consider the chosen cases from a wider viewpoint. Turning now to their selection, it is immediately apparent that the examples driving the reform are small in number. In addition, three of the four involve the deaths of children where the accused is a parent. As a result, they do not adequately provide a representative example of miscarriages of justice across the forensic or expert evidence spectrum. Thus, they cannot truly reflect a full and complete picture of the issues regarding unreliable evidence being adduced at trial. Indeed, some lawyers have gone so far as to opine that '[t]hese sorts of cases seem to come in and out of fashion'[5] – a point duly recognised by the Criminal Cases Review Commission.[6] The adoption of this narrow focus may indicate a sampling error by the Law Commission in their attempt to support their proposal. On the other hand it may in fact be indicative of an issue concerning a wider aspect of the criminal justice system at the time of the original trials, such as an overreliance on expert evidence. This second point is important to consider as it directly impacts on the need or effectiveness of introducing an enhanced reliability test. As such it will be returned to in the next Act. In addition to the points raised above, by choosing cases where non-accidental injury to an infant is suspected, the Law Commission reform has centred on examples that hold issues specific for the expert evidence adduced. The ripple effect emanating from this main focus on child abuse will spread across the wider criminal justice system, thereby affecting reliability assessments across the whole spectrum of expert evidence, that may not always be applicable or necessary. Therefore, in accordance with the legal maxim that 'hard cases make bad law'[7] it is argued here that these examples are an

[5] Oliver Lewis, 'Bill Bache Interview: Angela Cannings, Experts and Legal Aid' (*Oliver Lewis,*2014) <https://oliverlewisinfo.wordpress.com/2014/07/01/bill-bache-interview-angela-cannings-experts-and-legal-aid/> accessed 08 August 2020.

[6] This point will be returned to in chapter 8.

[7] Attributed to Oliver Wendell Holmes. See F Schauert, 'Do Cases Make Bad Law?' (2006) U Chi L Rev 73, 833.

inappropriate foundation on which to base a generic reform to the judicial reliability assessment. As previously stated, these cases are often highly complex in their nature with much disagreement between members of the medical profession as to which symptoms are indicative of abuse.[8] This can lead to a procession of expert witnesses appearing at trial with a wealth of complicated, contradictory and often perplexing testimony.[9] The result is that jurors are expected to follow many days of competing and heavily contested medical evidence that may begin to resemble a 'scientific symposium' rather than a court of law.[10] This potentially affects the ability of the jury to fully understand the evidence presented. Although a key concern of the Law Commission[11] it nevertheless remains outside the reach of a generic enhanced reliability test alone – a topic that will be returned to in Act 3. It must also be appreciated that these cases and the appeals that follow, are highly emotive in nature

[8] 'Professor Peter Furness (President of the College) welcomed the meeting participants. He acknowledged the fact that the subject had previously generated heated arguments. He set out the intention that the meeting should probe scientific aspects of interpretation of the pathology and should therefore be conducted in a collegiate spirit of scientific investigation, putting aside the adversarial processes that might be more appropriate in other circumstances'.

Royal College of Pathologists, 'SBS Report of a meeting on the pathology of traumatic head injury in children 10 December 2009' (*Shaken baby and sudden infant death,* 23 January 2011) <http://shakenbabyandsuddeninfantdeath.blogspot.co.uk/2011/01/sbs-report-of-meeting-on-pathology-of.html> accessed 18 November 2019.

[9] For example, 16 witnesses were called for the defence alone in the trial of *Angela Cannings*.

'We spoke to over twenty experts and ended up calling sixteen at the trial.' The London Advocate, 'We Can Afford Justice!' (2014) 82 6 <www.lccsa.org.uk/wp-content/uploads/2014/07/London-Advocate-issue-82.pdf> accessed 07 October 2016.

[10] This criticism of the confusion surrounding the presentation and understanding of complex expert evidence is attributable to Weir J in *R v Hoey* [2007] NICC 49. See 'Fresh Criticism of Omagh Evidence' (BBC News 8 December 2006) <http://news.bbc.co.uk/1/hi/northern_ireland/6162483.stm> accessed 08 August 2020.

[11] 'This consultation paper addresses the problems associated with the admissibility and understanding of expert evidence in criminal trials.' The Law Commission CP190 (n1) (iii).

thereby encouraging much debate and opinion especially within the media. [12] Consequently, following a successful appeal, they can stimulate public outrage against a criminal justice system perceived to be convicting the innocent. Indeed, in choosing these four cases the Law Commission acknowledges that they were the 'most well-known' wrongful convictions in the previous eight years.[13]

It will also become clear that they were cases whereby this complex expert evidence was the main plank for the prosecution, bolstered by circumstantial evidence of questionable relevance. Furthermore, fresh evidence was presented at appeal that undermined the cogency of the original opinion of the expert witness. This shines a spotlight on the charging policies of the time, the conduct of the defence and the uncertainty that surrounds scientific knowledge at any given point in time. This latter point is of great importance as it clearly goes to the heart of both scientific discovery and methodological advancement. Therefore, the concept of reliability is temporal in nature thereby allowing previous expert evidence to be refuted or redefined as scientific knowledge advances. Crucially this was recognised by the Law Commission[14] yet they failed to appreciate that this issue was fundamental to the successful appeals in their chosen cases.

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[12] A quick search of the internet will give an idea of the amount of publicity and commentary that these cases received. For example: The Telegraph, 'Solicitor's murder conviction quashed' (2003) <www.telegraph.co.uk/news/1420433/Solicitors-murder-conviction-quashed.html> accessed 12 November 2019;

R. Verkaik, 'Appeal Court clears mother of killing children' *The Independent* (London, 2005) <www.independent.co.uk/news/uk/crime/appeal-court-clears-mother-of-killing-children-484982.html> accessed 12 November 2019;

''Shaken baby' convictions quashed' *BBC News* (London, 21 July 2005) <http://news.bbc.co.uk/1/hi/uk/4702279.stm> accessed 12 November 2019.

[13] The Law Commission, Expert Evidence in Criminal Proceedings in England and Wales (Law Com No 325, 2011) 170.

[14] 'Scientific knowledge is continuously advancing as more empirical research is undertaken, so it is inevitable that some hypotheses will come to be modified or discarded, that expert testimony based on any such hypothesis will subsequently come to be regarded as unreliable and that this will have a bearing on the legitimacy of convictions (and, to a lesser extent, acquittals) founded on such testimony.'
The Law Commission CP190 (n1) [1.17].

This fact however, exposes the difficulty for the law in trying to 'future-proof' the introduction of any reliability assessment. Rather it is easier for the Law Commission to freeze the expert evidence at this given point in time thereby allowing them the ability to present it as flawed or unreliable and thus susceptible to resolution via the new reliability test.[15]

In addition, it will also be illustrated that there was no clear, causal link between the expert evidence and the verdict.[16] However, this thesis recognises that any claims to the contrary are equally unprovable especially with the paucity of jury research in this area which will again receive attention in a later chapter. Nevertheless, by placing the expert evidence under scrutiny in these reference cases within the greater evidential framework, it will illustrate that there was other equally prejudicial or persuasive evidence adduced thereby introducing a reasonable doubt as to the causative role of the highlighted expert evidence. This other evidence would be resistant to an enhanced reliability test therefore exposing the Law Commission reform to the claim that it is an unnecessary and inappropriate response to these appeals.

Consider now the key objective of the Law Commission proposal. This states that 'avoiding miscarriages of justice, whether wrongful acquittals or wrongful convictions is, in our view, a policy objective which does not need further justification'.[17] Whilst the fundamental aim cannot be faulted it is unfortunate that the Law Commission make no attempt to define their use of these key terminologies particularly that of 'wrongful conviction'.

[15] 'However, we believe that our proposals, if adopted, would ensure that convictions and acquittals would be founded on expert evidence only if the hypothesis and methodology underpinning that evidence can be shown to be trustworthy.' The Law Commission CP190 (n1) [1.20].

[16] This matter will be explored further in chapter 7.

[17] The Law Commission CP190 (n1) [C.14].

It is necessary at this point to appreciate that none of the chosen reference cases are *proven* wrongful convictions of the *innocent*[18] - an assumption that appears to be a foundational premise for the Law Commission proposal and one that will be returned to in later chapters.[19]

Finally, the Law Commission recognise the well-established common law principle that 'reliability' has two aspects. Firstly, '*the fundamental question* [of] whether the subject matter of the expert's evidence is sufficiently organised or recognised to "be accepted as a reliable body of knowledge or experience"' and secondly, *'the case-specific question* [of] whether the particular expert witness has properly drawn from that "reliable body of knowledge or experience*"* to provide a reliable opinion on the factual issue(s) the jury must resolve'.[20] They clarify that their primary focus will be on the first 'fundamental' issue,[21] devoting the bulk of their consultation document in explaining the perceived problems around this area. However, the more comprehensive critical analyses of these cases undertaken within this Act, will allow flaws to be identified in both the selection of cases chosen and the nature of their analysis at the hands of the Law Commission. Essentially it will be illustrated that none of the examples support the view that the expert's evidence was not a *prima facie* reliable body of knowledge or experience. Rather they are highly case specific, concerned more with the weight of the opinion flowing from the foundational scientific or medical information. Therefore, in their attempt to concentrate on answering the 'fundamental question' regarding the reliability of expert evidence, the Law Commission have in fact directed their focus towards evidence pertinent to the secondary question. In doing so they have confused unreliable expert evidence with that of unreliable expert testimony. Consequently, the introduction of a generic, validity-based reliability assessment directed at establishing the foundational

[18] The first reference case chosen by the Law Commission is frequently considered a case of DNA exoneration. However, the facts are scientifically more complex and far less convincing than may initially be believed with this matter being expanded upon within the relevant chapter.

[19] In contrast to this supposition, it is not the desire of this thesis to either criticise or lend support to the verdict reached by the jury or the reasoning of the Court of Appeal in deciding the final outcome of these cases. Rather it is hoped that a more holistic overview of the appellate judgments will illustrate that a focus on the reliability of the expert evidence as the blameworthy factor in these verdicts is both naïve and unsustainable.

[20] The Law Commission CP190 (n1) [1.5] (emphasis added).

[21] The Law Commission CP190 (n1) [1.6].

reliability of expert evidence immediately lacks support from the cases chosen. Ultimately it represents an inappropriate response that would be ineffective against the issues identified within the analyses of the cases conducted within the chapters that follow. It is thus nothing more than a reliability theatre within which the chosen actors play out their narrative.

In conclusion, there is a danger associated with the Law Commission seeking to introduce a universal test for assessing the reliability of expert evidence based on a small and unrepresentative cluster of high-profile miscarriages of justice. Therefore, as a result of their analytical short comings, this thesis will argue that these reference cases are unsuitable instruments on which to base an appeal for statutory intervention in judicial assessments of reliability.

Chapter 1: Mark Dallagher

1.1: Overview

The first of the appeals chosen by the Law Commission to support their proposal concerns that of *Mark Dallagher*, a known burglar.[1] In 1998 however, he was found guilty of the murder of an elderly lady whilst she lay sleeping in her own home. It was uncontested that the victim was killed by an intruder who entered her home via a transom window – the same method as employed by *Dallagher* in his previous crimes. The evidence presented to support the prosecution was mainly circumstantial therefore the use of ear print evidence found on the window became central to the subsequent identification of *Dallagher*. No witnesses appeared for the defendant to rebut the claims of the prosecution's experts. After the trial, two convictions from other jurisdictions based on the use of this evidence were overturned and subsequently there was concern expressed by others in the scientific community as to the cogency of ear print evidence as a method of identifying individuals. As a result of these events, an appeal for *Dallagher* was launched on the following four grounds. The first three challenged the admissibility of the ear print evidence. This was based on the relevance and reliability of the technique and the presence of the new research that questioned the validity of the methodology which was unavailable to the defence at the time of the trial. The fourth challenged the decision to admit evidence of *Dallagher's* previous convictions for burglary. In 2002, the Court of Appeal declared the conviction unsafe due to the fresh evidence undermining the individual identification capacity of the ear-print evidence.[2] In view of this decision, the fourth ground for the appeal was not considered in any depth. Crucially, the Court of Appeal did not rule that the ear print evidence should not have been admitted.[3] Furthermore, a retrial was ordered. However, by the time of this retrial, DNA profiling had advanced such that DNA evidence from the ear print was presented to argue that the print could not have been left by *Dallagher*. Consequently, the trial collapsed. The Law Commission

[1] *R v Dallagher* [2003] 1 Cr App R 12.

[2] '[T]he fresh evidence, if given at the trial, might reasonably have affected the approach of the trial jury to the crucial identification evidence of the experts and thus have affected the decision of the jury to convict'. *ibid* [34].

[3] '[T]he trial judge could not possibly have concluded that the Crown's expert evidence was irrelevant, or so unreliable that it should be excluded'. *Dallagher* (n1) [29].

has seized upon this DNA evidence to support a claim of innocence thereby presenting this case as a proven wrongful conviction due to a laissez-faire admissibility decision that allowed unreliable ear print evidence to be adduced at trial.[4] The following case analysis, however, will question these claims which are fundamental to the Law Commission proposal. It will illustrate that it was the asymmetrical nature of the Law Commission analysis that not only allowed a claim of innocence to be made but also targeted the unreliability of prosecution evidence for blame. Performing a more detailed, symmetrical analysis and placing the expert evidence within the wider context of the trial begins to reveal other factors that may point away from claims of innocence or may be equally controversial influences on the finding of guilt. Overall, this chapter will show that this anchor case chosen by the Law Commission fails to illustrate that the basis for the expert evidence was in fact unreliable. Rather it will begin to expose the issue to be found throughout the reference cases analysed within this Act that it was the level of certainty attaching to the opinion of the expert that was unreliable rather than the basis of the evidence itself.

1.2: A Wrongful Conviction? - The DNA Evidence

It is understandable that a preliminary assessment of this case may indeed indicate that the original ear print evidence was incorrect due to the DNA evidence subsequently produced providing exculpation for *Dallagher*. This tension between the two methodologies served to solidify the idea that the DNA profiling represented the gold standard of forensic science, allowing the expert witness for the defence at the appeal to later opine that it exhibited a 'superiority (...) over most other forensic methods of individualization'.[5] As the ear-print evidence was central to the prosecution case the Law Commission note that because the 'DNA evidence taken from the latent print *unequivocally established* that it had been left by someone other than D'[6] the prosecution was left with no other option than to drop their case against *Dallagher*.[7] The presentation of the DNA evidence has thus helped promote the

[4] The Law Commission, 'The Admissibility of Expert Evidence in Criminal trials in England and Wales - A New Approach to the Determination of Evidentiary Reliability' (2009) CP190 [2.15].

[5] L Meijerman, A Thean & G Maat, 'Earprints in Forensic Investigations' (2005) 1 4 Forensic Sci Med Pathol 247, 248.

[6] The Law Commission CP190 (n4) [2.15] (emphasis added).

[7] *Ibid.*

underlying premise for the Law Commission reform that the ear-print evidence was indeed foundationally unreliable and *Dallagher* innocent.[8]

However, far from being a straightforward comparison between the reliability of two forms of expert evidence, there are important limitations to the DNA evidence that need to be raised at this point. By the time of the re-trial in 2004, DNA profiling had advanced so that profiles could potentially be obtained from trace amounts of DNA without an identifiable source being necessary. This was known as Low Copy Number DNA profiling (LCN) and was the methodology employed for testing the ear prints found in this case.[9] Unlike the standard DNA method usually employed, the profiles obtained by LCN are often partial in nature and may frequently present a mixture of DNA profiles from different individuals. Thus, their evidentiary value must be carefully marshalled and understood. In 1998 when *Dallagher* was first convicted, LCN had not been developed so the ear print evidence was neither collected nor stored in line with the stringent procedures required today. Therefore, the risk of cross contamination occurring from other sources of DNA has subsequently been raised.[10] This is particularly relevant because of the sensitivity of the LCN methodology which in the case of *Dallagher* only produced an extremely weak partial profile.[11]

Furthermore, empirical research has identified that 'high levels of non-donor alleles are observed when ear prints are collected for DNA profiling'[12] and that in consequence these profiles 'should not be considered as proof that an individual did not deposit a questioned

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[8] 'DNA evidence taken from the latent print subsequently established that it had not been left by D, demonstrating the unreliable nature of the evidence used to secure his conviction.' *The Law Commission, Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011) [1.4].

[9] Eleanor Graham , V L Bowyer, V J Martin and G N Rutty,
'Investigation into the usefulness of DNA profiling of earprints' (2007) 47 Science and Justice 155, 158.

[10] L Meijerman (n5) 164.

[11] With the technique available in 2004 a full DNA profile would be obtained 'when the analysis of all ten STR loci and the gender marker has given successful results', see 'Guide to DNA for Lawyers and Investigating Officers' (2004) FSS;
In the case of *Dallagher* only one STR (ie: gene) was detected and this did not match *Dallagher*;
Eleanor Graham (n9) 158.

[12] Eleanor Graham (n9) 155.

ear-print'.[13] These findings invite speculation that profiling ear- prints could lead to individuals being falsely excluded from investigation[14] and thus, by way of extrapolation, may also result in false exonerations. Subsequently scientists working within this speciality have expressed their concern as to the evidential value of DNA obtained from ear prints.[15] This is in line with the cautionary approach exercised in relation to LCN DNA profiles in general by certain experts within this field.[16]

Although this data was not available at the time of the retrial of *Dallagher* it was however published prior to the Law Commission proposal but was not considered within their discussion of the reliability of ear print evidence. Consequently, as a result of the asymmetrical case analysis adopted by the Law Commission, the omission of this important limitation to the DNA evidence serves only to magnify both the role and unreliability of the ear print evidence which may not in fact be warranted. It is also worth noting that in 2007, three years after its pivotal role in the exoneration of *Dallagher*, the reliability of the LCN technology itself, rather than its application, was called in to question. This resulted in its temporary suspension from use within criminal trials until an independent review into its reliability had been conducted ('The Caddy Review'). Despite the conclusion that LCN methodology was 'fit for purpose'[17] The Caddy Review has not received overwhelming

[13] Eleanor Graham (n9) 158.

[14] 'Earprints and DNA in Germany and England' (*Double Helix Law,* 07 May 2012) <https://sites.psu.edu/dhlaw/2012/05/07/earprints-and-dna-in-germany-and-england/> accessed 15 March 2018.

[15] 'This high level of background non-donor DNA recovered from earprints is extremely concerning for the use of this evidence in criminal investigation' Eleanor Graham (n9) 158.

[16] 'Because of the issues surrounding interpretation of LCN profiles and the lack of confidence that exists in defining true profile alleles, LCN typing cannot be used for exculpatory purposes.' Bruce Budowle, Arthur J Eisenberg & Angela van Daal, 'Validity of Low Copy Number Typing and Applications to Forensic Science' (2009) 50 (3) Croat. Med J 207, 214.

[17]Professor Brian Caddy, Graham Taylor and Adrian Linacre, 'A Review of the Science of Low Template DNA Analysis' (2008) [3.17] & [7.3] <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/117556/Review_of_Low_Template_DNA_1.pdf> accessed 12 February 2020.

support.[18] As LCN had a such a pivotal role in the exoneration of *Dallagher*, and the Caddy review forms an integral part of the scenery at the reliability theatre in front of which the Law Commission played out its reform, the review itself is worthy of some further attention. As such it will be returned to in chapter 6. Not only will the analysis in this later chapter question both the quality of the review process itself and the subsequent findings, it will also illustrate that the disparate manner in which law and science attempt to resolve the limitations of new forensic technologies was already an embedded approach prior to the Law Commission proposal. However, it will be shown that on this occasion the scientific horse was left uncoupled from the legal cart thereby again avoiding a coherent dialogue between the two disciplines.

Therefore, in view of the limitations as to the conclusions that can be drawn from weak DNA profiles extracted from ear print evidence, the claims of the Law Commission cannot be corroborated thus being seriously undermined by this anchor case.

Before turning to discuss the ear-print evidence itself, it is first necessary to situate it within the other evidence adduced at the trial to consider the other influences on the jury decision making process.

1.3: Evidence at Trial

1.3.1: The Fibre Evidence

Importantly there is anecdotal evidence (from the expert witness who gave the ear-print evidence), that fibre evidence also implicating *Dallagher* was found on a curtain within the property itself.[19] Although this cannot be substantiated further it does nevertheless indicate the boundaries of the information that can be gathered from consulting appellate judgments in isolation. Due to the very nature of the enquiry, an individual piece of evidence is removed

[18] For example, see Professor Allan Jamieson, Dr Rhonda Wheate, 'Fit for purpose? The Review of Low Template DNA' The Barrister <www.barristermagazine.com/archivedsite/articles/issue31/Jamieson.html> accessed 25 September 2020;

Jason Gilder, Roger Koppl, Irving Kornfield, Dan Krane, Laurence Mueller and William Thompson , 'Comments on the review of low copy number testing' (2009) 123 6 Int J Legal Med 535.

[19] Cor van der Lugt, 'Ear Identification' (2013) Crime & Clues <http://crimeandclues.com/2013/01/29/ear-identification/5/> accessed 06 May 2018.

from much of the contextual background and singled out for censure. This is an important limitation to the analysis of the reference cases that will receive further attention in chapter 9. However, the point to be appreciated here is that if there were other trace evidence to support an identification, then this would have reduced the weight of the Law Commission assertion that the ear-print evidence stood as the sole means of identification thereby being responsible for the perceived wrongful conviction.[20]

1.3.2: The Evidence of 'Bad Character'

The final ground for appeal was a challenge to the admissibility of propensity or bad character evidence.[21] As previously stated, *Dallagher* was a convicted burglar who frequently entered houses via a transom window. It has been found that ear prints can be left on the window when the intruder listens for signs of activity in the home. Because the ear prints were found on the transom window at the home of the murder victim, *Dallagher's* previous convictions were admitted into trial as evidence of his propensity to enter properties in this manner. However, the admission and effect of misconduct evidence has proven controversial both in the domestic and international jurisdictions. It has thus attracted a wealth of academic debate and judicial concern[22] regarding its presence within a trial. This is primarily due to the 'headlong conflict between probative force and prejudicial effect'[23] that may in turn lead to an 'unfocused trial and a *wrongful conviction*'.[24]

The potentially 'poisonous nature'[25] of this evidence has also been judicially recognised from a procedural point of view, having attracted the comment that it can often be 'as close as the

[20] 'D's conviction for murder was based on unreliable expert opinion evidence relating to the comparison of an ear-print made by D with a latent ear-print found on a window.' The Law Commission No.325 (n8) [1.4].

[21] Sometimes referred to as 'similar fact evidence'.

[22] See David Hamer, 'The legal structure of propensity evidence' (2016) 20 (2) E & P 136, for a list of commentary.

[23] Gregory Durston, 'Similar fact evidence: A guide for the perplexed in the light of recent cases' (1996) 160 Justice of the Peace and Local Government Law 359 quoted in *R v Handy* (2002) 2 SCR 908 [138].

[24] *R v Handy* (2002) 2 SCR 908 [139] (emphasis added).

[25] *ibid* [146].

judge comes to singlehandedly deciding the outcome of the case'.[26] Interestingly the Law Commission expressed concern as to the potential prejudicial effect of this evidence in an earlier consultation but gave it no recognition within this context.[27]

It has been argued that unless the propensity evidence is sufficiently probative to overcome its prejudicial effect, there is a possibility that the jury will be drawn into a fallacy of reasoning when assessing the evidence as a whole. This effect has been termed 'reasoning prejudice'[28] whereby the introduction of previous bad character evidence may cause the jury to reason that the propensity to commit other crimes means that the defendant must therefore have committed the crime for which they stand accused.[29] The jury then become confused thereby treating previous misconduct as evidence in support of the charge in question.[30] As an adjunct to reasoning prejudice there is also the issue of 'moral prejudice'[31] whereby the jury may unintentionally lower the criminal standard of proof due to knowledge of the defendants past conduct.[32] It is thus intuitive that any propensity evidence should be sufficiently similar or distinctive so as to overcome the prejudicial effect that may be induced. Although it is beyond the reach of this thesis to interrogate this issue further, it is noted here that the results of empirical research into the effect of this evidence remain unsettled.[33] Whilst fears

[26] *Handy* (n24) [138].

[27] 'Unless and until further research demonstrates that the prejudicial effect on lay fact-finders is acceptably small, we believe that the wisest course is to maintain a general rule against the disclosure of the defendant's criminal record'. The Law Commission, 'Evidence of bad character in criminal proceedings' (2001) 273 [6.41].

[28] *Handy* (n24) [143].

[29] Also known as 'forbidden reasoning'; See P Carter, 'Forbidden reasoning permissible: Similar fact evidence a decade after Boardman' (1985) 48 MLR 29. '[I]t will be liable to induce in the minds of the triers of fact-the jurors or magistrates-a particular chain of reasoning which rests on an all too readily made assumption that the accused is unlikely to have changed his habits. The fact that he is shown to have behaved in a certain way on other occasions suggests that he has a tendency or propensity to behave in that way; it is assumed to be a continuing tendency or propensity; and this in its turn tends to show that he did in fact behave in that way on the occasion to which the charge relates.'

[30] *Handy* (n24) [137].

[31] *Handy* (n24) [139].

[32] *ibid.*

[33] '[H]owever, we are not left with terribly clear conclusions, nor with an obvious reform agenda'. Mike Redmayne, 'The relevance of bad character' (2002) 61 Camb L J 684, 713.

surrounding the prejudicial effect may turn out to be overstated, the presence of this evidence within the trial of *Dallagher* attracts some comment as to the cogency of the Law Commission's claim that unreliable expert evidence sits alone as the cause of this potential wrongful conviction.

Despite attempts by the defence to have it excluded from the trial, the prosecution was nevertheless allowed to admit evidence as to *Dallagher's* previous convictions for home burglary. However, as far as it can be established here, there appears to be no indication that he had ever used violence in the course of his criminal activities. It would appear therefore that the introduction of the similar fact evidence may have smoothed the way for the jury to make the large cognitive leap from small time burglar to brutal murderer without appropriate consideration or understanding as to the cogency of the evidence a whole.
Furthermore, although it was agreed that his burglaries were facilitated by entry through a transom window, there is no indication that he listened at the window beforehand in any of the previous instances. Consequently, it must be questioned whether the evidence of previous convictions was sufficiently similar in either nature or method for admission into this trial.

It is clear from the judgment that the propensity evidence was used to add weight to the ear print identification and was thus used to help rule out that this was an unsupported or blind identification.[34] It is thus reasonable to assume that the role of this evidence was an attempt to bolster the cogency of a weak case for the prosecution. This argument finds some support from the Court of Appeal who, whilst shying away from concluding that the trial judge erred in his decision to admit this evidence, nevertheless concluded that 'the admissibility of evidence of other burglaries will have to be re-assessed in the context of the re-trial'.[35] In light of the apparently weak case against *Dallagher*, the admission of the propensity evidence raises important questions for the trial process and the application of the laws of evidence beyond that of assessing sufficient reliability. However, because the Law Commission have singled-out the expert evidence for censure, it stands alone as the causative agent for the

[34] Unfortunately, this may inadvertently have introduced a confirmation bias into the overall identification which will be discussed later in this chapter.

[35] *Dallagher* (n1) [35].

potential wrongful conviction of *Dallagher*. This begins to illustrate the complexity of the criminal trial process and the difficulty in assigning causation to one particular aspect influencing a verdict. This is an important limitation when attempting to reduce the risk of wrongful convictions especially in the absence of jury research. As such these matters will be revisited in more detail in chapter 8.

This chapter has begun to question the claim made by the Law Commission that this case represents a wrongful conviction and to introduce some of the other immediate factors that may have influenced the jury in reaching their verdict. It now turns to the expert ear print evidence itself to examine whether this truly represents unreliable evidence entering the criminal trial process because of a laissez-faire admissibility regime. As this is the central tenet of the Law Commission reform it would be expected that the following interrogation of this evidence would provide convincing support for their claim. However, as this chapter continues it will become apparent that this is not the case. Rather it will begin to illustrate that the Law Commission have confused unreliable expert evidence with that of unreliable expert testimony. Therefore, it provides the first step for the argument to be developed throughout the course of this thesis, which is that the focus of the Law Commission on the reliability of expert evidence is misplaced. Consequently, their reform represents a reliability theatre with the opportunity to enact more appropriate and practical changes having been missed - a matter that will be returned to in Act 3.

1.3.3: The Ear-Print Evidence

The appeal of *Dallagher* has garnered specific academic attention because the ear-print evidence used within the prosecution case was considered to have been a novel methodology at the time.[36] This view is in line with that of the Court of Appeal which recognised that 'the

[36] 'In a recent decision, *R v. Dallagher*, involving the novel technique of ear print identification (…)'.
William O'Brian, 'Court Scrutiny of Expert Evidence: Recent Decisions Highlight the Tensions'
(2003) 7 E & P 172, 173;
In response to *R v Dallagher*, 'the courts should take care, in cases of novel science in particular, to ensure that it has a sufficient scientific base to be admitted as expert evidence'.
Justice Susan Glazebrook, 'Miscarriage by Expert' (2018) 49 VUWLR 245, 252.

expertise of ear print comparison was in its relative infancy'.[37] The experts for the prosecution at appeal also conceded that there were limitations to the technique and that more research was required in this area.[38] The Law Commission are thus concerned that the expert relied on his limited, subjective experience to perform the ear-print comparison rather than employing a more objective technique.[39] However, the research surrounding this form of identification, and its use within criminal trials, has a longer history than may initially be thought when it is discussed in terms of novelty alone. The potential for developing a system for ear recognition was postulated as early as 1890 with one of the first formal systems for comparison introduced in 1949.[40] From a legal perspective, *Dallagher* may possibly have been the first *successful prosecution for murder* involving the use of ear print evidence but it is apparent that this methodology had been utilised within criminal cases in the UK many times in the two years prior to this trial. It is also apparent that these cases included some involving serious crime.[41] It has also been recognised that at the time of *Dallagher's* trial ear prints were gaining in status so as to rival that of fingerprint evidence as a means of identification both in the domestic and international jurisdictions.[42] Therefore, ear recognition systems had already enjoyed a long history, both in scientific research and legal precedent. Furthermore, at the time of *Dallagher's* trial, ear-print evidence from this same witness had undergone a *Frye* hearing in the USA which has been described by one commentator as 'the most thorough in-depth judicial/scientific review of ear-print identification in legal and criminalistic history'.[43] It lasted more than 5 days, involved a procession of experts and resulted in the evidence being

[37] *Dallagher* (n1) [9].

[38] *Dallagher* (n1) [17].

[39] The Law Commission No.325 (n8) [3.120].

[40] Ayman Abaza, Arun Ross, Christina Hebert, Mary Harrison and Mark Nixon, 'A Survey on Ear Biometrics' (2013) 45 ACM Computer Survev 22.2,22.5

[41]'In the United Kingdom, Kennerley encountered more than 100 crime cases involving latent ear prints between early 1996 and September 1998. The majority of these cases concerned burglaries, but Kennerley also referred to cases of murder and rape.' Meijerman (n5) 247.

[42] *ibid.*

[43] Jim Fisher, *Forensics Under Fire: Are Bad Science and Dueling Experts Corrupting Criminal Justice?* (Rutgers University Press 2008) 170.

declared admissible.[44] Although it is recognised that the *Frye* test does not represent the admissibility standard for England and Wales it nevertheless represents a high admissibility standard and thus tends to point away from the accusation that this was a novel methodology with no scientific basis or legal interrogation. Therefore, it lends credence to the use of this technique and support for the judicial decision to admit the evidence. As ear print evidence from this witness had already been successfully received in both the domestic and international jurisdictions it is understandable that precedent would dictate that he should be allowed to testify in the case of *Dallagher*. This view was supported by the Court of Appeal who gave a thorough consideration to the legal precedents surrounding the reliability of expert evidence. They then rejected the appellants claim that the ear-print evidence should not have been admitted in to trial.[45]

Crucial to the Law Commission's claim of unreliability was that the ear-print comparison was based on a small database of samples. Consequently, it failed to provide sufficient support for claims as to the uniqueness of an individual's ears or the prints obtained.[46] In contrast to ear prints, the Law Commission appear to support the accepted view as to the uniqueness of fingerprints, based primarily on the long history and frequent use of this evidence. This has allowed the compilation of large databases to lend statistical support to these claims[47] thereby allowing persuasive claims for the individualisation of crime scene prints.[48] The ear-

[44] 'After five-and-a-half day of interrogation of several forensic experts of various disciplines including me, the judge allowed the prosecutor to use the earprint in court'. Cor van der Lugt, 'Crimes & Clues; The Art and Science of Investigation' (2013) Crime and Clues <http://crimeandclues.com/2013/01/29/ear-identification/5/> accessed 18 February 2018.

[45] *Dallagher* (n1) [22]-[29].

[46] The Law Commission No.325 (n8) [3.119].

[47] '[I]t would not be necessary to question assumptions or well-established theories about which there was no meaningful dispute. Our view was that the trial judge would be able to take judicial notice of such matters (for example, the validity of the scientific knowledge underpinning expert opinion evidence on DNA and the extreme unlikelihood that two persons will ever have the same fingerprints)'
The Law Commission No.325 (n8) [3.65].

[48] 'Individualization is understood to mean the narrowing of possible sources of a forensic trace to a single object in the universe. In this sense, "individualization" is meant to be distinguished from more modest claims of "identification" in which the potential source is narrowed only to a group (or "class") of objects'

print database on the other hand was very small by comparison and subsequently it was argued that it lacked the necessary research data to underpin claims of uniqueness. However, this focus on uniqueness as a basis for individualisation has been criticised within the academic forensic science community as being a legal, rather than a scientific construct[49] that remains unproven[50], irrelevant[51] and insignificant[52] to the source attribution of a print.[53] It therefore does little other than divert 'practitioners, advocates, scholars and judges (into) pointless debates about uniqueness'.[54]

This groundswell from the academic scientific community moving against uniqueness as the sole proxy for claims of source attribution occurred prior to the Law Commission

Simon A Cole, 'Forensics without uniqueness, conclusions without individualization: the new epistemology of forensic identification' (2009) 8 L P & R, 233, 235.

[49] '[T]he forensic literature consistently holds that evidence of the uniqueness of target objects is not the necessary empirical data to support testimonial claims of source attribution. The only groups that do not hold this view are, in some sense, the ones that matter most: practitioners and legal actors.' *ibid* at 242.

[50] 'The greater the number of individual observations that fit in with a generalised theory then the greater the probability that the theory is correct. However, even when vast numbers of observations are made, the scientific theory will by necessity have to go beyond the available data and therefore there always lurks the possibility that anomalies will be found to falsify the current theory. This is known as the problem of underdetermination'. Val Dusek, *'Philosophy of Technology – an introduction'* (Blackwell 2006) 7.

[51] 'Numerous other scholars have articulated the principle that the uniqueness of the target object is almost entirely irrelevant to the accuracy of the attribution process' Cole (n48) 242.

[52] 'Are two objects "the same" or "different"? That depends on your frame of reference. To some extent, all objects in world are "the same" and all objects in the world are "different"';
'What matters is whether we have analytical tools necessary to discern the characteristics that distinguish one object from all others or, in the forensic context, distinguish traces made by each object from traces made by every other object'. Cole (n48) 242.

[53] As the concept of uniqueness is central to the Law Commission analysis of this case and therefore their reform, it is necessary to draw attention to some of the key points raised that doubt the usefulness of uniqueness assessments. However, it is not the purpose of this thesis to delve into the science or the epistemological arguments any further. A good overview of these can be found in the article referenced in Cole (n48).

[54] '[D]ebates that are bound to be scholastic because "uniqueness" means nothing except what you mean by it'. Cole (n48) 250.

consultation.[55] Nevertheless, their proposal perpetuates scientifically naive assumptions regarding uniqueness, by using this concept as support for both the reliability of latent fingerprint analysis[56] and the unreliability of ear print comparison.[57] Despite information flowing from the scientific field, the Law Commission continue to place the legal cart before the scientific horse thereby falling victim to this particular 'pointless debate'. In doing so they potentially allow fingerprint identification testimony to be waved through under the doctrine of judicial notice. However, recent investigation has revealed that latent fingerprint analysis has substantial error rates, despite testimonial claims to the contrary, and having been heralded as an infallible identification analysis for many years.[58] Therefore it has been

[55] Cole (n48) published between the Law Commission consultation and final report, is a useful collation of the consensus in forensic literature.

[56] 'Even identical twins have different fingerprints. It therefore seems that fingerprints are generated by a combination of genetic and environmental factors in the womb, meaning that it is extremely unlikely that two individuals will share a complete fingerprint (…) Nevertheless, the court (United States v Mitchell (2004) 365 F3d 215) also recognised that the prosecution had presented overwhelming evidence that fingerprints are unique and permanent, so the point is perhaps of academic interest only.' The Law Commission No.325 (n8) 32, f/n 65.

However, this is in contrast to the view that 'there is no logical basis to assume that two fingers cannot arrive at identical patterns through different causal pathways (…) it has been suggested that the random genesis of friction ridge skin actually should make us less confident in uniqueness than we would be if we believed that they were determined solely by genetic factors'. Cole (n48) 240;

The assumption proffered by the Law Commission was also questioned by one of the respondents to the consultation process. 'Expert Evidence Consultation Responses' [1.53] (Law Commission, 2011) <http://www.lawcom.gov.uk/wp-content/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 12 February 2020.

[57] '[T]here was an insufficient body of research data to support the assumption as to the uniqueness of ear shapes or, if uniqueness is accepted, the assumption that ears leave unique prints, assumptions which underpinned the strength of this expert's opinion'. The Law Commission No.325 (n8) [3.119].

[58] 'PCAST finds that latent fingerprint analysis is a foundationally valid subjective methodology—albeit with a false positive rate that is substantial and is likely to be higher than expected by many jurors based on longstanding claims about the infallibility of fingerprint analysis.' Executive Office of the President President's Council of Advisors on Science and Technology (PCAST) 'Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods' (*Obama Whitehouse Archives,* September 2016) 149 <https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf> accessed 19 November 2019.

recognised that a poor-quality fingerprint is potentially less reliable for source attribution than a good quality ear-print.[59]

Despite the Court of Appeal in the case of *Dallagher* concluding that 'standard criteria' applied to fingerprint but not ear print identification,[60] this is in fact a fallacy. Attempts to standardise fingerprint methodology in the UK only began in earnest following censure from the Court of Appeal[61] many years after *Dallagher's* successful appeal.[62] This situation was mirrored in the USA also.[63]

Before leaving the argument that the ear-print database was insufficiently large to support a claim of individualisation, it is worth considering this in light of the novel method of hand image comparison.[64] This technique has received widespread judicial acceptance as

[59] Cole (n48) 244, f/n 13.

[60] '[T]here are no standard criteria to be applied, as there are with fingerprints'. *Dallagher* (n1) [14].

[61] 'This is one of the very few cases where fingerprint evidence has been challenged at a trial since 1999 and (…) the first since then to come before this court on an appeal where this court has had to hear fresh evidence. It is not unsurprising that the points we have raised identify practices which differ so markedly in England and Wales from modern forensic science practice in other areas of forensic science'. *R v Smith* (2011) EWCA Crim 1296 [61];

'There is plainly a need for the points that have arisen in this case to be the subject of wider examination. (…) there is a real need for the ACPO, the Forensic Science Regulator and the recently established Fingerprint Quality Standards Specialist Group to examine as expeditiously as possible the issues we have identified, to assess the position and to ensure that there are common quality standards enforced through a robust and accountable system' ibid [62].

[62] In 2013 'The (Forensic Science) Regulator's fingerprint comparison standard (based on ISO 17025) was published for public consultation.' Forensic Science Regulator. 'Annual Report 17 November 2017-16 November 2018' 30.

[63] 'In September 2011, the Scientific Working Group on Friction Ridge Analysis, Study and Technology (SWGFAST) issued "Standards for Examining Friction Ridge Impressions and Resulting Conclusions (Latent/Tenprint)" that begins to move latent print analysis in the direction of an objective framework. In particular, it suggests criteria concerning what combination of image quality and feature quantity (for example, the number of "minutiae" shared between two fingerprints) would be sufficient to declare an identification.' PCAST (n58) at 91.

[64] Richard Benson, 'To catch a paedophile, you only need to look at their hands' (2017) Wired <www.wired.co.uk/article/sue-black-forensics-hand-markings-paedophiles-rapists> accessed 05 March 2019.

admissible evidence in child sexual abuse cases[65] despite the small database of hand photographs[66] and the introduction of the Law Commission reform. This illustrates that there is still a legal need and acceptance of novel identification techniques that have not yet generated the large databases such as those developed for fingerprint and DNA evidence. Thus, a cautious and standardised approach towards the presentation of evidence such as this can ensure that the expert opinion accurately reflects the conclusion that can be drawn and alleviates the need for increased judicial scrutiny into these often-complex areas. Furthermore, it removes the focus from notions of uniqueness and database size.

1.4: Cognitive Bias

It is clear from their proposal that the main concern of the Law Commission was not the ear print comparison methodology itself but rather the testimony relating to the individualisation of the latent print. This was due to the experts expressing a level of certainty that was not necessarily supported by the small size of the reference database.[67]

However, this issue is not confined to the size of reference databases or ear-print evidence alone. Rather it is concerned with identification techniques where there is a subjective interpretation step required to provide an indication of individualisation.[68]

Wherever there is this subjective step then there is a risk that the analysis will fall victim to a bias at the laboratory level known as 'cognitive bias'. Cognitive bias is an umbrella term for a group of unintentional errors in reasoning that may affect the results of a forensic

[65] University of Dundee, 'The impact of perpetrator identification investigations on child sexual abuse and the judicial system' (2014) REF Impact Studies https://ref2014impact.azurewebsites.net/casestudies2/refservice.svc/GetCaseStudyPDF/35849 accessed 05 March 2019.

[66] *ibid.* 'A database of hand images from >500 participants was created to enable research into anatomical variability through forensic processes and help combat the sexual exploitation of children'. Calls have since been made for volunteers to come forward to help expand the database to 5000 prints. See Press Association 'Appeal for hand photos as part of Professor Dame Sue Black's project to track child abusers' *The Courier* (Dundee, 14 February 2019) <www.thecourier.co.uk/fp/news/uk-world/829115/appeal-for-hand-photos-as-part-of-professor-dame-sue-blacks-project-to-track-child-abusers/> accessed 05 March 2019.

[67] Dusek (n50).

[68] For example: bite marks, firearms, handwriting, footwear and hair comparisons.

examination.[69] It can be broken down into three main types known as contextual[70], confirmation[71] and expected frequency[72] bias. Cognitive bias may cause a forensic examiner to seek or interpret evidence 'in ways that are partial to existing beliefs, expectations, or a hypothesis in hand'[73] thereby reducing the objectivity of the analysis. As a result of this recognition, laboratory procedures have been suggested to minimise the effect as it may not be readily exposed within the legal setting.[74]

At the appeal of *Dallagher*, it was recognised that the protocol adopted by the prosecution expert for the ear print identification was heavily dependent on 'subjective comparisons and tolerances'[75] at each stage of the analysis. This immediately raises concern as to the effect of cognitive bias distorting the accuracy of the result unless robust procedures are in place to reduce the potential for its occurrence. It is however unlikely that these safeguards would have been in place at the time of *Dallagher's* trial. More recent information suggests that efforts to introduce procedural change within the established discipline of fingerprint identification have been met with reluctance.[76] Furthermore, the prosecution expert

[69] Sophie Stammers & Sarah Bunn, 'Unintentional Bias in Forensic Investigation' (2015), 15 Parliamentary Office of Science and Technology Brief, 2.

[70] 'Irrelevant contextual information about an event, or the way in which some information is presented, influences reasoning'. *ibid.*

[71] 'People interpret information, or look for new evidence, in a way that conforms to their pre-existing beliefs or assumptions'. Stammers (n69).

[72] 'People get used to a particular result occurring at a certain rate, and expect it to keep on occurring at that rate' Stammers (n69).

[73] Raymond S Nickerson, 'Confirmation Bias: A Ubiquitous Phenomenon in Many Guises' (1998) 2 (2) Rev Gen Psychol 2, 175.

[74] For example, linear sequential unmasking (LSU). This procedure 'requires examiners to first examine the trace evidence in isolation from the reference material, but also provides a balanced restriction on the changes that are permitted postexposure to the reference material'. For a fuller explanation see Itiel E Dror, William Thompson, Christian Meissner, Irv Kornfield, Dan Krane, Michael Saks and Michael Rissinger 'Letter to the Editor— Context Management Toolbox: A Linear Sequential Unmasking Approach for Minimizing Cognitive Bias in Forensic Decision Making' (2015) 60 J Forensic Sci 1112.

[75] *Dallagher* (n1) at [11].

[76] 'The abundance of research regarding this matter and the lack of procedural changes to address the issue, suggests a level of reluctance by Fingerprint Examiners to change their normal practices'. Chartered Society of

defended the cogency of his evidence at appeal by stating that he only reached his conclusion as to the ear-print identification 'sometime after he was first consulted and after *additional information had been supplied*'.[77] Whilst it is unclear as to the content of this additional information and whether this fact was exposed at trial, it nevertheless raises the possibility of contextual bias also creeping into the interpretative step of the analysis. This again throws doubt on the Law Commission claim that the ear-print evidence was foundationally unreliable. Rather it lends credence to the argument that it was the expert testimony that was at fault, either because of bias at the analytical level or because of other factors within the legal process that encouraged unwarranted certainty. These represent important influences on expert testimony outside the narrow parameters of the chosen reference cases. They are also unlikely to be rectified with recourse to an enhanced reliability test. Therefore, these important issues will be returned to in chapter 10. However, it is sufficient at this point to note that the partisan nature of the criminal trial may push expert testimony beyond the parameters dictated by the underlying scientific evidence. This can occur regardless of the foundational reliability of the underlying methodology.

1.5: The Relevance and Reach of the Ear-Print Evidence

Whilst the Law Commission are concerned with the lack of data to support the uniqueness and subsequently the individualisation of ear prints, this thesis argues that this is actually a matter peripheral to the conclusions that can be drawn from the ear print evidence thus their focus on these issues is an inappropriate basis for reform. The Law Commission state that:

> under our proposed admissibility test, the body of data in support of a hypothesis of uniqueness would need to be very strong indeed before any such expert would be permitted to opine that ear-print evidence *standing alone* establishes the accused's *guilt* beyond reasonable doubt.[78]

Forensic Scientists, (2016) 41 Fingerprint Whorld 13.

<www.csofs.org/write/MediaUploads/FPsoc/FPWhorld%201995-2015/2016_July.pdf> accessed 22 May 2019.

[77] *Dallagher* (n1) [16] (emphasis added).

[78] The Law Commission No.325 (n8) [3.123] (emphasis added).

Even if it could be *proven* that the ear print did in fact belong to *Dallagher* the only conclusion that can be drawn from this evidence in isolation is that *Dallagher* listened at the window sometime in the of 3-4 weeks preceding the murder. In view of the limitations surrounding the conclusions that can be drawn from this evidence this thesis argues that that use of the word 'guilt' in this context is inappropriate. This potential timeframe for depositing the ear-print is extremely important as it reveals that on occasion the expert evidence adduced will not necessarily point directly towards the legal outcome. Thus, care must be taken not to conflate the legal and scientific conclusions that can be drawn from the ear print evidence.[79] Unfortunately the Law Commission appear to have missed this very point. In focusing their attention on arguments as to the uniqueness of ear-prints they fail to appreciate that within the context of *Dallagher*, the scientific conclusion does not directly inform the legal verdict. They are therefore placing the desire for certainty within the legal process before that of the scientific conclusions that can be reliably drawn from the data.

Importantly, these limitations on certainty also apply to the LCN evidence extracted from the ear print and the associated claims of innocence. Anecdotal evidence at the time of *Dallagher's* retrial suggests that the weight attached to the LCN evidence suffered from the same overstatement as that of the ear print evidence discussed above. This resulted in a certainty that was neither warranted from the findings nor limited by the language used. [80] Furthermore, the fact that the ear-print evidence was of crucial importance to an otherwise circumstantial Crown case highlights the danger of relying so heavily on forensic techniques or expert opinion in order to bring about a prosecution.[81]

[79] Meijerman (n5) 248.

[80] 'The author was also informed by e-mail, on January 28, 2004, by one of the defense Queen's Counsel in the case, that the analysis of the DNA involved an examination of 'low copy DNA', showing that the evidence earprint could DEFINITELY NOT (in capital letters and underlined twice in the expert's report) have come from Mark Dallagher.' A Moessens, 'Earprint Comparison: Admissibility of Evidence in Court' 3 (*Wiley Online Library*, 2011) <https://onlinelibrary.wiley.com/doi/pdf/10.1002/9780470061589.fsa1016> accessed 19 November 2019.

[81] This is a theme that runs through all of the reference cases chosen by the Law Commission and as such will be illustrated throughout the appropriate chapters.

This is thus an example of where the legal and scientific fields are failing to communicate successfully across their disciplines. As a result, the scientists do not fully appreciate the legal need for certainty whilst the lawyers are not understanding the natural limitations surrounding scientific evidence. This disjunction within their dialogue may in turn lead experts into unwarranted claims as to the cogency of their evidence. This is an issue that directly affects the accuracy of the verdict but that will remain untouched by reform directed at the reliability of the expert evidence itself. Therefore, in focusing on the reliability of the prosecution expert evidence in isolation the Law Commission are not only exposing it for blame but are also missing the important difference between the reliability of the evidence and the reliability of the expert.[82]

Furthermore, the passage of time can cause erosion in the cogency of the expert evidence previously adduced in a trial. This is a product of continuing scientific advancement in both the techniques developed and the knowledge acquired. Thus, heavy reliance on the expert evidence in the absence of other indicators of guilt, may allow the safety of the original conviction to be undermined more readily. This occurred just after *Dallagher's* conviction following the increasing use of ear print evidence within criminal trials. The publication of a leading scientific article questioned the state of current knowledge in this field and the lack of data as to the inter- and intra-variability of ear prints.[83] This newly expressed doubt and the success of two similar international appeals[84] were central to the appeal of *Dallagher* as they undermined the strength of the expert opinion pertaining to the ear print match at his trial. With this in mind, and in view of their statement reproduced above, it appears that the Law Commission was actually more concerned with the central role played by the ear print evidence in this trial as opposed to the inherent unreliability of the methodology as an identification technique.[85] Indeed they concede that its admission to trial and the cogency of

[82] As this claim is central to this thesis it will be returned to in chapter 10 for more detailed consideration.

[83] C Champod, IW Evett & B Kuchler, 'Earmarks as evidence: a critical review' (2001) 46(6) J Forensic Sci 1275.

[84] *Dallagher* (n1) [13].

[85] 'In Dallagher, D's conviction for murder was based almost entirely on prosecution expert testimony relating to the comparison of an ear-print made by D with a latent ear-print found on a window at the scene of the

the opinion would be fact specific to the case in hand. So the weight given to the expert opinion, formed the successful grounds for the appeal of *Dallagher* rather than issues with the reliability and admissibility of the evidence itself.[86] Indeed, the Law Commission concede that rather than the evidence being excluded altogether the expert could well have been allowed to express his opinion in less certain terms.[87] Consequently, this thesis argues that the Law Commission failed to distinguish between the reliability of the methods, findings or techniques underlying the expert evidence and the reliability of the witness testimony as to the weight that can be given to their conclusions. In a similar vein, the analyses of the reference cases that follow within this Act will also reflect the central role of the expert testimony and the presentation of fresh evidence in the successful appeals.

1.6: Conclusion

In conclusion this case does not represent a convincing instance of a wrongful conviction caused by unreliable expert evidence. Rather there is agreement between the Law Commission and the Court of Appeal ruling that it was not the reliability or admissibility of the evidence *per se* that was at fault but rather the weight that was attached to it in the face of new research.[88] Hence a retrial was originally instructed by the Court of Appeal.[89]

Therefore, it is immediately apparent that a test designed to examine the reliability of the science underpinning the expert opinion is an inappropriate response. This has occurred because the Law Commission failed to distinguish between unreliable expert evidence and an

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crime. D's conviction was quashed, and a retrial ordered, because fresh evidence cast doubts on the extent to which ear-print evidence, *standing alone*, could safely be used to identify an offender.' (emphasis added) The Law Commission CP190 (n4) [2.14].

[86]'[T]he very strength of the Crown's expert evidence is what causes us concern'. *Dallagher* (n1) [34].

[87] 'He might, however, have been able to give a weaker opinion on similarities between the latent print and D's print'. *Dallagher* (n1) [8.12].

[88] The Law Commission do in fact recognise this when they state that 'a weak opinion based on ear-prints may well be sufficiently reliable to be admitted (under our proposed test), if the prosecution relies on the expert's opinion merely to provide additional support for other cogent evidence of the accused's guilt.' The Law Commission No.325 (n8) [3.121].

[89] 'We are satisfied that the interests of justice require that there be a retrial'. *Dallagher* (n1) [36].

unreliable expert whose opinion may be influenced by the unconscious biases common to all individuals.

However, as this chapter has illustrated, approaching their case analysis from a narrow, asymmetrical perspective has allowed the Law Commission to isolate the prosecution evidence for blame whilst simultaneously ignoring other areas of evidence that could have proven equally controversial and prejudicial. For example, the role of the bad character or similar fact evidence may have been used purely to bolster the cogency of the expert ear print comparison. This effect was then exacerbated by a judicial instruction whereby by the trial judge equated evidence of listening at a window with that of committing murder.[90]

Furthermore, in failing to widen their analysis, the Law Commission has been able to ignore any consideration as to the reliability of the expert evidence adduced for the defence at appeal. When this is subjected to deeper interrogation it becomes apparent that the fundamental claim of innocence attaching to *Dallagher* cannot necessarily be sustained. Yet the use of exculpatory LCN DNA profiling, itself a forensic technique with limited application, has cemented this case into the collective conscience as a confirmed wrongful conviction.

Consequently, this anchor case for the Law Commission proposal does not provide a solid basis from which to launch their reform. Indeed, as this Act progresses it will become clear that none of the chosen reference cases lend convincing support for the introduction of an enhanced test for evidential reliability. This is an important issue for establishing whether the subsequent legal change is either necessary or appropriate as it is from these initial case analyses that the reform finds its trajectory.

[90] 'If you are sure that Mr Van Der Lugt's evidence is correct and you accept it then you would be entitled to convict on his evidence alone.' *Dallagher* (n1) [9].

Chapter 2: Sally Clark

Following on from the anchor case of *Mark Dallagher*, the Law Commission now turn to an example involving the issue of infant death - a theme that flows throughout the remaining reference cases within this Act. It is important to appreciate at this point that these trials often involve complex and heavily disputed expert evidence. As such, the case analyses that follow may at times appear to be somewhat descriptive. However, this is a necessary requirement in order to expose the flaws behind the Law Commission assumption that unreliable expert evidence was the cause of wrongful convictions in these instances. Alongside *Dallagher* therefore, they continue to provide the groundwork for the application of the Sandman equation and the central argument of this thesis that the enhanced reliability test is nothing more than theatre.

2.1: Overview

Sally Clark was convicted in 1999 for the murder of her two young sons Christopher and Harry. Her first appeal against conviction in 2001 was unsuccessful but a second launched in 2003 finally saw her conviction quashed.[1] Ostensibly the original prosecution turned on whether the deaths of the infants were due to 'Sudden Infant Death Syndrome' (SIDS)[2] or were the result of a deliberate act by the mother to harm her children.[3]

At the heart of this case and central to the Law Commission proposal lies the statistical evidence presented by Professor Sir Roy Meadow[4] during the trial. The figures presented

[1] *R v Sally Clark* [2003] EWCA Crim 1020.

[2] Defined as 'the sudden death of a baby that is unexpected by history and in whom a thorough necropsy examination fails to demonstrate an adequate cause of death'. *Sudden Unexpected Deaths in Infancy: The CESDI SUDI Studies 1993-1996*. (Peter Fleming, Pete Blair, Chris Bacon, Jem Berry (eds), (London Stationery Office 2000) 2.

[3] This chapter will later show that SIDS was not actually a defence proposition from the outset.

[4] 'Emeritus Professor of Paediatrics and Child Health at St James' University Hospital in Leeds, with a specific interest in child abuse'. *Clark* (n1) [37].

were drawn from a draft report of a Confidential Enquiry into Still Births and Deaths in Infancy (CESDI)[5]: 'Sudden Unexpected Deaths in Infancy' (CESDI SUDI Study).[6] Contained within this report was information regarding the risk factors associated with SIDS - a narrower sub-category of infant death included within the definition of SUDI.[7] The statistical odds of two SIDS occurring in the same family in the presence of three different risk factors[8] were in tabular form within the CESDI report and this data, along with the accompanying paragraph, gave the risk of a SIDS death in groups with none of these defined risk factors as 1 in 8543.[9] It then went on to state that 'the risk of two infants dying as SIDS by chance alone will thus be one in (8,543 × 8,543), ie: approximately one in 73 million'.[10] It was this data that was put to the jury at the trial.

However, it was not made clear by Meadow during his testimony that the accompanying paragraph to this table indicted that 'the figures did not take account of possible familial incidence of factors other than those included in Table 3.58 (…)'.[11] It also went on to caution that '[w]hen a second SIDS death occurs in the same family, in addition to careful search for an inherited disorder, there must always be a very thorough investigation of the circumstances— though it would be inappropriate to assume maltreatment was always the cause'.[12] Despite the defence expert, who was also a co-author of the CESDI study,[13] referring to these qualifying statements in his evidence, crucially these explanatory paragraphs were omitted from both the prosecution testimony and the written evidence put to the jury. This is the origin of the '1 in 73 million' figure that has now come to be inextricably linked with the alleged wrongful conviction in this case and thus forms the essence of the Law

[5] Now known as 'The Confidential Enquiry into Maternal and Child Health' (CEMACH).

[6] CESDI (n2).

[7] The death of a baby between the age of 7-365 days caused by SIDS, illness, unrecognised pre-existing condition, accident, trauma or poisoning. CESDI (n2) 8.

[8] Smoking; wage earning; mother >26 years of age.

[9] *Clark* had none of these 3 risk factors as listed above.

[10] CESDI (n2) 92, table 3.58.

[11] CESDI (n2) 92.

[12] CESDI (n2) 92.

[13] Dr Berry, Professor of Paediatric Pathology

Commission's argument for the introduction of a reliability test for expert evidence.[14] Furthermore, in what appears to be an attempt to translate this raw probability into a format that would be more readily understood by the jury, Meadow then proceeded to equate this risk with the chances of successfully and repeatedly backing long odds winners in the Grand National horse race.[15] The incomplete nature of the table and the apparent bias of the prosecution witness led the Court in the second appeal to opine that 'the headline figures of 1 in 73 million that would be uppermost in the jury's minds'.[16]

Whilst the disputed statistical evidence did not form grounds for the success of the second appeal, it was considered again in the context of other new evidence. The success of this later appeal was due to the fact that crucial microbiological information obtained post-mortem was withheld by the pathologist at trial. As a result of this omission, parties to both the prosecution and defence were unaware that the death of the second infant may well have been caused by overwhelming infection. This caused Claire Montgomery QC, Counsel for *Sally Clark* in her second appeal, to opine that '[i]t is a matter of regret that the prosecution has failed to accept that there has been any material non-disclosure in this case. *Instead, an attempt has been made to minimise the importance of the microbiological test results*'.[17] It is

[14] '[T]he expert had been permitted, first, to testify outside his field of expertise and, secondly, to give an unfounded and misleading opinion on the likelihood of multiple cot deaths within a single family. There had been no prior assessment of his assumption or hypothesis to determine whether his evidence was sufficiently reliable to be considered by the jury.'
The Law Commission, *The Admissibility Of Expert Evidence In Criminal Proceedings In England And Wales A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [2.19].

[15] '[I]t's the chance of backing that long odds outsider at the Grand National, you know; let's says it's a 80 to 1 chance, you back the winner last year, then the next year there's another horse at 80 to 1 and it is still 80 to 1 and you back it again and it wins. Now here we're in a situation that, you know, to get to these odds of 73 million you've got to back that 1 in 80 chance four years running, so yes, you might be very, very lucky because each time it's just been a 1 in 80 chance and you know, you've happened to have won it, but the chance of it happening four years running we all know is extraordinarily unlikely. So it's the same with these deaths. You have to say two unlikely events have happened and together it's very, very, very unlikely.'
Clark (n1) [99].

[16] *Clark* (n1) [102].

[17] Clare Montgomery QC, 'Skeleton Argument on behalf of Sally Clark' (2nd Appeal) (emphasis added)

posited here that the Law Commission have also dismissed this problem of non-disclosure too readily preferring instead to concentrate on the testimony of Meadow about the incidence of SIDS.[18] As introduced earlier, the brief and asymmetrical analyses conducted by the Law Commission may initially steer the reader towards notions of causation too readily. A further interrogation of facts contained within this appeal will aim to illustrate that the role of the expert evidence in causing the potential wrongful verdict is neither clear nor convincing.

First and foremost, the Law Commission garner support for their proposal by paraphrasing the judgment from the second appeal. They state that this court 'took the view that (…) if the question of the statistical evidence *had been fully argued on appeal*, it would in all probability have provided a quite distinct basis upon which to allow C's appeal'.[19] However, it is necessary to place this observation within its true context and its entirety within the judgment itself. What the second appellate judgment actually stated was that:

> The Court of Appeal on the last occasion would, it seems clear to us, have felt obliged to allow the appeal but for their assessment of the rest of the evidence as overwhelming. *In reaching that conclusion the Court was as misled by the absence of the evidence of the microbiological results as were the jury before it.* We are quite satisfied that if the evidence in its entirety, as it is now known, had been known to the Court it would never have concluded that the evidence pointed overwhelmingly to guilt. *Thus* it seems likely that if this matter had been fully argued before us we would, in all probability, have considered that the statistical evidence provided a quite distinct basis upon which the appeal had to be allowed.[20]

(*Sally Clark,* 12 October 2011) < http://www.inference.org.uk/sallyclark/SkeletonArgumentForAppeal.txt> accessed 22 November 2019.

[18] 'C's convictions for the murder of her two infant sons were quashed (in Clark (Sally) (No 2)) primarily because of a prosecution expert's failure to disclose test results. In our consultation paper, however, *we focused specifically* on the unreliable statistical evidence given by a professor of paediatrics and child health.' (emphasis added)

The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325,2011) [8.13].

[19] *ibid* [2.18] (emphasis added)

[20] *Clark* (n1) [179]–[180] (emphasis added).

When the complete statement is read it indicates that the statistical evidence was only held by the court to be distinct grounds for appeal once it was clear that the other medical evidence of potential abuse had all but collapsed in view of the non-disclosure of the microbiology results. Therefore, the argument put forward by the defence for the second appeal was that '[t]he facts must now be reconsidered in the light of the substantially diminished certainty that can be attached to the prosecution medical case. The diminished medical evidence also has a knock on effect on the "circumstantial evidence" relied upon'.[21]

It is argued here that by failing to quote the relevant part of the appellate judgment in its entirety, the Law Commission have isolated the statistical evidence for censure thereby assigning more than the intended weight to its liability in the subsequent conviction. They have also largely avoided the opinion of the Court of Appeal in the first appeal where the statistical data was interrogated - its weaknesses and omissions fully explored - but where it was not held to be grounds for quashing the conviction.

This would appear to represent an example of the courts wrestling with the notion of reliability as a gradational concept when situated within the totality of the evidence base. The statistical evidence needs to be positioned within the wider framework of legal procedure and the common law to facilitate a greater understanding of its role in guiding the verdict.

Therefore, the analysis of the *Clark* case that follows will firstly consider whether the correct application and enforcement of the common law would have provided sufficient protection against the use or misuse of this statistical evidence. This will begin to undermine the Law Commission premise that a statutory reliability test would have provided assistance in this case thereby supporting the central argument of this thesis that it is nothing more than theatre. Following this initial analysis this chapter will then turn its attention towards any further specific issues regarding the evidence that arose from the two appeal processes themselves. This is again required to give a more balanced, symmetrical view of this case than that presented by the Law Commission in order to expose other factors that may equally have influenced the jury verdict. By setting the disputed evidence within a wider framework also allows for both the issues of reliability and causation to be more fully interrogated. In

[21] Montgomery (n17).

harmony with the analysis of *R v Dallagher* as discussed in the previous chapter, this case again exposes the difference between 'unreliable evidence' and an 'unreliable expert'. This is an important difference that the Law Commission have failed to identify thus their focus on unreliable expert evidence is inappropriate in a case such as *Clark*.

2.2: Was an Expert Needed?

An important common law principle, established by the court in *R v Turner,*[22]was developed to guide the courts in deciding when expert evidence was a necessary requirement for the administration of justice. Taking its name from this appeal 'The Turner Rule' established that 'an expert's opinion is admissible to furnish the court with scientific information which is likely to be outside the experience and knowledge of a judge or jury.' This point was reiterated nine years later in *R v Bonython*[23] - a Southern Australian case often quoted as representing the state of the common law in England and Wales.[24]

In the case of *Clark*, the Court at the second appeal considered this very issue before turning to briefly discuss the reliability of the evidence itself. They subsequently concluded that '[i]t is unfortunate that the trial did not feature any consideration as to whether the statistical evidence should be admitted in evidence and particularly, whether its proper use would be likely to offer the jury any real assistance'.[25] This was partly based on the reasoning that 'juries know from their own experience that cot deaths are rare'[26] and 'generally juries would not need evidence to tell them that two deaths in a family are much rarer still'.[27] Despite the possible inaccuracy of this statement[28] it nevertheless indicates that there was a potential

[22] (1975) QB 834, 841.

[23] 'whether the subject matter of the opinion is such that a person without instruction or experience in the area of knowledge or human experience would be able to form a sound judgment on the matter without the assistance of witnesses possessing special knowledge or experience in the area' (1984) 38 SASR 45.

[24] The Law Commission CP190 (n14) [1.2].

[25] *Clark* (n1) [173].

[26] *Clark* (n1) [175].

[27] *Clark* (n1) [177].

[28] The opinion of some experts that multiple SIDS are more common than originally believed goes to the heart of this appeal and that of the next case analysis. Some statisticians have calculated that the risk of a second SIDS death could be as low as 1 in 100. See Montgomery (n17) [110].

failure by the trial court to robustly consider the Turner Rule. If this principle had received attention then it may well have seen the statistical evidence being excluded from the trial without the need for further enquiry as to its reliability thereby rendering the reliability test redundant with regard to the statistical evidence.

2.3: Relevance of the Statistical Evidence

Alongside the Turner Rule, another foundational common law principle is that the evidence adduced must be relevant to the case in hand. Whilst being a broad inclusionary principle it is however, subject to judicial assessment as to whether the probative value of the evidence is outweighed by its prejudicial effect thereby allowing for its exclusion from the trial. Effective use of this principle to have excluded the statistical evidence would have again prevented the later need for reliability assessments. However, this foundational principle was unable to be effectively considered or applied in the trial of *Clark* due to definitional confusion and admitted errors by defence counsel. As previously explained, the statistical data adduced by Meadow was concerned with the probability of two SIDS deaths occurring in one family. The specific definition for SIDS was acknowledged by the Court of Appeal in the first instance[29] and the statistical evidence adduced by Meadow at trial indeed concerned the probability of two SIDS occurring within one family.

This evidence was relied upon by the prosecution in the erroneous belief that the defence would submit that both babies were victims of SIDS. The prosecution opening speech, whilst dealing with the statistical evidence from the CESDI trial, nevertheless concluded that '[y]ou don't find these sorts of recent unexplained injuries in a true case of SIDS'[30] thus confirming the fact that SIDS itself does not represent a positive medical cause of death but

[29] *R v Sally Clark* 2000 WL 1421196 [104].

[30] *ibid* [126].

rather attempts to explain a death in the 'absence of alternative causes'.[31] Despite the defence being made aware of this opening speech they did not object to its content.[32]

As the trial progressed it became clear to all parties that neither the prosecution nor the defence experts believed that either death was due to SIDS because of the post-mortem findings[33] leading the court at the first appeal to draw attention to the fact that '[t]he experts were debating the incidence of genuine SIDS (unexplained deaths with no suspicious circumstances) in a case where both sides agreed that neither Christopher's death nor Harry's death qualified as such'[34] concluding that the statistical evidence was therefore 'very much a side-show at trial'.[35] This would indicate that the fact in issue had not been correctly identified either prior to or during the trial as the Court of Appeal recognised when stating that 'the actual issue was whether the Crown could satisfy the jury that neither death was natural, so that the jury could safely infer that each death was unnatural'[36] as opposed to a SIDS.

Furthermore, Meadow on cross-examination went on to opine that the deaths of both children 'would probably have been likely to have been excluded from the (CESDI) Study'[37] based on the post-mortem findings. Significantly it was conceded by the defence 'that there were serious errors of approach towards the statistical material at trial'[38] whereby they failed to 'object to the opening of the evidence or to the admission of the evidence',[39] concluding

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[31] Richard Nobles & David Schiff, 'Misleading statistics within criminal trials: The Sally Clark case' (2005) 2 (1) RSS Significance 17, 18 <http://onlinelibrary.wiley.com/doi/10.1111/j.1740-9713.2005.00078.x/abstract> accessed 19 September 2016.

[32] *Clark 2000* (n29) [126].

[33] *Clark 2000* (n29) [15].

'The effect of the medical evidence as a whole was that neither baby was the subject of a SIDS death and there was consensus, as the lowest common denominator, that each death was unexplained and was consistent with an unnatural death.' However, it must be remembered that *Sally Clark* and her husband still maintained that the deaths were SIDS. *Clark 2000* (n29) [109].

[34] *Clark 2000* (n29) [142].

[35] *ibid*.

[36] *Clark 2000* (n29) [126].

[37] *Clark 2000* (n29) [132].

[38] *Clark 2000* (n29) [153].

[39] *ibid.*

that, 'the appellant should not be prejudiced by counsel's failings'.[40]Despite this the Court of Appeal nevertheless held that the statistical evidence was 'clearly relevant and admissible'[41] whilst accepting that the 'only relevance'[42] of the statistical table was to show 'that to have one unexplained infant's death with *no suspicious circumstances* in the family was rare, and for there to be two such in the same family would be rarer still'.[43] In view of the fact that neither the prosecution nor the defence classified the deaths as SIDS it is questionable whether the statistical evidence was indeed truly relevant and that a more robust approach to identifying the fact in issue would have resulted in this evidence being held as inadmissible.

In addition, another important challenge to the relevancy of the statistical evidence was recognised after the trial and formed part of the basis for appealing the use of the statistical evidence at first instance.[44] This argument centred on the lack of relevance in providing a standalone probability of two SIDS deaths occurring without presenting the relative risk of an alternative hypothesis – that is the probability of the two children being murdered. Using the same methodology as that used to calculate the double SIDS risk, this probability has been stated to be somewhere between 1 in 2.2 and 1 in 8.4 billion[45] therefore adding some perspective to the 1 in 73 million figure. This in theory, represents a situation that was far less likely to occur within a family than two SIDS deaths. The fact that competing probabilities are necessary was a point raised initially by the Royal Statistical Society prior to *Clark's* second appeal.[46] It was also echoed by some of the responses received during the Law Commission

[40] *Clark 2000* (n29) [153].

[41] *Clark 2000* (n29) [166].

[42] *Clark 2000* (n29) [182].

[43] *ibid* (emphasis added)

[44] *Clark 2000* (n29) [182].

[45] Professor Philip Dawid,'Statement of Professor A P Dawid; Sally Clark Appeal' (*Statslab*) [16] <www.statslab.cam.ac.uk/~apd/SallyClark_report.doc> accessed 05 October 2016;
A P Dawid, 'Bayes's Theorem and Weighing Evidence by Juries' (*Citeseerx,* 03 August 2001)[2.2.3] <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=BDE2113232D216EB90F777545AA949E9?doi=10.1.1.638.2817&rep=rep1&type=pdf> accessed 12 February 2020.

[46] Royal Statistical Society, 'Royal Statistical Society concerned by issues raised in Sally Clark case' (*Sally Clark,* 2001) <www.rss.org.uk/Images/PDF/influencing-change/2017/SallyClarkRSSstatement2001.pdf> accessed 20 November 2019.

consultation.[47] Whilst the Law Commission endorses the view of a 'competing theory probability'[48] within their proposed reliability test with specific reference to this case[49], it is not necessarily as statistically straightforward as first thought. The potential error surrounding the assumption that the two deaths were independent events has received most attention. Others however have argued that the opposing hypothesis, that is one of a double murder, is also an incorrect assumption on which to base a comparative probability.[50] It is argued that the correct hypothesis should be the probability that *Clark* murdered *at least one* child as this is the 'logical negation'[51] of the defence proposition that the deaths were both

[47] 'Expert Evidence Consultation Responses'(Law Commission, 2011) <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 20 November 2019;

For example, Dr Phil Rose, Associate Professor in Phonetics and Chinese Linguistics; Forensic Phonetics Consultant, Australian National University: 'in relation to determining admissibility, the expert should be able to say how probable the evidence is under both the prosecution and defence hypotheses, for if only one probability is given under one hypothesis renders the opinion evidence "no use"' [7.25];

The Royal Statistical Society: 'the role of probabilistic reasoning in the law is to enhance the procedure for the evaluation of evidence under each of two propositions, that of the prosecution and that of the defence' [1.61].

[48] 'We recommend that Part 33 of the Criminal Procedure Rules be amended to include the following: (…) a rule that where an expert witness is called by a party to give a reasoned opinion on the likelihood of an item of evidence under a proposition advanced by that party, the expert's report must also include, where feasible, a reasoned opinion on the likelihood of the item of evidence under one or more alternative propositions (including any proposition advanced by the opposing party)'

The Law Commission No.325 (n18) at [7.21 (2c)].

[49] '[U]nder our recommendations that expert would have been expected to try to formulate a counterbalancing probability reflecting the defence case. That is to say, he or she would have been expected to try to come to a figure reflecting the unlikelihood that the accused would have murdered her two children (if such a calculation were feasible)'.

The Law Commission No.325 (n18) [8.20].

[50] Professor Norman Fenton, 'Sally Clark case revisited: another key statistical oversight' (*Citeseerx,* 2013) <http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=5C9DC8F62B11F60FB90F7656887FD5D3?doi=10.1.1.588.9731&rep=rep1&type=pdf> accessed 19 September 2016.

[51] *ibid* 3.

due to SIDS.[52] If this hypothesis is tendered in the alternative then it can be shown that the 'defence hypothesis (of two SIDS deaths) weakens significantly'.[53]

Although this argument provides an interesting insight into the issues surrounding comparative statistical analyses it was noted that the discussions regarding the probabilities in the *Clark* case were necessarily an oversimplification. To perform a more in- depth statistical analysis 'would involve access to extensive information about all types of child deaths, all known instances of multiple child deaths within the same family, and information about dependencies between different deaths'[54] including that between SIDS and murder. This would obviously be an enormous, if not impossible task that highlights the complexity of statistical evidence. It also provides insight into the ultimate cogency of the statistic presented at trial and questions the approach of both the Royal Statistical Society and the Law Commission to this matter. Furthermore, it highlights the potential danger of attempting to introduce specific procedures aimed at incorporating statistical probabilities under competing hypotheses into evidence. It is thus possible that the situation would become highly mathematically complex, and potentially even more misleading. Despite its intuitive appeal, the 'competing theory approach' with reference to the *Clark* appeal, had already received criticism prior to the Law Commission proposal.[55] Here it was argued that whilst being correct from a statistical viewpoint it would be at odds with legal doctrine where the statistical probability of an alleged crime occurring, and therefore the chance of guilt, is not relevant or admissible in Court.[56] The evidence of an expert witness cannot be seen to decide the ultimate question thereby usurping the role of the jury.[57] Therefore this illustrates the uncomfortable interface often encountered between law and expert evidence and the need

[52] The problem with comparing the probability of two SIDS deaths with that of two murders is that it ignores the fact that the deaths may have been a combination of SIDS and murder.

[53] Fenton (n50) 4.

[54] Fenton (n50) 6.

[55] Tony Gardner-Medwin, 'What probability should a jury address?' (2005) 2 (1) RSS Significance 9 <http://onlinelibrary.wiley.com/doi/10.1111/j.1740-9713.2005.00076.x/full> accessed 19th September 2016.

[56] *ibid*.

[57] Nobles & Schiff (n31) 18.

to appreciate that legal process must be aligned to 'law's goals, law's purposes and law's structures'.[58]

Even if this figure was used merely to rebut a proposition that both deaths were due to SIDS rather than as an indication of guilt,[59] it must be remembered that SIDS was never put forward as a defence. The competing hypothesis therefore does nothing to increase the relevance of the original figure. In view of the complexity and criticism of providing a relevant, competing hypothesis it is thus naïve of the Law Commission to try to introduce a standard procedure for this highly complex area of mathematical probability. Rather the law should concern itself with the role of statistics within the criminal trial, reliable or not.

As the introduction of the statistical evidence should have been dealt with under the established common law rules for admissibility the focus on the reliability of the statistical evidence is both unnecessary and misleading. According to the Sandman equation, as introduced earlier, outrage is a factor that can inflate the perception of risk thereby driving response strategies that may not be truly reflective of the threat in question. The choice of this case by the Law Commission points towards the central argument of this thesis that the reform is being driven by the outrage flowing from this appeal rather than a more objective, symmetrical study of the evidence within the wider framework of this criminal trial. Chapter 9 will later return to this issue so as to situate the Law Commission reform against the backdrop of outrage that was generated by the reference cases chosen.

[58] Frederick Schauer, 'Can bad science be good evidence? Neuroscience, lie detection and beyond' (2010) 95 Cornell L Rev 1191 at [1218].

[59] The Court of Appeal clearly recognised that this figure '[says] nothing whatsoever as to the guilt or innocence of the appellant'. *Clark* 2000 (n29) [157].

2.4: Origin of the Statistical Probability

Regardless of media and academic commentary to the contrary[60] it is crucial to realise that Meadow was not responsible for calculating the 1 in 73 million figure.[61] Despite the court at the first appeal clarifying 'that the genesis of the 1:73 million figure was the CESDI Study, and not any individual calculation made by Professor Meadow'[62] this erroneous attribution continues through the Law Commission reform. This can be seen in their following statements that 'the expert had simply (and quite wrongly) assumed that there were no genetic or environmental factors affecting the likelihood of cot deaths, and testified that *in his opinion* there was only a one in 73 million chance of having two cot deaths in the same family'[63] and *'[t]he expert simply squared* this improbability to reach his opinion that the likelihood of two infant deaths in the same family would be one in 73 million'.[64] This is an important error by the Law Commission that goes to the heart of their criticism regarding unreliable expert evidence being admitted from experts with little data to support their opinion.[65] By adopting this erroneous approach, they therefore conclude that Meadow '[gave] an unfounded and misleading opinion on the likelihood of multiple cot deaths within a single family'.[66]

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[60] '[T]he paediatrician *claimed* the probability of two children in such a family dying naturally of SIDS was 1 in 73 million'. (emphasis added) Genevieve Roberts, 'Disgraced Meadow reinstated by judge' *The Independent* (London, 18 February 2006) 22;

'Professor Meadow multiplied 8,500 by 8,500 and arrived at the chance of one in 73 million' and '[h]e had calculated the probability of one specified individual having two cot deaths' (Dr Stephen Watkins);

John Sweeney, 'These cot-death convictions are just plain wrong' *BBC Radio News* (London, 15 July 2000) <www.mojuk.org.uk/Portia/archive%209/sallyr5.html> accessed 21 September 2016;

'But statisticians commenting on the Clark case had been very disturbed from the outset that Meadow had made a serious statistical error'. Professor John S Croucher, 'Assessing the statistical reliability of witness evidence' (2003) 23 Australian Bar Review at 175.

[61] Although it must be conceded that the narrative version regarding 'Grand National winners' was his own interpretation.

[62] *Clark 2000* (n29) [131].

[63] The Law Commission CP190 (n14) [2.17] (emphasis added).

[64] The Law Commission No.325 (n18) [8.14] (emphasis added).

[65] 'Our recommendations would put experts on notice that they might be required to provide sufficient material to demonstrate the reliability of their opinion evidence'. The Law Commission No.325 (n19) [5.100].

[66] The Law Commission CP190 (n14) [2.19].

In order to establish whether this evidence was indeed 'unfounded', it is necessary to examine the robustness of the background to the draft report. This will illustrate whether the accusation of unreliability was actually justified with regard to the data presented or whether it reflects more on the reliability of the expert opinion.

CESDI was originally formed in 1992 following a Department of Health directive that surveys should be conducted on the causes of perinatal mortality. This was aimed at identifying failures in service provision or substandard procedures thereby allowing improvements to be made in an effort to reduce the incidence of such deaths.[67] A number of surveys have been conducted since this time and the subsequent reports have been described as 'authoritative (and as having) influenced clinical practice'.[68] The CESDI SUDI is a comprehensive document consisting of 160 pages and with a full research team of 54 various professionals including paediatricians, pathologists and importantly three statisticians. It was edited by a team including a Medical Statistician and one of the main contributors was a Professor of Paediatric and Perinatal Epidemiology. Despite criticism of some of the earlier CESDI study methodology[69] it is now accepted that the issues identified were corrected by the time the CESDI SUDI study was conducted.[70] At the first appeal for *Clark* two statisticians provided written evidence for the defence with regard to the methodology of this study and in particular the calculation of the 1 in 73 million figure. Whilst expressing some underlying concerns they nevertheless conceded either that the CESDI SUDI study had been 'carefully planned and executed'[71] or that there was 'statistical validity (to) the assumption justifying the squaring (of the 1 in 8,543 figure)'.[72]

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[67] Professor A M Weindling, 'The Confidential Enquiry into Maternal and Child Health'
(2003) 88 Arch Dis Child 1034.

[68] *ibid.*

[69] 'CESDI's early projects often lacked controls and denominator information, which limited their interpretation and generalisability.' Weindling (n67) 1034.

[70] 'However, the study of Sudden Unexpected Deaths in Infants, (…) included information about controls.' Weindling (n67) 1034.

[71] *Clark 2000* [154].

[72] *Clark 2000* [156].

On this basis it is difficult to find support for the view of the Law Commission that the opinion of Meadow was 'unfounded' and points away from an erroneous reliability assessment by the trial judge. Indeed, it would have been difficult for a finding of insufficient reliability in view of the pedigree of this document and the surrounding opinions expressed. Any further interrogation regarding the data itself and the inferences that can be drawn from it, belongs to the scientific and statistical fields not to the law alone.

2.5: Competence of the Expert Witness

A further important principle of common law and of particular relevance in this instance is that an expert witness must have sufficient knowledge of their field in order to testify.[73]
It was also acknowledged by the Law Commission that

> [c]riminal courts in England and Wales are already under a tacit (and ongoing) duty to monitor expert witnesses' evidence to prevent drift because an expert witness can provide expert evidence only insofar as the common law admissibility requirements for such evidence are satisfied.[74]

Whilst recognising Meadow as a 'distinguished paediatric consultant'[75], the Court of Appeal in the first instance nevertheless acknowledged that, whilst he may have limited use of statistics in his own field, he was not a statistician.[76] Indeed the Crown did not call a statistician but more importantly neither did the defence – citing 'a number of important and unavoidable last-minute matters to deal with' as reason for this oversight.[77]
Therefore, it is argued here that there was a major failing within the legal process. Firstly, this allowed Meadow to present evidence from a study relying heavily on the use of statistical analysis and probability projections. Secondly, this occurred without challenge to either its

[73] '[T]he witness has acquired by study or experience sufficient knowledge of the subject to render his opinion of value in resolving the issues before the court' *Bonython* (n23).

[74] The Law Commission No.325 (n18) [4.40].

[75] *Clark 2000* (n29) [119].

[76] *ibid.*

[77] *Clark 2000* (n29) [120].

admissibility or to his rather flamboyant explanation of the figure.[78] As argued earlier in this chapter, the void created by the lack of robust application of the common law should not be filled by strengthening the test for assessing the reliability of the expert evidence. Although the test itself contains reference to the competence of the witness[79] this is an unnecessary distraction if the principles of common law are followed and applied. Equally, strengthening the assessment of expert evidence will not serve to resolve issues of poor defence strategy or the presentation of *reliable* evidence by experts acting outside their field of expertise. Thus, the test becomes reliability theatre playing to the outrage of the audience whilst disguising the real failings that remain hidden in the wings. It also serves to illustrate the apparent confusion of the Law Commission whereby the line between the unreliability of expert evidence and the unreliability of an expert becomes blurred.

Meadow's lack of competence as an expert in this field was indeed raised by the Law Commission in their consultation document as being 'an important point to note about this case'.[80] This point was also reiterated by one of the judicial consultees[81] as being a major error contributing to the conviction of *Clark*.[82]

However, it has been argued that preconditioning statistical evidence as needing presentation by a statistician would create a costly, and ultimately, unworkable trial procedure[83] and this argument would seem to be increasingly cogent as forensic science evolves and probability estimates pervade a number of techniques and trials. Underlying this view is that 'the decision to use statistical experts must turn on the relevance and importance

[78] Equating the incidence of two cot deaths in one family to an individual continually backing long odds Grand National winners.

[79] '[T]he extent to which the expert's opinion is based on material falling outside the expert's own field of Expertise'. '*Criminal Practice Directions Amendment No.2 2014* [2014] EWCA Crim 1569 [33A.5(e)] <www.judiciary.uk/wp-content/uploads/2015/09/crim-pd-2015.pdf> accessed 16 August 2018.

[80] 'The important point to note about this case is that (….) the expert had been permitted, first, to testify outside his field of expertise (…)' The Law Commission CP190 (n14) [2.19].

[81]Hon Theodore R Essex: 'it should have been obvious that the statistical evidence was outside Roy Meadow's expertise as an expert paediatrician.' Responses (n47) [1.24].

[82] It should further be noted that the expertise and competence of expert witnesses in general was raised numerous times by the consultees as being an important issue.

[83] Nobles & Schiff (n31) at 17.

of any particular piece of statistical evidence within the trial in question'[84] and that this remains firmly as a *legal* assessment.[85] The questionable relevance of the statistical evidence was discussed previously and it is argued here that by presenting robust and respected third party data, the presence of a statistician was not necessarily required especially as it was not the only, or main, focus of Meadow's testimony.

This was recognised by the Court of Appeal in the first instance when they stated that:

> [i]n our judgment, however, Professor Meadow's opinion was based on his expert assessment of the medical and circumstantial evidence, not on the statistical material. Most of his examination in chief was concerned with the medical issues. He nowhere suggests that Table 3.58 (which did not deal with deaths such as these) provides any evidence that these deaths were unnatural, only that true SIDS were rare.[86]

Furthermore, despite not being a statistician, the length of his career combined with a need to use statistics in his work[87] would arguably qualify him to present figures from an independent study to the 'sufficient knowledge' standard required by the legal process. The first Court of Appeal agreed, recognising that the physical presence of statisticians in court to present their evidence for the defence was not necessary due to the 'pressure of time and the limited utility of what would have been necessarily argumentative cross-examination of the statisticians'.[88] Importantly any potential errors or omissions within the statistical evidence were fully argued by the defence witnesses (albeit non-statisticians) and the jury were given clear instruction as to its limitations and direction as to its weight.[89] This indicates

[84] *ibid.*

[85] Nobles & Schiff (n31) 17.

[86] *Clark 2000* (n29) [144] (original emphasis).

[87] *Clark 2000* (n29) [119].

[88] *Clark 2000* (n29) [152].

[89] 'That part of the evidence relating to statistics is nothing more than that. It is a part of the evidence for you to consider. Although it may be part of the evidence to which you attach some significance, it is of course necessary for you to have regard to the individual circumstances relating to each of these two deaths before you reach your conclusion on the two counts on this indictment.' *Clark 2000* (n29) [144].

that rather than receiving quiet deference from the court, this evidence was robustly explored and challenged through the correct application of the adversarial system.

The above argues that the statistical evidence of Meadow was not necessarily 'unfounded' and that he possessed the required competence for his testimony. Therefore, attention must now turn to whether he was in fact 'misleading' the court with evidence that was either deceptive or incorrect.[90]

2.6: Did Meadow 'Mislead' the Court?

In order to assist in answering the question above it is useful to turn again to a judgment handed down by the Court of Appeal.[91] This time however, it concerns an assessment by the Court as to whether Meadow was guilty of serious professional misconduct in giving the statistical evidence at trial.[92]

It was held during the appeal that there was 'no evidence of calculated or wilful failure to use [his] best endeavours to provide evidence'.[93] Even the dissenting judgment stated that 'Professor Meadow did not intend to mislead the court and that he honestly believed in the validity of his evidence when he gave it.'[94] His failure to emphasise that he was not a statistician was criticised however it was noted that this was not dishonestly or wilfully withheld from the jury.[95] Furthermore, although he failed to provide the caveats associated with the calculation of the risk factors in his evidence, they were nevertheless provided to the defence and thoroughly explored on cross examination.

[90] 'Mislead = to deceive by giving incorrect information or a false impression' Oxford English Dictionary.

[91] *General Medical Council v Meadow* (2006) EWCA Civ 1390.

[92] Following on from *Clark's* successful appeal, Meadow faced a Fitness to Practice Hearing at the General Medical Council. This concluded that he was guilty of serious professional misconduct and his name was subsequently removed from the medical register. On appeal to the High Court the decision of the GMC was reversed. The GMC then appealed to have their verdict reinstated and it is to this last appeal that this section refers. The appeal was rejected.

[93] *Meadow* (n91) [211].

[94] *Meadow* (n91) [93].

[95] *Meadow* (n91) [214].

Meadow himself agreed that the use of the 'Grand National Winner' analogy was 'inappropriate and insensitive'[96] but this was considered by the Court of Appeal to be the use of 'colourful language'[97] rather than deception.[98] This case serves to highlight the importance of considering the standardisation of language with regard to expert testimony. It is therefore a topic that will be returned to in chapter 10.

It is also useful to return to the judgment from *Clark's* first, unsuccessful appeal where the statistical evidence was considered in detail. Here the court concluded that '[i]n *the context of the trial as a whole,* the point on statistics was of minimal significance and *there is no possibility of the jury having been misled* so as to reach verdicts that they might not otherwise have reached'.[99]

As shown above, it is difficult to sustain the argument that the statistical data was unfounded and there is no indication of conscious deception by the expert. Thus, there appears to be the necessary assumption by the Law Commission that the quoted statistic for the likelihood of the two babies both dying from SIDS has been proven to be inaccurate thereby rendering the expert evidence unreliable. This assumption however is open to challenge thereby adding further weight to the argument running through this thesis. That is that the brief, asymmetrical interrogation of this case by the Law commission has allowed them to claim support for the introduction of an enhanced reliability test that on further reflection is neither a necessary nor appropriate response to this particular case.

[96] *Meadow* (n91) [251].

[97] *Meadow* (n91) [94].

[98] Indeed, a belief that the problem lay with the language used rather than the reliability of the evidence *per se* was received in response to the Law Commission consultation by another legal reform organisation.

"The Law Reform Committee suggests that the miscarriage in Clark was not because of the reliability of the subject matter of the expert's opinion but the manner in which it was delivered". Responses (n47) [1.93].

[99] *Clark 2000* (n29) [272] (emphasis added).

2.7: The Accuracy of the Statistical Data

Concern regarding the accuracy of the statistical evidence not only formed one of the grounds for the original appeal[100] but is also apparent throughout the Law Commission consultation process and final report.[101] By repeatedly asserting that the figure 'grossly misrepresented'[102] the risk, the Law Commission appear to be paraphrasing the second Court of Appeal when they stated that 'we think it very likely that it grossly overstates the chance of two sudden deaths within the same family from unexplained but natural causes.'[103]

Crucial to the thinking of the Court was that there existed 'evidence to suggest that it may happen much more frequently than suggested by that figure'.[104] Central to this argument was the belief that it was erroneous to treat two events of SIDS as independent events; that is, as deaths that share no common factors such as genetic susceptibility. Therefore, the mathematical squaring of the 1 in 8543 figure to reach the risk of a second SIDS as being 1 in 73 million was an oversimplification of the statistical process. This view has continued to garner support from both the statistical and legal communities since *Clark's* original trial. Importantly, the Court at her second, successful appeal noted that if the reoccurrence of SIDS

[100] 'Professor Meadow's evidence of the statistical probability of two SIDS deaths in one family undermined the safety of the convictions (…) the figures cited were erroneous (application to call fresh evidence)'. *Clark 2000* (n29) [103].

[101] 'That expert had simply (and quite wrongly) assumed that there were no genetic or environmental factors affecting the likelihood of cot deaths and testified that in his opinion there was only a one in 73 million chance of having two cot deaths in the same family.' The Law Commission CP190 (n14) [2.17];

'The expert would have been required to demonstrate the evidentiary reliability (*the scientific validity*) (…)' (emphasis added) The Law Commission No.325 (n18) [8.17];

There is an inherent danger in the reasoning contained within this Law Commission quotation in that it risks merging the issue of scientific validity with that of legal reliability. This conflation will receive attention later in this thesis.

[102] The Law Commission CP190(n14) [2.18] and The Law Commission No.325 (n18) [1.5], [8.18] & 175.

[103] *Clark 2000* (n1) [178].

[104] *ibid*.

within a family was so extremely rare then the Care of Next Infant Scheme (CONI)[105] would effectively be a waste of time and resource.[106]

However, a collaborative study, conducted and published prior to the Law Commission consultation and final report has provided a valuable insight into this claim. The research concerned reviewing the CESDI data '[in order] to estimate the probability of a second SID in a family under different plausible scenarios of the prevalence of the risk factors'.[107] This model would then be applied 'to make predictions in the CONI study'.[108] This collaborative study concluded that the occurrence of a second SIDS within a family is in fact an *independent* event and thus the squaring of the risk to predict a second death is a valid approach. This has led other statisticians to comment that 'assuming *dependence* inappropriately can be just as serious as assuming independence inappropriately'.[109] It is not within the bounds or competence of this thesis to attempt to perform an in-depth statistical analysis of the two competing arguments. Nevertheless, this research lends some support to the central argument of this thesis that the focus of the Law Commission on the perceived unreliability of the 1 in 73 million statistic may be incorrect and unwarranted. If it is correct that SIDS deaths are indeed statistically independent events then the calculation within the CESDI report, as repeated by Meadow in court is necessarily correct also. Therefore, the use of this case by the Law Commission to support their proposal would actually undermine their argument.

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[105] The scheme is designed to support those parents who have already experienced a sudden infant death by providing care and guidance for their subsequent pregnancies and births. Data generated with regard to the outcomes of those enrolled has provided the basis for initiating confidential enquiries into the cause of any further infant deaths and to further understand the risks of having a subsequent SIDS within a family.
The Lullaby Trust, 'Care of Next Infant (CONI) (*The Lullaby Trust)* <www.lullabytrust.org.uk/bereavement-support/how-we-can-support-you/our-care-of-next-infant-scheme/> accessed 22 May 2017.

[106] *Clark 2000* (n1) [176].

[107] M Campbell, D Hall, T Stephenson, C Bacon and J Madan,
, 'Recurrence rates for sudden infant death syndrome (SIDS): the importance of risk stratification'
(2008) 93 Arch Dis Child 936.

[108] *Ibid.*

[109] N Best and D Ashby, 'A Bayesian approach to complex clinical diagnoses: a case-study in child abuse'
J R Statist Soc A (2013) 176 Part 1 53, 84 (emphasis added).

Indeed, the CONI data as referenced above, has been crucial to the defence of a number of those convicted of murdering their infants but has itself attracted criticism for its unreliability. As such, this matter will receive more discussion within the next chapter as it was a cornerstone for quashing the conviction of *Angela Cannings*; the third reference case chosen by the Law Commission.

In choosing to isolate one part of the overall narrative for censure, the Law Commission fails to appreciate that the bright line between reliable and unreliable evidence has become blurred between the evidence presented for the prosecution and that for the defence. This product of an asymmetrical analytical methodology of the evidence adduced also provides an example of how the scientific and legal fields may fail to integrate sufficiently in their efforts to reveal the truth.[110] This point should have been fully appreciated in order to prevent a response that effectively mounts a legal attack against scientific findings. Rather those engaged within the criminal justice system should look to stimulate a cross-disciplinary dialogue in order to increase their understanding around the limitations and cogency of expert evidence thereby guiding its appropriate use within the trial process.

Finally, an interesting point, overlooked by the Law Commission, has been revealed by the case analysis performed here, indicating that the reliability of statistical probabilities may in fact be influenced by the application of common law principles. The information taken from the CESDI report and adduced at trial concerned 'the three prenatal factors with the highest predictive value (…) of an increased risk of SIDS'.[111] However, the report studies and acknowledges further factors that may increase this likelihood, stating that 'regular moderate to heavy alcohol intake (more than 10 units per week) and particularly 'binge' drinking, by mothers during pregnancy and the postnatal period was associated with a significantly increased risk of SIDS'.[112] This was further supported by the fact that '[a]lcohol intake above two units by mothers in the 24 hours before the last/reference sleep was, however,

[110] Assuming that the discovery of 'objective truth' is indeed the purpose of the criminal trial. See chapter 7 for further elaboration.

[111] CESDI (n2) 91.

[112] CESDI (n2) 91.

associated with a highly significant increase in the risk of SIDS (…)'[113] - a fact that was recognised in the report from one of the statisticians called for the defence at the first appeal.[114]

Although evidence was admitted to trial that *Clark* 'tended to drink more heavily when her husband was away'[115] and that on the night Harry died she had visited the off-licence twice to buy some wine,[116] the defence managed to have mention of her alcoholism excluded 'because there was no evidence that she was under the influence at the time of the children's deaths.'[117] The successful exclusion of this evidence by the defence under common law principles raises the question as to whether it would have been more beneficial for *Clark* to actually have this evidence admitted. Its inclusion may well have served to mitigate the force of the CESDI statistic by increasing the likelihood that the deaths were in fact SIDS.[118] Whilst ultimately it was accepted that the introduction of the CESDI statistic should not have been allowed in this trial at all this example nevertheless serves to illustrate that common law mechanisms of protection employed by the defence may unwittingly, and unknowingly introduce a bias against the defendant. Thus, focusing on the reliability of the statistical evidence alone not only fails to differentiate it from an unreliable expert but also ignores the complexity of the criminal trial process and the many and varied factors that may influence a verdict. As this complexity directly effects the issue of causation and is an important factor when trying to assign blame within a miscarriage of justice scenario it will be discussed further in chapter 8.

[113] *ibid.*

[114] '[T]he appellant's alcoholism and depression were not taken into account'. *Clark 2000* (n29) [156].

[115] *Clark 2000* (n29) [87(5)].

[116] *ibid.*

[117] *Clark 2000* (n29) [156].

[118] It must be remembered at this point that discussions as to the probability of a second SIDS death are a moot point with regard to the *Clark* trial for the reasons discussed earlier. Therefore, neither the CESDI figure or the evidence excluded by the defence should have been relevant to this trial.

2.8: The Power of the Statistical Evidence

It is necessary at this point to reiterate the difference between the reliability of the 1 in 73 million statistic and that of Meadow's explanation with reference to 'winning the Grand National'. Whilst the Court at *Clark's* second appeal were concerned that the statistical evidence was in fact unreliable, and therefore may have incorrectly impacted the jury's verdict, they were nevertheless more concerned with the effect generated by the embellishment of this figure within the expert opinion evidence.[119]

As the previous section has illustrated the unreliability of the statistic is far from settled, as is its role in influencing the *Clark* verdict. However, following the argument put forward by the defence at *Clark's* first unsuccessful appeal, it is the influence of the raw calculation that tends to be the focus of academic concern[120] with little mention of the Grand National analogy.[121] If the statistic is correct then this approach merges the concept of unreliable evidence with that of the unreliable expert. Although the Law Commission refer to unreliable opinion evidence it is the calculation of the 1 in 73 million figure that seems to be central to their

[119] 'Quite what impact all this evidence will have had on the jury will never be known but we rather suspect that with the graphic reference by Professor Meadow to the chances of backing long odds winners of the Grand National year after year it may have had a major effect on their thinking.' *Clark 2003* (n1) [178]

[120] For example: '[I]t has been speculated that the use of such figures may have had considerable influence on the jury's decision.' Roger Byard, 'Unexpected Infant Death: lessons from the Sally Clark case' (2004) 181 (10 MJA 1 <www.mja.com.au/system/files/issues/181_01_050704/bya10006_fm.pdf> accessed 19 January 2021;

'It is speculation whether Sally Clark would have been acquitted without this evidence. But with this mathematical error prominent the conviction is unsafe.' S J Watkins, 'Conviction by mathematical error?' (2000) 320 BMJ 2;

'But I was both shocked and surprised that three High Court judges could so fail to see the significance of the flawed statistical evidence and not recognise the impact it must surely have had upon jurors.' Ray Hill, 'Reflections on the cot death cases' (2005) 2 (1) RSS Significance 13 <https://rss.onlinelibrary.wiley.com/doi/full/10.1111/j.1740-9713.2005.00077.x> accessed 19 January 2021.

[121] 'Given that Sally Clark's conviction was quashed on her second appeal, and that misleading statistics were felt by the Appeal Court to have had "a major effect on their [the jury's] thinking (…)' Nobles & Schiff (n31) Cf: n119.

reform proposal[122] rather than the embellishment of this evidence by Meadow.[123] Whether or not the statistical evidence can be shown to be reliable or not it must nevertheless be situated within the case of *Clark* as a whole. This more symmetrical approach prevents the isolation of a single piece of prosecution expert evidence for censure thereby questioning its causative role in the miscarriage of justice. Indeed, the Court of Appeal at first instance placed the significance of the statistical evidence within the framework of the 'overwhelming case against the appellant'. [124, 125]

Of particular significance to the Court was the fact that there was no clear cause of the deaths being postulated by the defence experts. Furthermore, these experts were forced to concede that 'neither of these deaths was a SIDS death because of the *suspicious circumstances* surrounding them.'[126] Indeed whilst the majority of the defence opinions regarding the cause of either one or both of the deaths concluded that they were 'unascertained' one expert called for the defence testified that he considered the death of Harry could have been either an accident or 'traumatic and non-natural'[127] depending on the interpretation of the post mortem findings. The medical evidence was complex but importantly it was situated within a

[122] 'This expert, who was not a statistician, had formulated his opinion on the assumption that there were no genetic or environmental factors affecting the likelihood of naturally occurring cot deaths, opining that there was only a one in 73 million chance of two such deaths in the same family.' The Law Commission CP190 (n14) [1.5].

[123] "The court also noted that the way the expert had presented his evidence could have had a major impact on the jury's deliberations." *ibid.*

[124]They did however note that the risk of the jury falling into the 'Prosecutor's fallacy' had not been sufficiently dealt with by the trial judge, *Clark 2000* (n29) [184].

[125] *Clark 2000* (n29) [272].

[126] *Clark 2000* (n29) [122] (emphasis added).

[127] *Clark 2000* (n29) [77].

wealth of circumstantial and anecdotal evidence.[128] Within the totality of the evidence it is therefore difficult to quantify the impact of the statistical data on the final verdict.[129]

Nevertheless, the Law Commission confidently state that '[t]here can be *no doubt* (…) that there have been some recent miscarriages of justice *caused* by a jury's reliance on unreliable expert evidence, as exemplified by cases such as Clark (Sally) (…)'.[130]
Despite the Law Commission adopting this stance, there is not necessarily overwhelming empirical evidence to support this belief. Although an in-depth analysis of heuristics is outside the boundaries of this thesis, the importance of the assumption to the proposal dictates that it is necessary to devote some time to this matter. It is appreciated that not only is this a very complex area of understanding but that there are also limitations surrounding much of the research conducted.[131] This is an important issue with regard to establishing causation and so it will be returned to in chapter 7. However, at this point it is interesting to note that there are results from empirical studies that point away from the influence of statistics within the criminal trial setting.

For example, one study demonstrated that an expert presenting anecdotal evidence was given more credibility than one presenting non-anecdotal evidence.[132] Thus, their evidence carried greater weight with the participants than the more scientific and probative non-anecdotal information. Although this may have been an issue with understanding or scientific scepticism it was also postulated by the researchers that 'people are influenced more by

[128] '[T]he prosecution's case against the appellant depended on a large number of pieces of circumstantial evidence, including not only the medical evidence concerning each baby but also evidence going to the credibility of the appellant and her husband' Above (n29) [91].

[129] Research has indicated that 'base-rate data have little or no impact regardless of whether they are presented before or after the case data, and regardless of whether they agree or disagree with the case data'. See A Tversky & D Kahneman, 'Causal schemata in judgments under uncertainty' Advance Decision Technology Programme <www.dtic.mil/dtic/tr/fulltext/u2/a056667.pdf> [3-5] accessed 14 June 2016.

[130] The Law Commission CP190 (n14) [C.12] (emphasis added).

[131] Due to the statutory restrictions on conducting jury research within this jurisdiction as imposed by The Contempt of Court Act 1981.

[132] Brian H Bornstein, 'The impact of different types of expert testimony on mock jurors' liability verdicts' (2004) 10 (4) P C & L 429.

salient, individual cases than by base rates drawn from larger samples'.[133] This is either due to an inherent 'difficulty in generalising from abstract background information to specific concrete cases'[134] or the fact that 'anecdotal evidence, by nature, tends to be more elaborate, vivid and salient than base-rate information.' [135] It was therefore claimed that anecdotal evidence had a greater ability to initially grab the attention of jurors thereby remaining more memorable when compared to the rather stark base rate frequency data.[136] Whilst it is appreciated here that the argument as to whether statistical evidence in general may unduly impact the decision of the jury (as opposed to individual jurors) is far from totally settled,[137] there does nevertheless appear to be some evidence suggesting that overall statistical base-rate data is generally underutilised in the trial setting.[138]

At *Clark's* second successful appeal, the court took a more measured view to the issue of causation that than adopted by the Law Commission. Whilst acknowledging that the method in which the statistical evidence was presented 'may have had a major effect on (the jury) thinking notwithstanding the efforts of the trial judge to down play it'[139] they conceded that the 'impact all this evidence will have had on the jury will never be known'.[140]

One of the arguments central to the Law Commission reform and the role of the statistical evidence was that juries may simply defer to an expert opinion without proper consideration of the evidence itself. They state that this may be due to either its complexity[141] or because

[133] *ibid* 433.

[134] Bornstein (n132) 433.

[135] Bornstein (n132) 433.

[136] Bornstein (n132) 433.

[137] 'It is unclear, for example, how much the individual judgmental errors documented by these studies affect the group decisions of juries.' W Thompson & E Schumann, 'Interpretation of statistical evidence in criminal trials: The prosecutor's Fallacy and the Defense Attorney's Fallacy' (1987) 11 Law & Hum Behav 167.

[138] *ibid.*

[139] *Clark 2003* (n1) [178].

[140] *ibid.*

[141] '[T]here is a danger that juries will abdicate their duty to ascertain and weigh the facts and simply accept the experts' own opinion evidence, particularly if the evidence is complex and difficult for a non-specialist to understand and evaluate'. The Law Commission No.325 (n18) [1.9].

of reliance on peripheral and inappropriate indicators of reliability.[142] It must be remembered however, that a jury is the sum of twelve individuals and that *Clark* was convicted by a majority verdict of 10:2.[143] Therefore, the argument that the jury may have simply deferred to the expert is not necessarily supported by this case. The lack of a unanimous verdict provides proof that at least two jurors were not swayed by the statistical evidence. Subsequently it does not follow that the other 10 were, especially as it was acknowledged by the Court of Appeal that this was a 'complex case'.[144]

The statistical evidence has received the most attention and is generally perceived to carry a significant proportion of blame in the resulting verdict. Yet it must be noted that this evidence formed just one of the five grounds for appeal in the first instance. Importantly for this thesis the first two grounds were centred on the prejudicial use of 'similar fact' evidence[145] and the effectiveness of the limiting instruction given by the judge with regard to its weight.[146] Just as the use of propensity evidence was crucial to bolster the prosecution case against *Dallagher* as discussed previously, the case of *Clark* reflects a comparable practice whereby similar fact evidence was used for the same function.

2.9: Similar Fact Evidence

As opposed to the similar fact evidence relevant to *Dallagher* and introduced in the previous chapter, in the trial of *Clark* it was used in a different manner. Rather than being an indicator

[142] '[T]here is a real danger that juries (…) may focus on perceived pointers to reliability [such as the expert's demeanour or professional status]' The Law Commission No.325 (n18) [1.15].

[143] This raises the question of the sufficiency of a majority verdict in cases such as these but this subject remains outside the boundaries of this thesis.

[144] *Clark 2000* (n29) [239].

[145] *Clark 2000* (n29) [78(a)] 'the trial judge was wrong in law in ruling that the evidence on each count was admissible upon the other, and consequently in refusing to sever the indictment and have separate trials'.

[146] '[T]he trial judge wrongly directed the jury that they could take into account the circumstances surrounding both deaths before concluding that either was unnatural.' *Clark 2000* Above (n29) [78(b)].

of a propensity to commit the crime, it was used as evidence of 'coincidences' that would be an 'affront to common sense'[147] to ignore.[148]

Alleged cases of child abuse often bear certain points of contextual and familial similarity and therefore evidence to support a prosecution is derived from these situations.[149]

However, these coincidences are frequently harmless and gendered events[150] inviting the warning that this evidence 'may well reflect the innocuous organisation of family affairs rather than constituting evidence of a criminal pattern'.[151]

Drawing from the field of psychology, it is recognised that that we are naturally predisposed to seeing:

> order, pattern, and meaning in the world, and (finding) randomness, chaos, and meaninglessness unsatisfying. Human nature abhors a lack of predictability and the absence of meaning. As a consequence, we tend to 'see' order where there is none, and we spot meaningful patterns where only the vagaries of chance are operating.[152]

It was held at *Clark's* original trial that there were six similarities surrounding the circumstances of the deaths of the two children and that these similarities were 'of sufficiently probative force to make it just to admit the evidence on one count in relation to the other, and vice versa (…)'.[153] Yet five of the six similarities involved events that were principally associated with the role of the primary caregiver – often, and particularly in this case, the

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[147] *Clark 2000* (n29) [91].

[148] '[D]istinguished from the one involving previous convictions, as involving "coincidence" rather than propensity reasoning'. Mike Redmayne, *'Character in the Criminal Trial'* (OUP 2015) 46.

[149] '[E]vents are related (because) they are substantially and relevantly similar and they occur in similar circumstances.' Emma Cunliffe, *Murder, Medicine and Motherhood* (Hart Publishing 2011) 107.

[150] *ibid.*

[151] Cunliffe (n149) 116.

[152] Thomas Gilovich, 'How We Know What Isn't So: The Fallibility of Human Reason in Everyday Life' The Free Press 9 <www.r-5.org/files/books/ethology/human-mind/Thomas_Gilovich-How_We_Know_What_Isn't_So-EN.pdf> accessed 28 September 2016.

[153] *Clark 2000* (n29) [81].

mother. For example, both babies were found by the defendant at the same time, in the same room and whilst she was alone with them.[154]

A further effect of this coincidence evidence was that it allowed for the charges against *Clark* to be conjoined. The conjoining of charges has been described as a mechanism for overcoming the situation whereby the preponderance of evidence associated with each individual event has insufficient weight to reach the criminal standard of proof.[155] In the case of *Clark* it was the presence of the potentially 'innocuous coincidences' that allowed the charges to be conjoined in this way.

It must be considered whether this action introduced additional bias against the defendant as empirical research from mock jury studies has found that when offences are conjoined the conviction rate increases significantly.[156] This is particularly pertinent when the charges are similar.[157] It is postulated that this is due to the jury '[fostering] an unfavourable impression of the defendant, which influences perceptions of the evidence as well as the verdicts'.[158] There is thus a risk of an increased prejudicial effect from both the admission of the coincidence evidence and the conjoining of the charges. In an effort to offset these risks, judicial directions are given to limit the jury's use of this evidence. This is aimed at preventing jurors from inappropriately attaching too much weight to the coincidences and the relationship between the two events. The courts continue to put faith in the ability of limiting instructions in the belief that they will influence the jury so as to 'reduce the level of prejudice (…) [and] cure any error.'[159] However, there is research that does not support this view,

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[154] *Clark 2000* (n29) [87].

[155] H Schreier & J Libow, *Hurting for Love - Munchausens by Proxy Syndrome* (Guildford Press 1993) 187.

[156] Although this represents just one research study, it states that '[t]he findings were compared statistically to the results of previous research, and it was concluded that increased convictions in joined trials are robust effects.' Sarah Tanford, Steven Penrod and Rebecca Cotlins, 'Decision Making in Joined Criminal Trials: The influence of charge similarity, evidence similarity, and limiting instructions' (1985) 9 Law & Hum Behav 319.

[157] *ibid.*

[158] Tanford (n156) 334.

[159] Again, only one paper is cited in support of this theory. However, it 'synthesize(s) the psycholegal research concerning the effectiveness (or, more commonly, the ineffectiveness) of various jury instruction practices.' S Tanford & J Alexander, 'The Law and Psychology of Jury Instructions' (1990) Neb L Rev 69, 71 at 98.

showing that the direction is often ineffective.[160] It has been postulated that this is due to jurors being unable or unwilling to correctly limit their use of the evidence.[161] Furthermore, this same research has indicated that the use of judicial directions may actually have an adverse and counterproductive effect.[162] Thus in the present case the Court's reliance on the use of a limiting instruction as an effective cure to the potential prejudicial effect of conjoining similar charges may be unfounded and potentially make 'matters worse'.[163] Further problems also arise with the ability of jurors to understand the given judicial direction. Again, research indicates that whilst the majority of jurors try hard to follow any given direction, they actually encounter some difficulty in understanding the instructions[164] despite their perception that they are in fact easy to comprehend.[165]

At *Clark's* trial the jury were instructed to 'look at the death of each child independently and only if you reach the conclusion that the defendant killed one child should you ask yourselves whether that helps you in relation to the other child'.[166] They were also forbidden to conclude 'that simply because she killed one of them, she must have killed the other one as well.'[167] It is unfortunate that within the context of this reference case the actual effect of the judicial direction is unknown due to the inability to interrogate jurors on their verdict – a point that will be returned to in chapter 9. Nevertheless, as discussed earlier, research that has been

[160] At around the time of *Clark's* trial the research findings regarding the effectiveness of limiting instructions was far from settled. Although much research supported the view that they were ineffective there were indications that specially designed, robust directions could reduce conviction rates. Tanford (n159).

[161] Tanford (n159) 98.

[162] Like instructions to disregard evidence '[a] similar systematic counterproductiveness is found in courts' use of limiting instructions'. Tanford (n159) 97.

[163] Tanford (n159) 87.

[164] Penny Darbyshire, 'What Can We Learn From Published Jury Research?: Findings For The Criminal Courts Review 2001' (2003) 3 Judicial Studies Institute Journal 71, 76.

[165] Cheryl Thomas, 'Are Juries Fair?' Ministry of Justice Research Series 1/10 40 (*Ministry of Justice,* February 2010) <www.justice.gov.uk/downloads/publications/research-and-analysis/moj-research/are-juries-fair-research.pdf> accessed 30 September 2016.

[166] *Clark 2000* (n29) [100].

[167] *Clark 2000* (n29) [95].

undertaken indicates that there will always remain doubt as to its efficacy in providing the limiting safeguards as anticipated by the Court of Appeal.

As there is this substantial risk of unfounded prejudice against the defendant by the introduction of coincidence evidence into trial, its admissibility is controlled by application of the common law principles of relevancy and the weighing of prejudicial effect against probative value. This nevertheless remains a problematic balancing exercise for the judiciary.[168] In trials such as those of *Clark*, where the expert evidence maybe complex, uncertain or absent, the use of coincidence to plug the evidential voids may be an equally powerful source of risk for wrongful convictions as the reliability of the expert evidence alone. Despite all these concerns the potential prejudicial nature of the coincidence evidence adduced at *Clark's* trial was not fully appreciated by the Courts until the second successful appeal.[169] Whilst dismissing four of the six similarities outright and cautioning against use of another[170] the court concluded that rather than being 'any significant indication of murder'[171] the use of these similarities was rather 'open to real criticism'[172] on the grounds of the relevancy of evidence.[173] This again points toward the argument
running through this chapter that the reliability test has been used to disguise the inadequacies of the application of the common law in other areas of the trial process. The brief, asymmetrical analysis of the refence cases allowed the Law Commission to single out both the expert and their evidence for blame. This is despite academic concern regarding the potential prejudicial effect of coincidence evidence and the use of conjoined charges as raised above.

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[168] '(This evidence) poses enormous problems for judges, jurors and magistrates alike (due to) the headlong conflict between probative force and prejudicial effect'. Gregory Durston, 'Similar fact evidence: A guide for the perplexed in the light of recent cases' (1996) 160 Justice of the Peace and Local Government Law 359 quoted in *R v Handy* (2002) 2 SCR 908 [138].

[169] *Clark 2003* (n1) [15] '[i]n the ordinary incidence of family life, it could be anticipated that some imprecise similarity of this kind could always be found'.

[170] *Clark 2003* (n1) [15] & [16].

[171] *Clark 2003* (n1) [15].

[172] *Clark 2003* (n1) [15].

[173] *Clark 2003* (n1) [15].

Therefore, statistical evidence aside, there were other components of the legal process that were equally capable of prejudicing the jury and thus equally culpable for any potential wrongful verdict in this case. Yet despite the strongly worded concern of the second Court of Appeal, no recognition as to the potential gendered and prejudicial nature of the coincidence evidence is recognised by the Law Commission.[174]

2.10: Conclusion

By adopting a more in-depth and critical analysis than that conducted by the Law Commission, this chapter has begun to expose the complexity of this specific case. For example, weaknesses in both the defence strategy and robust application of the common law sit alongside the controversial use of circumstantial evidence and conjoined charges. However, the potential influence of all these factors has been ignored by the Law Commission in favour of a focus on the role of the statistical evidence in the final verdict. This is despite the non-disclosure of medical evidence, described by one expert witness as a 'blood chilling'[175] omission, undoubtedly being the major culprit in causing the verdict to be declared as 'unsafe'. Rather than assess this complex case within the wider evidential framework it appears that the perceived unreliability of Meadow's expert evidence may have initiated the outrage that drove this reform. This will become more apparent as this thesis moves to the next chapter where Meadow was again central to the prosecution expert evidence.

Of crucial importance is that the Law Commission fell into the popular trap of assigning the calculation of 1 in 73 million to Meadows himself when it is clearly stated within the CESDI report. Furthermore, there is no convincing evidence to suggest that the now notorious 1 in 73 million figure was actually unreliable in itself, especially in view of the more recent research conducted and referenced within this chapter. Thus, it becomes apparent that it was the flamboyant testimony of a witness working at the periphery of his expertise rather than the unreliability of the statistical figure that has driven concern regarding its role in the verdict. The Law Commission has therefore failed to separate unreliable expert evidence from

[174] By doing so the Law Commission have advanced the criticism that those analysing cases such as these often 'exclude a gender analysis in preference to focusing on (the) scientific evidence'. Cunliffe (n149) 202.

[175] Professor Luthert in Montgomery (n17).

that of an unreliable expert and that in conducting their very brief and asymmetrical overview of this case they have merely reflected the popular opinion surrounding Meadow and the statistical evidence. Consequently, the enhanced reliability test is an unnecessary piece of theatre, that will ultimately prove unnecessary or ineffective in cases such as that of *Clark*. It has been illustrated throughout this chapter that firm application of the common law would have prevented the need to revisit the reliability of the statistical evidence and may well have prevented it from being introduced into the trial in the first instance. Consequently, the accusation of evidential unreliability serves to deflect scrutiny away from the wider legal process. Thus, for the reasons set out above, this appeal is an unconvincing example of the hazard of unreliable expert evidence causing a wrongful conviction.

Chapter 3: Angela Cannings

The next case chosen by the Law Commission continues the current theme in that it again involves a mother convicted of killing her infant children and the use of expert evidence to support or rebut a possible SIDS diagnosis. Subsequently some of the issues raised previously in the case of *Sally Clark* are relevant to this next appeal not least the fact that Professor Roy Meadow again appeared as an expert witness for the prosecution. The subsequent outrage that these two cases generated against Meadow will be considered within chapter 9 as it is an important factor in the Sandman equation and thus relevant to the factors potentially influencing the Law Commission reform.

3.1: Overview

The appeal against the conviction of *Angela Cannings*[1] followed less than a year after that of *Sally Clark* and flowed directly from its outcome.[2] At first glance these two appeals appear to share a similar factual basis involving the conviction of a mother for the killing of her two infant children and including evidence for the prosecution being given by Meadow. However, there were also crucial differences between the two as noted by the court.[3] For example, there was no quantitative statistical data adduced for the prosecution as to the rarity of reoccurring SIDS within a family neither was there any non-disclosure of evidence discovered post-trial.

Most notably however, the Court stated that there was 'no direct evidence and very little indirect evidence'[4] that the children were victims of crime at all with the defence arguing that both infants were indeed victims of SIDS. Working within the limited amount of evidence available, the prosecution was thereby forced to rely exclusively on the heavily contested, inconclusive opinion evidence of their expert witnesses that the infants had been smothered.

[1] *R v Angela Cannings* (2004) 1 W L R 2607.

[2] Partially due to the undermined credibility of Meadow as an expert witness who also testified at the trial of *Angela Cannings.*

[3] *Cannings* (n1) 2612.

[4] *Cannings* (n1) 2611 In addition to this observation the court also recognised that there was 'further evidence which tended to suggest that they were not (victims of a crime).'

They then bolstered the cogency of this evidence based on coincidental occurrences surrounding the time of death, in a similar vein to the case against *Clark*. A further similarity to the previous case was that many experts with conflicting opinions were called over a number of days to give evidence in court.[5] Although the credibility of Meadow was called into question following *Clark's* successful appeal[6] this judgment does not indicate that this appeal was based on grounds relating to the perceived unreliability of any specific piece of expert evidence adduced for the prosecution.[7] Nevertheless, the Law Commission direct their attention toward this evidence implying that the 'dogmatic expert view'[8] caused the potential wrongful verdict in this instance.

However, the following case analysis will instead illustrate the problematic nature of the complex and often disputed expert evidence that surrounds prosecutions such as this, and in doing so, will begin to expose the naivety of the Law Commission response.

Controversial evidential debates such as this demand a detailed dialogue between the legal and medical fields to understand the limits of the findings and to prevent the adversarial style of the criminal trial from distorting its weight. By focussing on the reliability of the expert evidence alone the Law Commission are again attempting to affect a legal solution to a scientific dilemma. They are therefore placing the legal cart before the scientific horse in an effort to create the certainty so desired by the legal process.

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[5] 'We spoke to over twenty experts and ended up calling sixteen at the trial.'
Oliver Lewis interview with Bill Bache 'We Can Afford Justice!' (2014)82 The London Advocate 6 (*Oliver Lewis,* 2014) <https://oliverlewisinfo.wordpress.com/2014/07/01/bill-bache-interview-angela-cannings-experts-and-legal-aid/> accessed 18 May 2018.

[6] *Cannings* (n1) 2612.

[7] 'She appealed against conviction on the grounds, inter alia, that (1) the judge erred in declining to withdraw the case from the jury on the basis that the medical evidence was not capable of proving that the deaths were unnatural, and (2) there was fresh medical and scientific evidence from recent research which demonstrated that three infant deaths in the same family occurred significantly more frequently than stated by the Crown.' *Cannings* (n1) 2607.

[8] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011) [1.6].

Furthermore, this chapter continues to highlight the problematic nature of basing a generic reliability test on a small cluster of appeals. The fact that three of the four reference cases involve evidence supporting claims of infant harm would suggest that this area needs a targeted multi-disciplinary approach in order to establish acceptable legal boundaries. The findings derived from asymmetrical case analyses involving narrow and controversial areas of expert evidence have been extrapolated by the Law Commission across the wider spectrum. Consequently, the majority of evidential categories will remain untouched by the findings thereby inviting the criticism that their resultant reform will largely be a reliability theatre. Before turning to this matter, it is important to consider the heavy reliance that was placed on this expert evidence.

3.2: Lack of Evidence

As opposed to that of *Clark*, the prosecution in the trial of *Cannings* could adduce no physical ante- or post-mortem evidence that would potentially indicate that the children had been smothered. This lack of material evidence is therefore reflected in the first grounds for the appeal. It was argued that there was in fact no case to answer and thus ' the judge erred in declining to withdraw the case from the jury on the basis that the medical evidence was not capable of proving that the deaths were unnatural'.[9] The Court considered at length the evidence both from the original trial and that subsequently adduced for this appeal (which will be discussed later in this chapter) but the reasoning given with regard to the appeal itself is relatively brief[10] and somewhat ambiguous.

Whilst acknowledging the lack of any direct or indirect evidence against *Cannings* the Court nevertheless held that '[their] analysis of the evidence called by the prosecution demonstrates there plainly was a case for Mrs Cannings to answer. It would therefore have been wrong for Hallett J to have withdrawn it from the jury'.[11] The Court however, concluded its judgment with the now renowned principle that:

[9] *Cannings* (n1) 2607,

[10] A point noted within the judgment itself - '[a]fter this lengthy discussion, we can deal relatively briefly with the issues raised in the appeal' *Cannings* (n7) 2647.

[11] *Cannings* (n1) 2647.

> for the time being, where a full investigation into two or more sudden unexplained infant deaths in the same family is followed by a serious disagreement between reputable experts about the cause of death, and a body of such expert opinion concludes that natural causes, whether explained or unexplained, cannot be excluded as a reasonable (and not a fanciful) possibility, the prosecution of a parent or parents for murder should not be started, or continued, unless there is additional cogent evidence, extraneous to the expert evidence (…) which tends to support the conclusion that the infant, or where there is more than one death, one of the infants, was deliberately harmed. In cases like the present, if the outcome of the trial depends exclusively or almost exclusively on a serious disagreement between distinguished and reputable experts, it will often be unwise, and therefore unsafe, to proceed.[12]

Bearing these words in mind, it is not readily apparent why the Court did not feel that the first basis for the appeal was sufficient to quash the conviction. This may be partly due to the general recognition that withdrawing a case from the jury 'is an extremely rare course for a judge to take (…)'.[13] This case therefore shines a spotlight on the role of the legal process rather than the quality of the expert evidence in this highly discordant area of medical expertise. Despite the clarity of this important judgment there is no recognition by the Law Commission as to the role played by the prosecution strategy in this potential wrongful conviction[14] - a point that will be returned to in chapter 5 - or their use of coincidence evidence to bolster a weak case. Attention was drawn to the use of coincidence evidence in the previous chapter and, as it was also central to the prosecution of *Cannings*, the potential prejudicial impact of this evidence within this trial will receive further discussion at the end

[12] *Cannings* (n1) 2652.

[13] *Cannings* (n1) 2648.

[14] Some support is found from the judiciary in the later appeal *R v Kai-Whitewind* (2005) EWCA Crim 1092, [479]. Whilst discussing the judgment in *R v Cannings* they concluded that:

'these observations were not directed to the conduct of the trial by the judge. Initially they are directed to the prosecution process, but they would plainly be relevant to an argument that there was no case to answer, or indeed to that rare occasion when the judge considers whether to withdraw the case from the jury at the close of all the evidence. They provide an emphatic criticism of the prosecution's theory that the rarity of three deaths, not specifically identified as natural, raises an overwhelming, or virtually overwhelming inference, that the deaths resulted from the infliction of deliberate harm.'

of this chapter. As the Law Commission have chosen to single out the expert evidence for censure to lend support to their proposal[15] this now needs to be considered.

3.3: The 'Overly Dogmatic' Expert Evidence

The issue of 'dogma'[16] is central to both this appeal and the Law Commission proposal. Unsurprisingly this terminology was first introduced by the defence but was seized upon by the Law Commission to support its proposed reform.[17] It is thus necessary to examine this allegation in greater depth.

Instances of suspected child harm or murder are fraught with evidential difficulties. Therefore, disagreements amongst experts often leads to vast quantities of complex scientific detail and argument as recognised by the Court of Appeal in this case.[18]However, it must be remembered that in contrast to witnesses of fact who may be mistaken, opinion evidence is based upon the knowledge and experience of the witness. Consequently experts will frequently offer a differing interpretation of the evidence based on their own particular

[15] Chapter 7 will later consider that certain steps were in fact taken to alter criminal procedure and prosecution policy. This was in recognition of prosecutions such as these being brought where they rested almost entirely on the opinion evidence of expert witnesses. It is argued that these changes ultimately reduce the Law Commission proposal and the need for a reliability test in cases of this nature to vanishing point.

[16] 'An opinion, a belief; *spec.* a tenet or doctrine authoritatively laid down, esp. by a church or sect. Also: an imperious or arrogant declaration of opinion.' Oxford English Dictionary;

The Law Commission defined a dogmatic expert view as one that is 'based on a hypothesis which has not been sufficiently scrutinised or supported by empirical research'. Law Commission No.325 (n8) [1.6].

[17] 'It was held that the mere fact of two or more unexplained infant deaths in the same family could not be allowed to lead inexorably to the conclusion that murder had been committed, contrary to the view – indeed the "dogma" – amongst a number of expert paediatricians'. The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [2.20];

'C's convictions for the murder of her two infant sons had been based on the dogmatic expert view (---) that the mere fact of two or more unexplained infant deaths in the same family meant that murder had been committed'. The Law Commission No.325 (n8) [1.6].

[18]'[T]he whole course of the trial, the sheer number of experts called by the defence and the complex specialist fields in which these distinguished men and women worked (…)'. *Cannings* (n1) [170].

background.[19] Thus, leaving aside cases whereby experts deliberately mislead the court by manipulating or omitting detail that does not support their view in any particular case,[20] when a reputable expert holds an honest belief in the validity of his evidence it has been claimed that 'the dichotomy of truth or falsehood has no relevance'.[21] By using this case as an example of unreliable expert evidence being adduced at trial the Law Commission are forced to divert attention away from the legal process itself and to concentrate on the reliability of the opinion evidence alone. This necessarily requires them to discern between evidence truly based on and derived from the knowledge and experience of reputable experts and that which is mere dogma resting on nothing more than their authority alone.

This situation may be difficult to distinguish and one which does not readily lend itself to the proposed reliability test. The topic of deliberate infant harm has in fact been subject to much scrutiny by the medical profession resulting in a number of detailed research programmes and documented cases that more often than not involve an analysis of family,[22] and in particular, sibling medical history.[23] This has culminated in published books, surveys and articles in peer-reviewed journals.[24] Thus rather than being the unsupported conclusion of

[19]Louis Blom-Cooper & Terence Morris, *With Malice Aforethought* (Hart Publishing 2004) 85.

[20] For example, the non-disclosure of microbiological evidence by Dr Williams at the trial of *Sally Clark*; Also see 'GMC strikes off proponent of temporary brittle bone disease' (2004) 328 BMJ 604. 'Paterson was entitled to his beliefs on temporary brittle bone disease but had failed to apply his own diagnostic criteria consistently.' 'Dr Paterson's evidence was described as "woeful" by the judge'.

[21] Blom-Cooper (n19) 85. This view has also found some support from the court in a later appeal case of *R v Kai-Whitewind* when discussing *R v Cannings.* 'Other reputable experts in the same specialist field took a different view about the inferences, if any, which could or should be drawn. Hence the need for additional cogent evidence.' (2005) 2 Cr App R 31 [480].

[22] Psychiatric assessment of the abuser (usually the mother) 'revealed histories of sexual, physical, or emotional abuse.' M P Samuels, W McClaughlin, R R Jacobson, C F Poets, and D P Southall, 'Fourteen cases of imposed upper airway obstruction' (1992) 67 Arch Dis Child 162, 168.

[23] For example, '[m]any instances are known in which parents have brought about the death of two or more successive babies before the cause was recognised' . *Sudden Unexpected Deaths in Infancy: The CESDI SUDI Studies 1993-1996* (Peter Fleming, Pete Blair, Chris Bacon, Jem Berry (eds), London Stationery Office 2000) 129 quoting from 4 journal articles.

[24] For example, H Schreier & J Libow, in *Hurting for Love – Munchausens by Proxy Syndrome* (The Guildford Press 1993) provides a detailed overview of the syndrome by calling on the experiences of clinicians

experts called to bolster a case for the prosecution[25] this topic has in fact been subject to much research and documentation and the consensus of medical opinion on this matter was in fact noted by the Court in this instance.[26]

Whilst medical research supports the justification that previous infant deaths or Acute Life Threatening Events (ALTE) may indicate evidence of child harm, this must be contrasted to the dangers of relying on pattern or coincidence evidence *alone* in a criminal prosecution. Whilst the legal process bears a burden of proof, a presumption of innocence and a desire for certainty, medical professionals in the field of child protection are duty bound to put the welfare of the child first and to undertake further investigation when suspicion is aroused. This is the origin of the rule that 'One sudden infant death is a tragedy, two is suspicious and three is murder until proved otherwise'- colloquially but incorrectly known as 'Meadow's Law'.[27] It is to this 'law' that the defence initially directed their accusation of dogma.[28] Though often quoted, criticised and now effectively discredited in the courts[29] it does however appear to have found limited support from some members of the statistical community who have calculated that the risk of homicide as the cause of death does in fact increase with each

worldwide. However, it importantly gives an insight into the number of professionals involved and amount of research conducted within this area with the references quoted within this book numbering 445.

[25] Previous studies have tended to indicate that clinicians are generally reluctant to diagnose child abuse without strong indicative evidence. For example, '[o]ur findings suggest that most paediatricians do not make this diagnosis on tenuous evidence but do so only when they feel there is a very high probability of abuse.' R J McClure, P M Davis, S R Meadow and J R Sibert 'Epidemiology of Munchausen syndrome by proxy, non-accidental poisoning, and non-accidental suffocation' Archives of Disease in Childhood 75 57-61 1996 60.

[26] 'Given the overwhelming consensus of medical evidence, it would indeed have been an affront to common sense to treat the deaths of the three children and the ALTEs as isolated incidents, entirely compartmentalised from each other.' *Cannings* (n1) 2611.

[27] Although accredited to Professor Meadow this concept was originally introduced in 1989 by Dominick and Vincent Di Maio in their book *Forensic Pathology* (CRC Press,2nd edn, 2001) 327 as follows: 'It is the general policy of the authors to ascribe the first death in a family presenting as SIDS to SIDS. The second death by the same mother is labelled undetermined and a more intensive investigation of the circumstances surrounding the death is conducted. (…) A third death with the same mother is thought by the authors to be homicide until proved otherwise'.

[28] *Cannings* (n1) 2613.

[29] In both *R v Sally Clark* and *R v Angela Cannings*.

subsequent death.[30] Whilst serving as a 'working rule for (medical professionals) encountering these tragedies'[31] it is important to note that it clearly does not represent a *legal* standard[32] or dictate the cause of death at post mortem without proper investigation - a point made forcibly by the original author of this rule when facing criticism around its application.[33] Furthermore, constant reference to a working rule as a 'law' risks equating it to some quasi-legal standard within the legal process. Indeed, the Court of Appeal were clear that to state that if this 'law' was used as a basis for bringing prosecutions then it was a 'fashion that must now cease'.[34] They were thus critical of the prosecution policy in this specific case rather than of the evidence itself.

Furthermore, accusations of dogma may arise due to the adversarial format of the criminal trial itself. Meadow himself expressed concern about the intense pressure exerted by the judicial system to 'offer certainty when there was manifest uncertainty'[35] caused by the necessary pitting of expert witnesses against each other. Therefore, it must be considered whether the adversarial structure, combined with the sheer number of experts that may be called in any one trial, shares the burden of increasing the occurrence of wrongful verdicts.[36] In addition, this combination proves problematic for the Law Commission to convincingly isolate the unreliability of the expert evidence as the causative agent and may also prevent their enhanced reliability test from exerting any real effect.

The problems created for expert evidence by the criminal trial procedure will receive further attention in chapter 10, and so here it is sufficient to consider that the accusation of

[30] 'Single cot deaths outnumber single murders by about 17 to 1, double cot deaths outnumber double murders by about 9 to 1 and triple cot deaths outnumber triple murders by about 2 to 1. So each successive death does give rise to some slightly increased suspicion (…)'. Ray Hill, 'Reflections on the Cot Death cases' (2005) 2 (1) Significance, 13.

[31] Roy Meadow (ed), *ABC of Child Abuse* (3rd edn, BMJ Publishing Group) 'Fatal Abuse and Smothering', 29.

[32] The defence do not have to prove anything hence why more tangible post-mortem evidence should be required for a prosecution to proceed.

[33] 'Aside from it being bad medicine, I would not make rulings solely on the basis of statistics (…)' Vincent JM Di Maio, 'Repeat Sudden Unexpected Infant Deaths' (2005) 365 The Lancet, 1137.

[34] *Cannings* (n1) 2613

[35] Richard Horton, 'A dismal and dangerous verdict against Roy Meadow' (2005) 366 The Lancet, 277.

[36] A matter that will be returned to in chapter 10.

dogmatism may have arisen as a by-product of this process rather than because of an inherent unreliability in the basis for the expert opinion. It has nevertheless resulted in attaching itself to the reliability of the evidence or behaviour of the expert witness.

Furthermore, it is argued that the issue of dogma was perpetuated by the Court of Appeal who, rather than questioning the *reliability* of the expert evidence as adduced for the prosecution in this case, preferred instead to challenge the *credibility* of Meadow following the successful appeal of *Clark*, and the lingering shadow cast over the CESDI SUDI figures as presented by him at trial. Tainted by the criticisms of his presentation of this evidence, the court in this instance used this to throw doubt on the reliability of his evidence in its entirety and also his standing as an expert witness.[37] This is a particularly pertinent point as Meadow gave no express statement of a statistical probability but rather stood accused of providing it to the jury by implication. His presence as a witness at *Cannings* trial was nonetheless crucial in bringing about this appeal.[38]

3.4: Fresh Evidence

Importantly, the Court of Appeal in *Cannings* recognised that medical knowledge around the area of unexplained infant death was continually advancing such that it cautioned against 'the dangers of dogmatism at a time when our knowledge is limited and incomplete'.[39] However, it is suggested here that this warning must also apply to new evidence adduced for the defence – in this case the data generated from the Care of Next Infant Programme (CONI). This evidence was previously introduced in the discussion regarding the appeal of *Clark*. Since these two appeals the reliability of this data has been questioned and therefore it lends itself

[37] '[N]otwithstanding his pre-eminence, at least part of his evidence in the Sally Clark case was flawed in an important respect. To some extent at least, Professor Meadow's standing as a witness would have been reduced. Therefore the flawed evidence he gave at Sally Clark's trial serves to undermine his high reputation and authority as a witness in the forensic process. It also, and not unimportantly for present purposes, demonstrates not only that in this particular field which we summarise as "cot deaths", even the most distinguished expert can be wrong, but also provides a salutary warning against the possible dangers of an over-dogmatic expert approach' *Cannings* (n1) [17].

[38] It must be remembered that the previous chapter introduced recent research that provides some legitimacy for the CEDSI SUDI statistic at least to a medical if not a legal standard.

[39] *Cannings* (n1) [29].

to accusations of dogma also. By conducting an asymmetrical analysis of the expert evidence within this appeal the Law Commission has been able to isolate the prosecution evidence for blame. This has then enabled them to present *Cannings* as a reference case to support their reform. However, an interrogation of the CONI data undermines their underlying assumption that it is in fact reliable. Importantly, the CONI conclusion that 'a second unexpected infant death within a family is not a rare event and is usually from natural causes'[40] was crucial to the quashing of Canning's conviction on the second grounds of appeal.[41] It has also been central to the defence argument in a number of other high-profile trials or successful appeals of mothers accused of murdering their infants.[42] Furthermore the Court of Appeal had on a previous occasion expressed concern at being compelled to overturn a conviction where the defence was partially based on the CONI data.[43] For this reason the CONI data invites further explanation and scrutiny.

3.4.1: The Care of Next Infant (CONI) Data

The CONI Scheme is a programme designed to support those parents who have already experienced a sudden infant death by providing care and guidance for their subsequent pregnancies and births.[44] Data generated with regard to the outcomes of those enrolled on the scheme has provided the basis for initiating confidential enquiries into the cause of any further infant deaths in an effort to understand the risks of having a subsequent SIDS within a family. It was this data that was referenced in *Clark's* appeal, but it goes directly to the heart of the defence case for *Cannings*. Any discussion regarding the reliability and admission

[40] *Cannings* (n1) [141].

[41] 'We have received significant and persuasive fresh evidence, which was not before the jury (…)' *Cannings* (n1) [175].

[42] Such as *Trupti Patel* and *Donna Anthony.*

[43] *R v Donna Anthony* [2005] EWCA Crim 952: 'Notwithstanding the presence of disturbing features about the appellant's behaviour and her account of events (…)' [97];
'We have been extremely concerned whether following the quashing of the convictions the interests of justice as a whole do not require us to order a new trial (…) and, not without some hesitation, we have decided not to do so' [98].

[44]The Lullaby Trust, 'Care of Next Infant (CONI)' (*The Lullaby Trust)*, <http://www.lullabytrust.org.uk/coniprofessional> accessed 04 January 2017.

of expert evidence into a trial or appeal must be considered at the relevant historical juncture. Therefore, at the time of these appeals, it must be noted that the CONI data had not yet received formal acceptance by the scientific community as it was awaiting publication.

This fact was recognised by the Court[45] but they were willing to accept it into evidence as an indication of how rapidly the knowledge base surrounding SIDS was developing.[46] This is an important point as without publication, peer-review and general acceptance this data could also be vulnerable to the criticism that it is nothing more than 'dogma' in line with that levelled against the prosecution evidence.

Furthermore, since its publication in The Lancet[47] - a well- respected, peer reviewed journal, this data has been subject to fierce criticism and debate within the scientific community. For example, Professor Carpenter was both a lead author on the CONI study and appeared as a defence witness for *Cannings*. Since publication of the CONI data, the issue of competence has been raised with regard to Carpenter's role in analysing the figures.[48] This echoes the criticisms levelled at Meadow in the *Clark* appeal and highlights the difficulty in establishing the level and area of competence that is sufficient for an expert witness in Court.[49] Arguably it is of greater importance to establish the competence of this witness in view of the fact that he was the lead author on the CONI data paper presented in court. This stands in contrast to Meadow who was merely presenting data from independently conducted research by competent professionals.

More importantly however, criticism has been directed at the fact that during the course of the study, and following the death of the well-respected, lead researcher Professor Emery,

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[45] 'Although not yet formally "accepted" we received the study in evidence.' *Cannings* (n1) [23].

[46] 'We cannot avoid the thought that some of the honest views expressed with reasonable confidence in the present case (on both sides of the argument) will have to be revised in years to come, when the fruits of continuing medical research, both here and internationally, become available.' *Cannings* (n1) [22].

[47] R Carpenter, A Waite, R C Coombs, C Daman-Willems, A McKenzie, J Huber and J L Emery, 'Repeat Sudden Unexpected and Unexplained infant deaths: natural or unnatural?' (2005) 365 The Lancet, 29.

[48] 'Carpenter and colleagues, who are epidemiologists and paediatricians, seem not to be disturbed by venturing outside their area of expertise and using dubious data.' Di Maio (n33)

[49] See discussion in *R v Sally Clark* in chapter 2.

some infant deaths were re-categorised from 'unnatural' or of 'indeterminate cause' to 'natural' despite extraneous factors to indicate that this may not necessarily be the case.[50] It has been argued that due to the difficult nature of diagnosing covert homicide in children that such a dichotomous approach to classification is insufficient, being open to researcher bias and thus enabling the overestimation of repeat SIDS deaths.[51] These concerns prompted one leading Paediatrician[52] to conclude that 'the analysis was seriously flawed(…) seriously misleading'[53] and with 'serious consequences for child protection'.[54] Despite requesting that the publishing journal provide a 'detailed review'[55] of the findings thereby opening them up to scrutiny by the medical and statistical communities, it was nevertheless denied. Thus, arguments remain polarised as to the accuracy and reliability of this data. This serves to illustrate the point introduced earlier that accusations of unreliability or dogma could equally attach to expert evidence adduced for the defence. In failing to consider this point the Law Commission have blamed the unreliability of the prosecution evidence instead of appreciating that this is complex area with much debate and disagreement. This in turn undermines their use of this case as an example of unreliable expert evidence perverting the course of justice.

Furthermore, it is must be understood that both the highly contentious CESDI SUDI data adduced by the prosecution in the trial of *Clark* and the CONI data used to support the defence case in these, and other appeals, are the result of 'confidential enquires'. Importantly Emery stated as early as 1993 that '[t]hese enquiries are not designed to produce legal evidence for use in court (…)'[56] As a result of this statement, the criticisms levelled at the

[50] 'Violence in the family, parental mental health problems, preceding ALTES, post mortem findings of asphyxia, abuse of a previous child, open coroners verdict and professional concern about the safety of other children.' Christopher Bacon 'Repeat Sudden Unexpected Infant Deaths' (2005) 365 The Lancet 1137.

[51] *ibid.*

[52] Professor Hall Past President of The Royal College of Paediatrics and Child Health.

[53] Jonathan Gornall, 'Was message of sudden infant death study misleading?' (2006) 333 BMJ 1165.

[54] *ibid.*

[55] Gornall (n53).

[56] Gornall (n53). Although as noted in the previous chapter, some of the initial criticisms levelled at these reports have since been corrected in later years.

admission of the statistical data into the trial process are equally applicable to the evidence adduced for the defence also.

Although it is appreciated that the subsequent criticisms of the CONI data were not available to the court at the time of both the *Clark* and *Cannings* appeals, they were available to the Law Commission at the time of their consultation process. It is reiterated that this thesis is not directly concerned with challenging the verdicts or appellate judgments in these cases. It is however, necessarily concerned that the Law Commission have not taken this opportunity to interrogate the expert evidence within a wider, symmetrical framework to establish the reliability of all the expert arguments in these extremely difficult cases. Neither the conviction of *Clark* nor *Cannings* was overturned specifically due to the unreliability of the prosecution expert evidence. Therefore, there is an inherent danger that the Law Commission have used the quashing of these convictions to guide and garner support for their argument that the reliability of the prosecution expert evidence was to blame for the initial conviction. In stating that both the prosecution and defence evidence should be held to the same standard where the reliability test is applied, the Law Commission further elaborates that there is room for 'legitimate concerns'[57] about the reliability of evidence when defence experts adduce material that 'has not been published in a reputable journal or been peer-reviewed in some other manner'.[58] Yet despite these clear observations they have fallen short in applying their own recommendations in this situation choosing instead to adopt an asymmetrical approach directed solely towards the evidence of the prosecution witnesses and particularly that of Meadow.

This thesis notes the ethical arguments that support a focus on the prosecution evidence and the risk of wrongful convictions as opposed to wrongful acquittals. However, by adopting a narrow focus directed against the prosecution evidence, The Law Commission has missed a valuable opportunity to investigate the reliability of all the crucial expert evidence within

[57] The Law Commission No. 325 (n8) [3.100].

[58] *ibid.*

these appeals attaching instead the label of 'wrongful conviction' too readily in order to support their proposal.[59]

3.4.2: Genetic Evidence

As discussed above, the CONI data represented fresh statistical evidence to again undermine the cogency of the CESDI SUDI probability data. However, it is important to note the central role of other new evidence adduced in this appeal. The presence of a half- sibling who had suffered multiple infant deaths was discovered after Canning's trial. This served to strengthen the possibility of a genetic link for SIDS, as postulated in the appeal of *Clark* earlier. It thereby further undermined the safety of the conviction in this case. However, due to its highly case specific nature this information does not provide an automatic assumption that the medical evidence adduced by the prosecution was unreliable. Rather it provides more evidence pointing away from a prosecution that was brought on little more than disputed medical evidence and coincidence evidence alone. Therefore, the presentation of fresh evidence at appeal illustrates that scientific discovery is continually advancing whether it be in more generic empirical studies or in the case of knowledge regarding individual cases and situations.

3.5: The Coincidence Evidence and Conjoined Trial

Regardless of the potential criticisms of the prosecution evidence or the methodology underpinning the CONI data, the basis for this appeal must be remembered. In short, this seminal judgment held that suspicion on behalf of those involved in child protection is necessary but not sufficient to warrant a prosecution and that a prosecution must not rest on disputed expert opinion evidence alone. Further evidence must be available to support a charge of murder – a task that may prove difficult but must nevertheless form part of the legal process – and one duly noted by the court in their judgment.[60] In complex cases such as this, the required support for a prosecution may take the form of coincidence evidence. A discussion of the potential prejudicial nature of conjoined charges and coincidence evidence;

[59] Why this may have occurred will receive further discussion in Act 3.

[60] '[T]he prosecution of a parent or parents for murder should not be started, or continued, unless there is additional cogent evidence, extraneous to the expert evidence (…)" *Cannings* (n1) [178].

especially that based on the pattern of daily family roles and responsibilities, was undertaken within the context of the *Clark* appeal in the previous chapter. However, two important points arise with the use of this type of evidence in the case against *Cannings*.

Firstly, attention was previously drawn to research indicating that conviction rates increase in trials where charges are conjoined. This research has further demonstrated that this effect is most significant in trials involving *three* charges which 'were either identical or similar'[61] in nature. Although the charges against *Cannings* related to the deaths of two sons, Jason and Matthew, the death of her first child, Gemma, over ten years earlier was included as support for the coincidence evidence[62] and as 'background relevant to subsequent events'.[63] Importantly, the jury were aware from the outset that this death had initially been classed as a SIDS death,[64] but following the deaths of the two boys, *Cannings* was charged with the murder of this child also.[65] The charge however did not proceed to trial presumably because of the time elapsed since the death and the lack of available post-mortem samples for reinvestigation.[66] Despite this fact, it was noted by the Court of Appeal that the death of Gemma assumed a far greater role than mere background to the charges and that it actually 'encapsulated the fundamental basis of the Crown's case (…)'.[67] It is argued here therefore, that the emphasis on this death may have exerted an effect on the minds of the jurors as if it were the third similar charge and thus potentially further increased the chances of conviction on both of the other two charges. Indeed, the straightforward reclassification of Gemma's death retrospectively alone may have prejudiced the jury by implying that *Cannings* had benefited from a doubt at the time of Gemma's death that was now either disproven or no longer warranted.

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[61] Sarah Tanford, Steven Penrod and Rebecca Cotlins 'Decision Making in Joined Criminal Trials: The influence of Charge Similarity, Evidence Similarity and Limiting Instructions' (1985) 9 Law & Hum Behav 333.

[62] Along with evidence of an ALTE in Jade, the surviving child. *Cannings* (n1) [74] - [95].

[63] *Cannings* (n1) [42].

[64] *Cannings* (n1) [42] - [46].

[65] *Cannings* (n1) [4].

[66] *Cannings* (n1) [167].

[67] *Cannings* (n1) [44].

Secondly, in common with statistical data, coincidence evidence also serves to provide a probability of multiple SIDS within a family albeit of a qualitative not quantitative nature; a point duly noted by the defence.[68] The quantitative statistical evidence adduced at the trial of *Clark* has since been heavily criticised, and is thus likely to be the reason why the prosecution refrained from adducing overtly mathematical calculations in the trial of *Cannings*.[69] However, it nonetheless lends itself to robust legal and scientific challenge, by a competent defence, as to the methodology or underlying assumptions and therefore its ultimate reliability as evidence.[70] Coincidence or pattern evidence does not easily lend itself to exposure of this kind and contains the inherent danger of an appeal to 'common-sense' and the view that 'lightning does not strike three times in the same place'.[71] Interestingly there has been a recent recommendation by The National Commission on Forensic Science in the USA that probability evidence should become 'more overtly statistical and quantitative.'[72] Although of increased relevance with regard to analyses of 'pattern, impression or trace evidence'[73] it is recognised that the recommendation applies throughout all areas of forensic science and medicine including establishing causation in cases of child death.[74] This serves to

[68] 'Mr Michael Mansfield submitted that although Professor Meadow did not expressly give statistical evidence, he offered it to the jury by implication'. *Cannings* (n1) [17].

[69] It would appear that the effects of the *Sally Clark* case and the use of base rate probabilities have been felt in other common law jurisdictions leading one Australian academic to conclude that since the successful appeal by *Sally Clark* 'statistical evidence of this sort has routinely been excluded from similar cases'. Emma Cunliffe, *Murder, Medicine and Motherhood* (Hart Publishing 2011) 9.

[70] A process that was sadly lacking in the defence of *Sally Clark*. See previous chapter.

[71] 'There could be no denying that the death of three apparently healthy babies in infancy while in the sole care of their mother was, and remains, very rare, rightly giving rise to suspicion and concern and requiring the most exigent investigation'. *Cannings* (n1) [12]; 'Each of the appellant's four children suffered serious ALTE or death, or both, while small babies. (The Crown) relied on the "pattern of events", suggesting that this "pattern" was reinforced by the fact that all the relevant events, the deaths and the ALTEs, occurred when the baby was in the sole care of the appellant.' *Cannings* (n1) [157].

[72] National Commission On Forensic Science, 'Views of the Commission: Statistical Statements in Forensic Testimony' (2016) justice.gov <www.justice.gov/ncfs/page/file/918446/download> accessed 06 January 2017.

[73] *ibid.*

[74] 'Statistical statements may describe measurement accuracy (…), weight of evidence (…), or the probability or certainty of the conclusions themselves. Such statements occur with many types of forensic evidence. [F]or

illustrate the tension between the admission of statistical probabilities, as in the trial of *Clark* and the subsequent reluctance to adduce this evidence again following her successful appeal. It is clear that opinion regarding the use and format of data such as this is far from settled.

3.6: Conclusion

With doubt hanging as a cloud over both the prosecution and defence data, the trial of *Cannings* reflects primarily an over-zealous prosecution policy based mainly on heavily disputed medical evidence bolstered by circumstantial coincidence evidence in an area where both clinical and legal opinion remain highly controversial. Reasons for this prosecutorial exuberance may possibly be rooted in the political and social climate of the time and as such this will be considered in chapter 5. However, the outcome of this appeal is not wrapped up in issues of reliability *per se* but rather in the now seminal judgment handed down from the Court of Appeal.

Alongside that of *Dallagher*, the cases of *Clark* and *Cannings* are also not convincing examples of the 'tip of a larger iceberg'[75] of wrongful convictions based on unreliable expert evidence. Rather in choosing these two cases, the Law Commission has concentrated their attention on the controversial areas of SIDS or deliberate infant harm with examples that share the common bond of the prosecution expert witness. It is thus posited that the Law Commission have confused the unreliability of expert evidence with that of the expert or their testimony. Whilst a specific problem with an individual witness in a designated field can certainly be useful in developing strategies and policy changes around a specialist area[76] it is questioned whether such a narrow focus should be used as a basis for a generic change in the laws of evidence to encompass all the myriad of forensic and medical evidence.

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example] (…) [c]ause, manner, and time of death (in child abuse).' National Commission on Forensic Science (n72).

[75] The Law Commission CP190 (n17) [2.25] [2.26].

[76] For example, Rt. Hon Stephen Goudge, 'Inquiry into Pediatric Forensic Pathology in Ontario' vol 3 (*Ministry of the Attorney General*, 1 October 2008) <www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html> accessed 28 April 2017.

Without a strong indication that unreliable expert evidence is the causative agent in producing this wrongful verdict then the reliability test is likely to exert little effect on cases such as this in the future. Furthermore, the warning delivered by the Court of Appeal, that a cautionary approach to future prosecutions should be adopted in cases such as this, was immediately adopted into legal practice.[77] This targeted response that goes to the heart of the issue within this case again renders the reliability test as unnecessary theatre.

[77] See *'Archbold Criminal Pleading, Evidence and Practice'* (Richardson P. (Ed), Sweet & Maxwell 2008) [10.67].

Chapter 4: Lorraine Harris

The appeals of *Sally Clark* and *Angela Cannings* both involved expert evidence in relation to unexplained sudden infant death and the last case chosen by the Law Commission continues this theme of infant death at the hands of the mother. However, the case of *Lorraine Harris* centres on expert evidence surrounding another highly controversial area - that of 'Non-Accidental Head Injury'(NAHI).[1] Four conjoined appeals were heard in 2005 to consider the safety of convictions for NAHI dating from 1995 – 2000.[2] Crucial to all four of the convictions was the presentation of expert evidence regarding the 'triad' of pathological findings considered at the time as a strong indicator of this form of child abuse.[3] All four of the trials involved the use of at least some, if not all, of the triad indicators to support the prosecution. These appeals flowed directly from the quashing of *Cannings* conviction the previous year and the finding of the court that 'if the outcome of the trial depends exclusively or almost exclusively on a serious disagreement between distinguished and reputable experts, it will often be unwise, and therefore unsafe, to proceed'. [4]

Therefore, as this chapter progresses it will become apparent that it was not the unreliability of the expert evidence that was central to these appeals. Rather it was the weight that could be attached to the expert opinion especially in the absence of other evidence to support a prosecution. Thus, the final reference case of *Harris* joins with the other actors to point away from the need for an enhanced reliability test and concludes this Act by again undermining support for the Law Commission reform.

4.1: Overview

The Law Commission references the first of these conjoined appeals - that of *Lorraine Harris*, in support of its proposal in what was originally held to be a case of 'shaken baby syndrome

[1] Previously known as 'shaken baby syndrome' it will become evident that this change in nomenclature has significance when assessing the data available to support the diagnosis.

[2] *R v Harris* (2005) EWCA Crim 1980.

[3] Sub-dural haemorrhage, retinal haemorrhage and cerebral encephalopathy.

[4] *R v Angela Cannings* (2004) EWCA Crim 1 [178].

without impact'. Although factually different, this case bore striking similarities to that of *Cannings* regarding the prosecution policy and the legal process at trial.

Firstly, there was no extraneous evidence outside that of the pathological findings to suggest that child abuse had occurred;[5] secondly, there were a number of expert witnesses called for both the crown and the defence with strong and differing opinions[6] and finally, described by the court as a 'common thread running through these appeals,'[7] there was the presentation of fresh evidence due to developments within medical research since the original convictions. As a result of this new evidence the conviction of *Harris* was held to be unsafe and was subsequently quashed.[8]

As the presence of the triad of symptoms was critical to the charge and subsequent conviction of *Harris* it is necessary to consider the developmental history of 'Shaken Baby Syndrome' and the surrounding debate and disagreement. The gives texture to the argument that this area of child protection has long been subject to diverse expert opinion that will continue to stimulate scientific research and debate well into the future. This contentious environment creates difficult decisions for the judiciary with regard to the reliability of the evidence proffered. However, as this chapter progresses it will become apparent that this case shares some features that are common across the chosen reference cases not least the heavy reliance on expert evidence to bring about a prosecution. This reflects more on the charging policy at the time rather than an inherent unreliability within the evidence itself. It thus builds on the previous cases to support the argument of this thesis that an enhanced reliability test is an inappropriate response that would do little to assist in the examples chosen by the Law Commission.

[5] The appellate judgment clearly states that there was an absence of any bruising or fractures that would be associated with an impact injury and that there was no other evidence to suggest that *Harris* was anything other than 'a caring and careful mother'. Therefore, the expert evidence and the weight attached to the diagnostic value of the triad of injuries stood alone. *Harris* (n2) [150].

[6] 4 for the Crown and 3 for the defence.

[7] *Harris* (n2) [3].

[8] *Harris* (n2) [153].

4.2: Shaken Baby Syndrome

The concept of 'Shaken Baby Syndrome' was not a new or novel theory at the time of the trial of *Harris*. Its origins lay in the work of Henry Kempe in 1962 and his seminal paper on 'The Battered Child Syndrome'.[9] Since this time the syndrome has not only attracted much research and associated controversy but has also undergone a number of changes in nomenclature. This has been in an effort to more accurately describe the injury mechanisms involved and to reduce the prejudicial effect of certain terminology.[10] As a result of its long history and the publication of many influential articles during this time the syndrome has received judicial acceptance both here and in other jurisdictions for a number of years.[11]
It is important thus to recognise the long history of this syndrome before considering legal assessments of reliability. Despite some claims that 'shaken baby syndrome' does not exist at all,[12] it nevertheless has roots in decades of clinical observation with some incidences supported by direct observation or admission of shaking.[13]

To date the indications are that there is a consensus between experts that brain injury causing death can occur in the absence of external bruising, fractures or obvious evidence of impact.

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[9] Edward J Imwinkelried, 'Shaken Baby Syndrome: A Genuine Battle of the Scientific (And Non-Scientific) Experts' (2009) UC Davis Legal Studies Research Paper Series No.194 [IB] <https://pdfs.semanticscholar.org/5ea7/e52a0201a2b10d824858a2856f409562b970.pdf> accessed 20 April 2017.

[10] For example, these include: Shaken Impact Syndrome; Inflicted Childhood Neurotrauma; Abusive Head Trauma; Non-Accidental Head Injury; Whiplash Shaken Infant Syndrome. See Imwinkelreid (n9).

[11] Clare Dyer, 'Diagnosis of shaken baby syndrome still valid, appeal court rules' (2005) 331 BMJ 253. *State v. Compton*, 304 N J Super 477 (1997) [485] 'It is clear, as well, that the condition has been adequately analyzed and recognized in medical research and literature.' The Court then proceeded to list a number of influential articles regarding shaken baby syndrome.

[12] 'No middle ground emerges over whether the condition exists. But some experts have begun to doubt it.' Allen G Breed, 'Shaken Baby Syndrome is questioned' *LA Times* (Los Angeles, 20 May 2007) <http://articles.latimes.com/2007/may/20/news/adna-shaken20> accessed 19 March 2021;
'We need to reconsider the diagnostic criteria, if not the existence of shaken baby syndrome'. J Geddes and J Plunkett, 'The Evidence Base for Shaken Baby Syndrome' (2004) 328 BMJ 719.

[13] 'Nevertheless, in his 1972 and 1974 articles Dr. Caffey collected more than 30 documented cases in which there was no evidence of an impact but either the custodian admitted or an eyewitness observed shaking.' Imwinkelreid (n9) [IIIB].

They further agree that the force required to produce this brain injury is probably substantial. There is however, disagreement as to the minimum force necessary and whether shaking alone can induce this injury in the child. There is also debate as to whether some if not all of the triad of pathological findings can be attributed to some innocent accident such as a fall.[14] Thus, the issue in trials such as that of *Harris* hangs on whether the triad of symptoms in the absence of other evidence is diagnostic rather than indicative of shaken baby syndrome.

The central premise of the Law Commission argument was that at the time of *Harris's* conviction 'the diagnosis of a violent assault was predicated on empirical research comprising only a small, poor-quality database'.[15] They base their conclusion on a literature search published in 2003 that reviewed the quality of evidence supporting a diagnosis of shaken baby syndrome and its subsequent finding that the wealth of literature underpinning this syndrome rested on inconclusive or inadequate research.[16]

Despite the Law Commission reliance on this paper, the findings flowing from it are themselves subject to certain limitations. Firstly, the purpose of the review was to rank the quality of published research based on the 'tenets and practices'[17] of evidence-based medicine (EBM). However, this methodology has been held to be inappropriate for assessing medical evidence where 'investigation follows rather than precedes (the) outcome and the

[14] Apart from the arguments raised at appeal, overviews of these points can also be found in the following; The Royal College of Paediatrics and Child Health and The Royal College of Ophthalmologists, 'Abusive Head Trauma and the Eye in Infancy' (*RCOPHTH,* 2013) rcophth.ac.uk <www.rcophth.ac.uk/wp-content/uploads/2014/12/2013-SCI-292-ABUSIVE-HEAD-TRAUMA-AND-THE-EYE-FINAL-at-June-2013.pdf> accessed 03 June 2019; and articles published by The Royal College of Pathologists London on 'Shaken Baby and Sudden Infant Death Syndromes' (2009) <http://shakenbabyandsuddeninfantdeath.blogspot.com/2011/01/sbs-report-of-meeting-on-pathology-of.html> accessed 03 June 2019.

[15] The Law Commission, *The Admissibility of Expert Evidence In Criminal Proceedings In England And Wales A New Approach to the Determination of Evidentiary Reliability* (Law Com No 190, 2009) [2.24].

[16]Mark Donohue, 'Evidence-based Medicine and Shaken Baby Syndrome: Part 1: Literature Review 1966-1998' (2003) 24 Am J Forensic Med Pathol 239.

[17] Donohue (n16) 239.

history may be incomplete or deliberately missing'.[18] This particular study also received criticism for using narrow search criteria that ultimately served to exclude 'a number of qualified studies'. [19]

Secondly, because of the increasing acceptance of EBM by the end of the 1990's, this review was to be conducted in two parts with 1999 acting as the cut-off.[20] Part II however was never published[21] consequently the paper quoted by the Law Commission reviewed only research between 1966 and 1999. Whilst this evidence maybe pertinent to the trial of *Harris* it is nevertheless considering research from over 40 years prior to the Law Commission proposal. Therefore, this data would have reflected the reliability standards of that time in an area that was both controversial and developing. It thus has limited pertinence for future cases or for lending support for the introduction of a more stringent legal reliability assessment. In the absence of the Part II publication, a recent, wider literature search conducted by the Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU)[22] appears to support these earlier Part I findings. The SBU research concluded that there was limited scientific knowledge to support the triad as being *diagnostic* of SBS as other differential diagnoses were capable of producing the same symptoms.[23] Therefore, it is 'problematic for medical professionals to establish with certainty that certain specific injuries in infants are automatically evidence that they were caused by shaking'.[24] However, within two years of the

[18] Brian Harding, R Anthony Risdon & Henry F Krous, 'Shaken Baby Syndrome; Pathological diagnosis rests on the combined triad, not on individual injuries' (2004) 328 BMJ 720.

[19] The only search term used was 'Shaken Baby Syndrome' thus excluding any research that may have classified the condition using different nomenclature.

'The evidence for Shaken Baby Syndrome; Response to editorial from 106 Doctors' (2004) 328 BMJ 1316.

[20] Donohue (n16).

[21] Personal e-mail communication with the author confirmed that the second research paper was never concluded.

[22] Swedish Agency for Health Technology Assessment and Assessment of Social Services, *'Traumatic shaking: The role of the triad in medical investigations of suspected traumatic shaking. A systematic review'* (2016) SBU No.255e.

[23] 'The SBU report shows that there is scientific evidence – albeit limited – for the idea that the triad may be caused by shaking, but that there are other illnesses and events that can cause the triad or its constituent parts.' *ibid* 66.

[24] SBU (n22) 67.

SBU publication there have been calls for either its withdrawal from circulation or for further international scrutiny of the findings as it is alleged that its flawed methodology may put children's lives at risk.[25] It is apparent that even to this day, the cogency of the symptoms in the diagnosis of NAHI continues to divide professionals and stimulate fierce debate. Thus, the uncertainty surrounding this topic is the only thing that remains certain. In using this appeal as a reference case to support their proposal, The Law Commission has ultimately translated this scientific uncertainty into an example of legal unreliability.[26] It has thus entered the fray with a discrete legal solution via the means of a more stringent test for admissibility. Furthermore, without consulting the trial transcripts themselves, the Law Commission are left with only the relatively undetailed appellate judgment, the limitations of which will be discussed in chapter 8. The use of this document alone gives no indication as to the strength of the cross-examination of the witnesses or whether the approach of the prosecution led the expert into areas of certainty that were not warranted by the evidence.

Nevertheless, on closer inspection, it becomes apparent that the Law Commission understand that potentially unfounded claims of certainty lie at the heart of the *Harris* trial rather than the admission of flawed expert evidence.[27] They thus support that the triad may still be used in evidence when associated with 'sufficiently cogent circumstantial evidence of the accused's guilt (such as separate injuries consistent with abuse)'.[28] By accepting that the

[25] 'Abusive head trauma and the triad: a critique on behalf of RCPCH of "Traumatic shaking: the role of the triad in medical investigations of suspected traumatic shaking"'. G D Debelle, S Maguire & P Watts, 'On behalf of the Child Protection Standing Committee, Royal College of Paediatrics and Child Health' (2018) 103 Arch Dis Child 606.

[26] Alongside the disagreement between experts as to the weight of the pathological findings, chapter 10 will consider whether the nature of the adversarial system may encourage overstatement and partisanship and thus this may also be a contributing factor in giving the evidence more weight than it deserved.

[27] 'The judge would no doubt have ruled that the expert opinion evidence in support of the prosecution assertion of a non-accidental injury could not be admitted unless the experts concerned were willing to modify or qualify their opinions to reflect the uncertainties associated with the hypothesis and the quality of the research supporting it.' The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011) [5.69].

[28] *ibid* 132 f/n 46. This was indeed the case in the conjoined appeal of Alan Cherry against his conviction for manslaughter. In this case the conviction was upheld, despite weaker pathological findings, because of the presence of other injuries suggestive of abuse.

pathological findings *can* be admitted into trial, so long as it is within a framework of other evidence in support of NAHI, is in direct conflict to the claim that the triad is in fact untrustworthy or unreliable. Rather this reflects the concern that a prosecution policy relying so heavily on expert evidence is effectively requiring medical professionals to make out the legal charge alone. This being the case, the prosecution process as a whole, across all of the reference cases chosen by the Law Commission, must shoulder some of the blame for these potential wrongful convictions.

4.3: **The Fresh Evidence**

As scientific knowledge advances there is always the inherent risk that conventional theories may be undermined or falsified. This issue is appreciated by the courts,[29] the Crown Prosecution Service (CPS)[30] and also by the Law Commission in their final report.[31]
Since the original trial of *Harris,* Dr Geddes, a neuropathologist, published the findings of her further research in a series of three papers,[32] with the last challenging the wisdom that only trauma could cause the triad of symptoms. This was known as the 'Unified hypothesis'.[33]

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[29] 'As knowledge increases, today's orthodoxy may become tomorrow's outdated learning.' *R. v Holdsworth (Suzanne)* (2008) WL 1867253 [57].

[30] 'The central issue leading to *Lorraine Harris's* conviction being quashed was new scientific evidence coming to light since her trial'. CPS Press Release, 'Crown Prosecution Service response to Judgments in Four Appeals involving Shaken Baby Syndrome Issues' (*The National Archives,* 2005) <http://webarchive.nationalarchives.gov.uk/20091112160519/http://www.cps.gov.uk/news/press_releases/137_05/> accessed 25 April 2017.

[31] '[W]e referred to the case of *Harris and others* where new evidence undermined the medical view of a number of experts (…).' The Law Commission No.325 (n27) [5.64];
'Fresh evidence suggested that multiple cot (SIDS) deaths in the same family could have an underlying genetic cause.' The Law Commission No.325 (n27) [8.21].

[32] J F Geddes, A K Hackshaw, G H Vowles, C D Nickols and H L Whitwell, 'Neuropathology of Inflicted head Injury in Children (I). Patterns of Brain Damage' (2001) 124 Brain 1290;
J F Geddes, G H Vowles, A K Hackshaw, C D Nickols, I S Scott and H L Whitwell 'Neuropathology of Inflicted head Injury in Children (II). Microscopic Brain Injury in Infants' (2001) 124 Brain 1299.

[33] J F Geddes R C Tasker, A K Hackshaw, C D Nickols, G G W Adams, H L Whitwell and I Scheimberg, 'Dural haemorrhage in non-traumatic infant deaths: does it explain the bleeding in ''shaken baby syndrome''?' (2003) 29 (1) Neuropathol Appl Neurobiol 14.

As this hypothesis undermined the diagnostic value of the clinical findings to support the prosecution it was of importance in the appeal of Harris. However, early in the course of the appeals process this paper and its findings were retracted by the author who described its publication as nothing more than a hypothesis put forward to stimulate medical debate and not to be proven in Court.[34] Despite this admission the court recognised that the appeals still concentrated on the medical issues raised within this paper and allowed them to proceed.[35] Therefore the expert opinion underpinning the challenge to the diagnostic value of the triad and thus going directly to the heart of the appeal[36] had, as a result of fierce criticism,[37] been effectively retracted by its author.

Furthermore, Dr Squier, a neuropathologist, having originally written a report favourable to the prosecution at the trial of *Harris*, had now revised her opinion in light of the discredited unified hypothesis of Dr Geddes. Consequently, she appeared for the defence at appeal stating that there was now 'no incontrovertible evidence of trauma'.[38] Despite the retraction of the hypothesis and 'the weight of evidence disputing her opinions'[39], the court was nevertheless unwilling to reject Squier's evidence in its entirety. [40] In light of these changing and conflicting opinions it is unlikely that a further judicial admissibility assessment could add anything more to the effective application of the common law principles without encroaching on the role of the jury or usurping expert opinion. Aside from the medical research, there was also data presented at the appeal of *Harris* that had resulted from biomechanical studies.[41] This data was also concerned with undermining the cogency of the pathological findings. However, it was not presented by the defence for *Harris* at trial. At her appeal the opinion of

[34] *Harris* (n2) [58].

[35] *Harris* (n2) [59].

[36] *Harris* (n2) [56].

[37] For example; J Punt and others, 'The 'unified hypothesis' of Geddes et al. is not supported by the data.' (2004) Paediatr Rehabil 7(3):173.

[38] *Harris* (n2) [113].

[39] *Harris* (n2) [145].

[40] *Harris* (n2) [145].

[41] *Harris* (n2) [84]-[94].

Dr Thibault was adduced for the defence, however his seminal work[42] co-authored with Dr Duhaime, was in fact published many years prior to the trial date.[43]

There was also reference to the work of Dr Ommaya which represented a fundamental piece of research carried out over thirty years prior to the trial.[44] This raises a question as to the quality of the defence offered to carers who find themselves charged with serious child abuse allegations based on little more than medical opinion alone. This failure in the legal process is, equally open to the charge of causing an unsafe verdict as is that of the perceived unreliability of the expert evidence. To provide an efficient and robust defence to charges based heavily on expert evidence requires knowledge of the types and cogency of the information available. Defence teams need to know when it is necessary to instruct an expert to provide the required 'contrary evidence' thereby ensuring the proper workings of the trial process. Equally the medical and scientific fields must inform the law of the evidence available and the boundaries to the certainty that can be attached to the claims. An enhanced judicial test for admissibility will do nothing to plug this void in the defence strategy or knowledge base nor corral unjustified levels of certainty encouraged by the partisan adversarial nature of the criminal trial. It thus becomes a prop within the reliability theatre that will ultimately prove an ineffective means of correcting erroneous verdicts in cases such as *Harris*. Furthermore, it serves to deflect attention away from the claim made throughout the analyses of the last three reference cases, that expert evidence used to implicate a defendant in the death of a child is often complex, controversial and therefore complicated to defend.

4.4: The Need for Research

Although the disagreement between expert opinions with regard to NAHI appears far from being settled at this time there is however, almost universal agreement amongst those within the medical and scientific community that there must be robust and continuing research

[42] 'The work is regarded as a reference article and has served as the basis of many other experiments and the method has been further developed.' SBU (n22) 59.

[43] A C Duhaime, T A Gennarelli, L E Thibault, D A Bruce, S S Margulies and R Wiser, 'The shaken baby syndrome. A clinical, pathological and biomechanical study' (1987) Mar 66 J Neurosurg 409.

[44] A K Ommaya, F Faas & P Yarnell, 'Whiplash Injury and Brain Damage: An Experimental Study' (1968) 204 J Am Med Assoc 285.

conducted around this area.[45] The Law Commission also acknowledges the *need* for the prosecution to rely on 'properly conducted research showing a sound correlation between the intra-cranial injuries and a non-accidental cause (from independent evidence) and the absence of such injuries where there have been accidents or congenital conditions'.[46]

However, robust research in this area is fraught with difficulty. Whilst alleged cases of NAHI may have associated findings that raise suspicion[47] or are strongly indicative of abuse or impact,[48] the real problem centres on those cases that rest on the triad of pathological finds alone. In these instances there will be a desire to find either other extraneous, non-medical evidence[49] or to conduct blinded, large and age-controlled studies that would provide data to support a shaking diagnosis[50] Apart from the obvious reason that shaking babies to observe the effects is ethically abhorrent and legally forbidden, there are however, limitations that either greatly inhibit the ability to conduct robust research in this area or that serve to cause further dispute. For example, cases of potential NAHI are mercifully rare with quoted incidence rates in the region of around 24 per 100,000 live births.[51] This relatively low

[45] 'There is therefore an urgent need for research into the pathophysiology and the natural course of subdural and retinal hemorrhages.' SBU (n22) 34;
'There was consensus that the only way in which disagreements discussed at the meeting would be resolved was by undertaking systematic research.' Royal College of Pathologists (RCP), 'Report of a meeting on the pathology of traumatic head injury in children' (2009) <http://shakenbabyandsuddeninfantdeath.blogspot.com/2011/01/sbs-report-of-meeting-on-pathology-of.html> accessed 23 March 2020;
'There is an urgent need for close collaboration between physicians and biomechanicians to objectively and scientifically evaluate infant head injuries to further define their mechanical bases, and to assist in their diagnosis and treatment.' W Goldsmith & W Plunkett, 'A Biomechanical Analysis of the Causes of Traumatic Brain Injury in Infants and Children' (2004) 25 Am J For Med and Path, 2, 89.

[46] The Law Commission No.325 (n27) [8.28].

[47] Royal College of Paediatrics and Child Health, 'Sudden unexpected death in infancy and childhood Multi-agency guidelines for care and investigation' (2nd edn, RC Path November 2016) appendix 2.

[48] Bruising, fractures or abrasions.

[49] Such as confession evidence or eyewitness accounts.

[50] SBU (n22) 35.

[51] This figure relates to children under 1 year of age: this age group most frequently presents with the relevant pathology.

frequency thus makes large studies difficult and will require both national and international collaboration.[52] Regulatory changes affecting the satisfaction of ethical requirements prior to publication of observational studies and the introduction of legislation that requires the consent of the parent (who may then risk prosecution) to release tissue samples for examination have also impeded research in this area.[53] As a result the observational, medical opinion evidence for the prosecution is then pitted against the empirical biomechanical data for the defence in a battle for supremacy. Unfortunately, there are also problems inherent in the biomechanical studies that are recognised by the scientific community and the Law Commission alike.[54] Therefore the reliability of the results generated from the key, reference study utilised by the defence have since been called into question.[55] All this thwarts the call of the Law Commission for 'properly conducted research' giving rise to 'a sound correlation'

Anthony Busuttil and Jean Keeling, *Paediatric Forensic Medicine & Pathology* (CRC Press, 2nd edn, 2008) 283.
C Hobbs, A-M Childs, J Wynne, J Livingston and A Seal,
'Subdural haematoma and effusion in infancy: an epidemiological study' (2005) 90 Arch Dis Child 952.

[52] 'In order to improve diagnosis within the field, broad coordination at international level is required to ensure a study population of adequate size' SBU (n22) 34.

[53] For example, the 'poor drafting of the Human Tissue Act 2004' RCP (n45).

[54] 'A perfect biofidelic model of an infant does not exist and hence forces that are required to produce ocular injury calculated on current models will be imprecise'. The Royal College of Ophthalmologists, 'Abusive Head Trauma and the Eye in Infancy' (*RCOPHTH,* June 2013 <www.rcophth.ac.uk/wp-content/uploads/2014/12/2013-SCI-292-ABUSIVE-HEAD-TRAUMA-AND-THE-EYE-FINAL-at-June-2013.pdf> accessed 03 June 2019;
'Some specialists, medical and non-medical, in Child Abuse and NAHI cases believe that evidence of bio mechanical studies should not be part of the complex investigation and prosecution of such cases. One straightforward problem is that the dummies do not replicate the particular human structures that are central to the "triad of injuries"' The Crown Prosecution Service, 'Non-Accidental Head Injury Cases (NAHI, formerly referred to as Shaken Baby Syndrome [SBS]) - Prosecution Approach' (*CPS,* 2018) <www.cps.gov.uk/legal-guidance/non-accidental-head-injury-cases-nahi-formerly-referred-shaken-baby-syndrome-sbs> accessed 30 June 2019;
'[T]here are difficulties associated with biomechanical models'. The Law Commission No.325 (n27) 76 f/n 67.

[55] 'There must now be sufficient doubt in the reliability of the Duhaime et al. (1987) biomechanical study to warrant the exclusion of such testimony (that pure shaking cannot cause fatal head injuries in an infant) in cases of suspected shaken baby syndrome.' C Z Cory and B M Jones, 'Can shaking alone cause fatal brain injury? A biomechanical assessment of the Duhaime shaken baby syndrome model'
(2003) 43 Med Sci Law 43 317.

between the triad of pathological findings and abuse. It must be accepted that there may never be the conclusive research findings necessary to satiate the certainty so desired by the legal process and that the enhanced reliability test will add nothing of value in trying to clarify accidental from non-accidental injury in this difficult area.

4.5: Admissibility of SBS Evidence in a *Daubert* jurisdiction

The seminal case of *Daubert v Merill Dow Pharmaceuticals Inc*[56] *(Daubert)* provides the admissibility standard for expert evidence for virtually all jurisdictions in the USA today and it is upon this test that the Law Commission based their calls for reform. At this point it is useful to observe how this tension between the expert evidence was dealt with by a Court of Appeal in a *Daubert* jurisdiction which occurred between the quashing of *Harris's* conviction and the Law Commission consultation.[57] This appeal was initiated by the state of Kentucky in response to a *Daubert* hearing that had been tasked with resolving the conflict between the medical opinion evidence[58] and scientific biomechanical data. The lower court found the triad of pathological findings to be inadmissible due to the insufficiency of supporting studies and a lack of scientific methodology.[59] The Court of Appeal approached this matter by considering several legal precedents with regard to the gatekeeping function of the judge. Quoting directly from the *Daubert* judgment the court held that 'vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence'[60] – a quote also partially reproduced by the Law Commission in their consultation document.[61]

[56] 509 US 579 (1993).

[57] *Commonwealth of Kentucky v. Raymond Martin, Commonwealth of Kentucky v. Christopher A Davis* 2006-CA-002236-MR, 2006-CA-002237-MR (13 June2008).

[58] This was the presence of the triad of pathological findings in the absence of any other indicators of abuse.

[59] 'The existence and maintenance of standards controlling the study of SBS [Shaken Baby Syndrome] certainly exists. However, not all of the studies have observed the scientific method in reaching conclusions. In fact the most damning studies supporting SBS are the ones that failed to follow the scientific method' *Martin* (n57) [68].

[60] *Martin* (n57) [68].

[61] The Law Commission CP190 (n15) [6.50].

Importantly however, the Court of Appeal then went on to warn about the danger of 'conflat[ing] the questions of the *admissibility* of expert testimony and the *weight* appropriately to be accorded such testimony by a fact finder'[62] whilst stating that they had confidence in the jury to 'hear similar conflicting expert testimony and weigh it accordingly'.[63] They concluded that the *Daubert* test was designed to prevent '"pseudoscientific" expert scientific testimony that would confuse or mislead the jury, or that cannot legitimately be challenged in a courtroom'[64] from entering the trial process. As the medical evidence could not be described as 'pseudoscientific or junk science', despite its obvious flaws, it was held as admissible and that criminal proceedings should be initiated.[65]

It is important to note that a judicial focus on the 'scientific method' as adopted by the court of first instance in this case, must be approached with caution as there is no consensus on this matter - a point that was duly recognised in the appellate judgment. [66] This is particularly true for testimony that is derived from experience and knowledge rather than empirical testing such as in cases of SBS or SIDS. As the concept of 'sound scientific methodology'[67] is central to the Law Commission reform, this matter will receive further attention in chapter 10. Although the Law Commission may not agree with or wish to follow judgments such as this, an overview of the points raised and a rebuttal as to their reasoning would have been welcome. This is especially so in view of the fact that these jurisdictions have already been applying a formal admissibility test for some time and the Law Commission are quick to dismiss criticisms as to its effectiveness in the criminal trial process.[68] The Law Commission

[62] *Martin* (n57) [68] (emphasis added).

[63] *Martin* (n57) [69].

[64] *Martin* (n57) [67].

[65] *Martin* (n57) [67].

[66] 'It is unreasonable to conclude that clinical studies and trials are inherently unreliable (and hence inadmissible) because they cannot and do not follow a particular methodology'. *Martin* (n57).

[67] The Law Commission No.325 (n27) [3.41].

[68] The Law Commission CP190 (n15) [4.52]–[4.85].

expressly endorses the introduction of a '*Daubert*-style reliability test'[69] and suggest that this would have prevented the 'triad' evidence from being adduced at the trial of *Harris*.[70]

However, a reference cited within the Law Commission Report in support of their argument[71] actually states that application of the *Daubert* test rarely excludes the triad of pathological findings from trials even in cases where it is unsupported by further cogent evidence.[72] Therefore, this conflict of opinion as to the effectiveness of a *Daubert*-style test is firmly embedded within the Law Commission proposal. If there is no clear consensus or evidence base to support the introduction of a similar process within our courts then the thrust of their reform is immediately undermined.

4.5: Conclusion

This final case in the quartet of those chosen by the Law Commission embodies the theme initiated within this Act and that will be developed over the following chapters. Namely that the Law Commission has both failed to demonstrate that the risk of unreliable expert evidence caused the wrongful convictions within the reference cases and provide any support that a more stringent admissibility standard would affect a different outcome. The expert disagreement and controversy surrounding the topic of NAHI defines this whole, complex area of evidence. Doubt has also been expressed as to the reliability of the evidence in

[69] The Law Commission CP190 (n15) [5.2].

[70] 'If our proposed admissibility test had been in force at the time when the prosecution was seeking to rely on the triad of intracranial injuries as proof of a non-accidental head injury, and the prosecution's expert opinion evidence had been challenged (…) it is highly unlikely that the judge would have allowed the prosecution to advance a case at trial founded solely on expert opinion evidence that the deceased or injured infant exhibited the triad of intra-cranial injuries associated with shaken baby syndrome'.
The Law Commission CP190 (n15) [5.67].

[71] D Tuerkheimer, 'The Next Innocence Project: Shaken Baby Syndrome and the Criminal Courts' (2009) 87 (1) Wash U L Rev 1.
See The Law Commission CP190 (n15) 76 f/n 65 & 131 f/n 42.

[72] 'Defense motions to exclude expert testimony regarding SBS have, almost without exception, proven unsuccessful (…) Even recently, and in cases involving triad symptoms alone, courts in both *Daubert* and *Frye* jurisdictions have rejected arguments that SBS is not generally accepted in the medical community and that it is not based on reliable scientific methods'. Tuerkheimer (n71) 32.

confirmed cases of NAHI within the literature that are based on confession or eyewitness testimony.[73] Thus it is evident that this area is far from settled within the medical community. This chapter has attempted to draw attention to the arguments surrounding the quality and methodology used by published, peer-reviewed papers dealing specifically with this subject on both sides of the argument. With these obstacles in mind there is little that the law can do to answer the reliability questions that so allude the scientific community. These answers must emanate from the medical and scientific fields who in turn can inform the criminal justice system as to the agreed boundaries of the evidential value thereby correctly placing the scientific horse before the legal cart. It is also apparent that neither the Law Commission nor the Court of Appeal consider the triad as unreliable pseudo-science based on unfounded belief or lacking scientific validity.

Even in the face of fresh scientific data the Court agreed that they remained indicative if not diagnostic of the shaking of an infant and that the dispute lay with the amount of shaking force required to induce these injuries.[74]Rather these institutions are concerned with the reliance placed on this evidence in the absence of any other supporting evidence of a crime having been committed.[75] This is not a direct function of the court but rather lies with the police and the Crown Prosecution Service charging policy. These have subsequently

[73] Strong opposition to the reliability of using confession evidence as a basis for medical research is found in the opinion of Dr John Plunkett – an expert called for *Harris* at appeal.
'Plunkett scoffs: "What is the No. 2 cause of wrongful convictions? False confessions. (...) You don't base scientific conclusions on what people confess to"'. Allen G Breed, 'Shaken Baby Syndrome is questioned' *LA Times* (Los Angeles, 20 May 2007) <http://articles.latimes.com/2007/may/20/news/adna-shaken20> accessed 31 March 2017.

[74] 'This leads on to a very important issue which arises in these appeals and will no doubt arise in many cases where the triad of injuries are present. It is the question of how much force is necessary to cause those injuries.' *Harris* (n2) [76]

[75] '[H]owever, a conviction would have been possible – as it is today – on the basis of the triad of intra-cranial injuries in association with other sufficiently cogent circumstantial evidence of the accused's guilt (such as separate injuries consistent with abuse)'. The Law Commission No.325 (n27) 77(5);
'[T]he mere presence of the triad on its own cannot automatically or necessarily lead to a diagnosis of NAHI.' The Law Commission No.325 (n27) [152].

undergone revision since *Harris's* appeal and thus these important changes will receive further attention in the next chapter.

Furthermore, the scientific community also responded to the issues raised within these exemplar cases at the time producing information that has helped to inform the scope and appropriate use of the expert evidence and to clarify areas that remain disputed. These important reports and reviews will also receive attention in the following chapter. *Harris* stands alongside the other reference cases in illustrating that prosecutorial enthusiasm must be curbed in highly disputed areas of medical evidence that stand alone and boundaries as to the certainty of their findings must be delineated by the experts and enforced by the legal process. Thus, the application of a more stringent test for the judicial assessment of reliability is a naïve and inappropriate suggestion for finding the answers within highly contentious scientific or medical evidential debates.

It has further been postulated by some that expert witnesses have at times become 'scapegoats' for wrongful convictions especially in those cases involving sudden infant death.[76] Having concluded the analyses of the Law Commission reference cases it is hoped that this has begun to illustrate the multi-faceted nature of the influences that may affect a jury verdict. Whilst it is appreciated that some expert testimony may have been too certain or overstated there is no convincing evidence to suggest that the opinions were based on foundationally unreliable science. These examples therefore do not deserve to attract the moniker of pseudo-science with the associated curative action of a more stringent judicial admissibility test. Furthermore, defence evidence adduced at appeal was frequently capable of attracting criticism and yet this was not considered by the Law Commission. Rather their

[76] For example: Graham Jackson, 'Expert abuse syndrome: the scapegoating of Roy Meadow' (2005) 59 Int J Clin Prac 1121.

Richard Horton, 'A dismal and dangerous verdict against Roy Meadow' (2005) 366 The Lancet, 277.

The Law Commission, 'Expert Evidence Consultation Responses' (Law Commission, 2011) <www.lawcom.gov.uk/wp-content/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 27 January 2017.

'[I]t is unhelpful and unconstructive simply to blame the experts because a number of failings can contribute to a miscarriage of justice (…)' [1.29]

'Dr David Murray is critical of our criticism of Professor Meadow (…)' [1.33].

asymmetrical analytical methodology focused solely on the prosecution evidence. This allowed the perceived reliability of the defence evidence to be unconditionally accepted thereby allowing it to be elevated above that adduced for the prosecution.

Consequently, this emphasised the need for intervention whilst errors in prosecution policy were disguised. It is thus concluded that the Law Commission proposal represents both the populist approach of witness blaming and a missed opportunity to fully investigate and reassess the underlying reasons for these miscarriages of justice. As a result, it also misses the opportunity to explore issues of jury understanding of complex evidence and to rectify the procedures within the adversarial system that may contribute to an overreliance on the expert evidence, leading to expressions of unwarranted certainty.

As this final example again involves complex medical evidence relating to child abuse it further serves to solidify the claim that the reference cases chosen provide an unrepresentative example on which to base a generic reliability test for all expert evidence. Therefore, as the curtain falls on this first Act it has been illustrated that there is little evidence so far to bolster the claims of the Law Commission that unreliable expert evidence is entering the trial process. Within this evidential vacuum, the actual driving force behind their risk response strategy remains hidden and unappreciated. Remaining firmly situated within this void, the following chapters will begin to expose that the covert influence could in fact be the 'outrage' factor as described by Sandman. Consequently there is nothing to distract from the assertion within this thesis that the introduction of the reform will be a 'reliability theatre'.

Act 2: The Scene Change

It can be seen from Act 1 that the reference cases chosen by the Law Commission to support their reform primarily reflect two areas of expert evidence – that of ear-print identification and infant harm. They are thus not representative across the forensic or expert evidence spectrum. Within this small cluster of reference cases it became apparent that there was a heavy reliance on the expert evidence in the absence of other cogent proof which may have drawn the experts into claims of unwarranted certainty with regard to their testimony. As such the Law Commission have failed to convincingly demonstrate that it was unreliable evidence that sat at the heart of these convictions being declared unsafe. Rather it was the unreliability of the expert in overstating the boundaries of their evidence that was causing concern. The failure to appreciate the difference between these two concepts was further compounded by the brief, asymmetrical analyses undertaken by the Law Commission. These allowed the prosecution evidence to be removed from the overall context of the trial thereby isolating it for blame. Consequently, these cases did not convincingly illustrate that it was flawed judicial assessments of sufficient reliability that were culpable for the convictions being declared as unsafe upon appeal.

Following on from these analyses, this second Act will seek to interrogate the influences and changes that preceded the Law Commission proposal thereby providing a backdrop for the reform. The first of these chapters will initially consider how the political climate at the time may have encouraged the prosecutions of *Sally Clark*, *Angela Cannings* and *Lorraine Harris.* An increasing emphasis on identifying and reacting to cases of perceived deliberate infant harm may have encouraged the heavy reliance on expert evidence in the face of little other proof of a crime even having been committed at all. Thus, it must be considered whether this situation was responsible, at least in part, for the unwarranted certainty within the expert testimony. This first chapter will then progress to consider what reports, reviews and changes were introduced to legal procedure, scientific development and prosecution policy prior to the Law Commission consultation. These are important to consider as the responses were more appropriate for and targeted to the issues highlighted by the Court of Appeal. Therefore, their introduction lends support to the central argument of this thesis that the Law Commission reform was an unnecessary distraction for a justice system that had already

responded to the challenges raised by these high-profile appeals. Subsequently the enhanced reliability test will become nothing more than theatre, especially in cases factually similar to those crucial in justifying the reform. At this point the reader will be introduced to the Government report from the House of Commons Science and Technology Committee that was fundamental in instigating the Law Commission proposal. This is an important document because it was to the recommendations contained within it that the Law Commission mounted their response. However, this chapter will argue that these recommendations were ultimately misinterpreted by the Law Commission and that the call for cross-disciplinary dialogue was missed. Consequently, the law has attempted to answer scientific questions with a purely legal response thereby placing their cart before the scientific horse. As a result, this document is the foundation for the arguments developed throughout the remaining two Acts of this thesis.

The second chapter of this Act will focus on the specific forensic technique of Low Copy Number DNA profiling (LCN). Whilst the LCN methodology did not receive any express censure within the Law Commission proposal, the findings emanating from a review into the science underpinning this technique nevertheless deserve some deeper consideration. As introduced previously the use of LCN evidence stimulated a response from the common law with the beginnings of a sufficiently reliable standard becoming evident alongside the Law Commission reform. Furthermore, the review conducted after the suspension of LCN from use within the criminal justice system was concluded in 2008. It is thus chronologically relevant, sitting between the HCSTC report and the Law Commission consultation. However, it illustrates that the HCSTC call for a unified approach to resolving issues within forensic science had already been ignored prior to the Law Commission proposal. This failure in dialogue between the fields of science and law had thus been a feature of previous attempts to resolve reliability issues within expert evidence. Consequently, this review failed to attach the scientific horse to the legal cart resulting in these two disciplines remaining adrift.

Chapter 5: The Backdrop

5.1: The Prosecutorial Environment

As discussed preciously in Act 1, three of the reference cases chosen by the Law Commission in support of their proposal concerned the death of young children. These are without doubt shocking and tragic events and never more so than when a parent or carer stands accused of causing their demise. Arguably cultural norms dictate that the emotive nature of these cases is further enhanced when it is the mother herself that is incriminated.[1] Cases such as these have previously been labelled as inducing a prejudicial effect against the defendant that can be difficult to overcome thereby effectively reversing the burden of proof.[2] As the convictions of *Sally Clark*, *Lorraine Harris* and *Angela Cannings* occurred in 1999, 2000 and 2002 respectively, they therefore represent a chronological 'cluster' of trials which needs exploring further within their historical context. It must be clarified that this is a brief overview and as such is not intended as an in-depth social study into the construction of these crimes which would be outside the boundaries of my thesis. Furthermore, despite garnering significant attention it nevertheless remains an area that has divided academic opinion .[3] It is purely to

[1] 'Mothers who kill their own children present an even more troubling challenge to cultural ideals concerning femininity.' 'Women (…) symbolise the nurturant safety of the home'. Heather Leigh Stangle, 'Murderous Madonna: femininity, violence and the myth of post-partum mental disorder in cases of maternal infanticide and filicide' (2008) 50 Wm & Mary L Rev 699, 707.

[2] For example, those lawyers actively involved in the trial and appeal of *Angela Cannings* drew attention to the 'prejudice faced by women defending themselves against charges of killing their babies' and the monumental task they face in effectively having to prove their innocence. 'Oliver Lewis interview with Bill Bache: We Can Afford Justice!' (2014)82 The London Advocate 6 (*Oliver Lewis,* 2014) <https://oliverlewisinfo.wordpress.com/2014/07/01/bill-bache-interview-angela-cannings-experts-and-legal-aid/> accessed 18 May 2018;
Michael Mansfield QC, *Memoirs of a Radical Lawyer* (Bloomsbury 2009) 49.

[3] For example, '[g]endered knowledges about motherhood inform the process of allocating criminal responsibility in subtle ways'. Emma Cunliffe, *Murder, Medicine and Motherhood* (Hart Publishing 2011) 194; '[P]rofessionals need to be acutely aware of the way in which such societal contexts influence the decisions that will be taken when a mother is suspected of intentionally causing harm to her child." F Raitt & M Zeedyk 'Mothers on Trial: Discourses of Cot Death and Munchausen's Syndrome by Proxy' (2004) 12 Feminist Legal Studies 257, 277;

provide some texture to the social climate at the time that may have encouraged prosecutions against these women that were grounded so heavily in disputed expert evidence with little else to support their guilt.

The starting point for this discussion is 1997 when political power in the UK was transferred to the Labour Party. One of their key manifesto declarations was to be 'Tough on Crime and Tough on the Causes of Crime'. Since described as 'authoritarian (and) punitive,'[4] this policy stimulated a swathe of legislation and reform[5] and importantly initiated the restructuring of the Crown Prosecution Service so that it could 'convict more criminals'.[6]

It has since been internationally recognised that around this time there was also a discernible shift occurring in both professional and public opinion towards women whose babies suffered an unexpected death; moving from a position of sympathetic understanding to punitive suspicion.[7] Against this social change both here and abroad it is understandable that a diagnosis of SIDs was increasingly considered as protecting women from being exposed as the ruthless murderers of their offspring.[8]

However, Stangle (n1) 733 argues that '[t]he denial of female aggression points to the troubling possibility that preserving myths of female passivity has become more important than protecting children and disciplining those women who commit heinous crimes'.

[4] A Sanders, 'What was New Labour thinking? New Labour's approach to criminal justice' in 'Lessons for the Coalition: an end of term report on New Labour and criminal justice' (2011) Centre for Crime and Justice Studies (Arianna Silvestri (ed)) at 12 <www.crimeandjustice.org.uk/sites/crimeandjustice.org.uk/files/end%20of%20term%20report.pdf> accessed 11 October 2020.

[5] For example, The Crime and Disorder Act 1998, expansion of the anti-terrorism laws, increased police stop and search powers, and increasing minimum tariffs for murder (Criminal Justice Act 2003).

[6] New Labour Party, 'New Labour because Britain deserves better' (*Archive of Labour Party manifestos,* 1997) <http://www.labour-party.org.uk/manifestos/1997/1997-labour-manifesto.shtml> accessed 11 October 2020.

[7] See Emma Cunliffe, *Murder, Medicine and Motherhood* (Hart Publishing 2011) at 11-12 for a very comprehensive list of published works relating to this change in public and legal opinion.

[8] *ibid*.

Specifically, in the UK throughout the 1990s, there was 'increasing recognition'[9] of a controversial syndrome known as Munchausen Syndrome by Proxy (MSBP)[10]. This complex type of child abuse is described as where illness is either fabricated or induced in a child,[11] usually by a parent, but most frequently by the mother.[12] Documented cases show that it has many clinical and psychiatric presentations but includes suffocation, seizures, bleeding, irritability and unconsciousness.[13] In the early part of this decade there was some dispute by medical professionals as to whether the condition actually existed at all and if so, then as to its prevalence.[14] However, towards the end of the 1990s, there began to be genuine concern as to the 'controversial and unprecedented frequency'[15] with which it was being diagnosed by a key researcher in this area. It has thus been claimed that this relaxation of the diagnostic

[9] Roy Meadow (ed), *ABC of Child Abuse* (3rd edn, BMJ Publishing Group 1997) 47

B Yaacob, 'Munchausen Syndrome by Proxy' (1999) 6, 2 Malays J Med Sci 30.

[10] See H Schreier & J Libow, *Hurting for Love: Munchausen by Proxy* (Guildford Press 1993) chapter 1 for an overview of the origins and development of interest and research in this syndrome.

[11] It is unnecessary to elaborate further on psychology or causes of this condition for the purposes of this thesis other than to say that it stems from the 'mother's intense need to be in a relationship with doctors and/or hospitals.' *ibid* 13.

[12] Schreier & Libow (n10). 'This phenomenon is strikingly more common in mothers than fathers (…)' at 7; '95% of parents (directly involved) are mothers (…)' 7 f/n 7.

[13] These are particularly relevant to the first three reference cases but see Appendix A in *Hurting for Love: Munchausen by Proxy* for a list of approximately 100 clinical features of MSBP.

[14] 'If MSBP exists, which is less than certain, it remains (in the stated view of its supporters) a rare condition. It has no particular significance and no significant application'. 'Both Dr Meadow and Dr Southall initially regarded MSBP as a rare complaint requiring sophisticated diagnostic skills'.

B Clark, ' The Consensus Report: Misdirection of Social Policy: Assessing Ordinary Parents as Abusers, Assessing Ordinary Children as Victims' (*Family Law Reform,* 2005), 4 and 14

<www.fixcas.com/scholar/consensus.pdf> accessed 18 February 2019;

'A two year survey of MSBP in the UK suggested that the annual incidence for children under age 1 is at least 3 per 100,000'. Meadow (n9) 47;

'Our review of the literature and a survey of paediatric subspecialists undertaken for this book suggested that MSBP is not an uncommon disorder, although even many people who have written about the syndrome portray it as rare'. Schreier & Libow (n10) 62.

[15] Clark (n14)

criteria for MSBP allowed for the increased targeting of parents, commonly when they were merely seeking medical help for their child, and the labelling of them as 'abusive'.[16]

Against this backdrop of shifting professional opinion towards the culpability of the mother, it is not difficult to appreciate that MSBP would have been brought into direct conflict with claims of SIDS or accidental head injury[17] at around this time. This increasingly voracious appetite for diagnosis would then feed the criminal justice system with prosecutions bearing little extraneous evidence to support the accusation. Certainly, the last three reference cases chosen by the Law Commission expose the fact that any uncertainty surrounding the pathological findings in an infant death were given little credence in a prosecution policy that progressed these cases to trial with, at best, highly circumstantial coincidence or pattern evidence.

This eagerness to instigate a prosecution inadvertently received Government support via the publication of guidelines which aimed to put 'the child's safety and welfare as the primary focus of all professional activity (…)'[18] These guidelines, finally published in 2002 following a Working Party Consultation, clearly stated that '[a]ny suspected case of fabricated or induced illness may also involve the commission of a crime'[19] and the Police should *always* be involved as early as possible after suspicion is aroused.[20] Whilst aimed primarily at the processes needed to identify and protect those children who survive fabricated illness by a parent or carer, the report nevertheless dealt briefly with those cases that resulted in a fatal outcome, quoting statistics from research conducted at both a domestic and international level. For example, the guidelines drew attention to the fact that a study had shown that 12 per cent of children who had died as a result of abuse had a sibling who died previously and that 4 per

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[16] *ibid.*

[17] 'The "Shaken Baby Syndrome" is an offshoot of MSBP towards the harder end of the spectrum.'
Clark (n15) 12.

[18] Department of Health, 'Safeguarding Children in Whom Illness is Fabricated or Induced' (*The National Archives,* August 2002) [1.4]
<https://webarchive.nationalarchives.gov.uk/ukgwa/20100415170931/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4008714 > accessed 17 January 2017.

[19] *ibid* [4.84].

[20] DOH (n18) [4.85].

cent of these earlier mortalities were originally attributed to SIDS.[21] It concluded by saying that:

> [p]reviously reported physical abuse of siblings is common in this group of children and previous abuse may have included the fabrication or induction of illness. A child may be considered to be at risk of *significant harm* because of abuse inflicted on siblings, or the death of siblings due to abuse.[22]

It is evident therefore, that a policy such as this could directly influence the decision to prosecute these mothers who had suffered severe emergencies or death in more than one infant.

However, both the Working Party consultation and the guidelines flowing from it have been subject to intense criticism, being charged with misdirecting social policy.[23] This was due to a failure to implement the underlying objective of 'assist[ing] in the correct identification'[24] of MSBP thereby targeting only those individuals where suspicion was genuinely warranted. Unfortunately, the effect was exactly the opposite lending credence to the lowering of the diagnostic threshold with its associated increasing frequency of allegations of abuse. Consequently, the guidelines were accused of 'launch[ing] the mistake that they were intended to prevent'.[25]

Subsequently, Ministers from the Department of Education and Skills (DfES) and Department of Constitutional Affairs (DCA) described this Government intervention as 'the root of a social disaster'[26], responsible for 'an extensive catalogue of miscarriages of justice'[27] between 2001 and 2005[28], that were 'indefensible for medical, legal, social and intellectual failings.'[29] Although it is noted that the prosecutions of *Clark, Harris* and *Cannings* occurred just prior to

[21] DOH (n18) [2.15].

[22] *ibid* (emphasis added)

[23]Clark (n14).

[24] Clark (n14) 15.

[25] Clark (n14) 9.

[26] Clark (n14) 5.

[27] Clark (n14) 11.

[28] This timeframe includes the successful appeals of *Sally Clark, Angela Cannings and Lorraine Harris*.

[29] Clark (n14).

the official guidelines being published, these guidelines nevertheless act as the final indicator of the pro-MSBP environment in existence at the end of the 1990s and the underlying tacit government support that it received.[30] Spearheaded by the Department of Health, the Working Party consultation process represented a valuable opportunity to both interrogate the reliability of the research and also to delineate the certainty attaching itself to the diagnostic findings. However, this opportunity was missed as there were only two medically qualified personnel within the Working Party composition of nine people.[31] Furthermore, only one of these had medical knowledge relevant to the task in hand.[32] The issue of ensuring that interrogations of expert evidence are initially conducted by the relevant field of expertise has plagued attempts to establish the reliability and weight of the evidence under review; a point that will again be raised in the next chapter. It is therefore unreasonable to expect the judiciary to be able to understand and correct the failings of both Government and medicine whilst swimming against a tide of enthusiastic prosecutions.[33] Even the enhanced form of the reliability test would do little to stem the flow against such a Government backed social movement. In fact, as illustrated in earlier chapters, the Law Commission proposal clearly indicates that their concern lies with bringing a prosecution based on expert evidence *alone* rather than on its reliability when placed within a wider evidential framework.

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[30] Interestingly, just prior to the Court of Appeal verdict in *R v Cannings,* the then Minister of Children, Margaret Hodge effectively distanced the Government from its own report stating that '[t]he whole issue is a crucial one *of whether (Munchausen by proxy) is a proper diagnosis*' (emphasis added). Melissa Kite, 'We can't reunite thousands of mothers with children wrongly taken from them' *The Telegraph* (London, 18 January 2004) 1.

[31] Clark (n14) 23.

[32] *ibid.*

[33] The solicitor involved in the trials of both *Sally Clark* and *Angela Cannings* duly noted that '[t]hese sorts of cases (induced or fabricated illness) seem to come in and out of fashion'. Oliver Lewis interview with Bill Bache 'We Can Afford Justice!' (2014)82 The London Advocate 6 (*Oliver Lewis,* 2014) <https://oliverlewisinfo.wordpress.com/2014/07/01/bill-bache-interview-angela-cannings-experts-and-legal-aid/> accessed 18 May 2018.

The Law Commission have therefore placed the legal cart before the scientific horse in believing that the laws of evidence alone could solve the concerns surrounding the expert evidence in these three reference cases when they could equally have been the product of a 'distorted social and family policy'[34] resulting in a 'systemic injustice.'[35] This issue of a 'systems failure' is important to the Law Commission proposal as it was a crucial finding of the HCSTC report that will be discussed later in this chapter. Also, when viewed within the wider framework of the criminal trial it became apparent within Act 1 that the causative agent for the verdicts was difficult to isolate due to the complex interactions occurring within this process. As the complexity of this system presents an obstacle to the development of a successful risk response strategy it will be discussed in more depth in chapter 8.

In view of their factual similarity and their temporal position, the last three reference cases represent a 'cluster' reflecting the prosecution policy of the time, with expert evidence provided by Meadow in the first two. Alongside the 'domino effect' of their appeals these cases indicate the potential problems for bringing prosecutions in this difficult and contentious area. They do not fairly represent a general problem of unreliable expert evidence pervading the criminal justice system via a laissez-fare admissibility regime. Therefore, the cogency of the expert evidence, or indeed the behaviour of a specific witness, required a targeted and specific approach. Instead an enhanced reliability test was introduced that is both too narrow, in that it ignores the other potential problems associated with child abuse cases; and too wide, in that it attempts to absorb these specific problems into a wider reliability framework.

Following these successful appeals there was a genuine interest by both the Government and professionals in the medical and legal fields to try and fully understand the reasons behind these miscarriages of justice. To this end a number of reports, reviews and policy changes were undertaken which will be considered next within this chapter. Whilst it is outside the scope of this thesis to analyse this information in depth, these documents however are worthy of some attention as they represent the wide reaching and thorough investigations that were carried out as result of the concern felt after these three appeals. Importantly their

[34] Clark (n14) 4.

[35] Clark (n14) 2.

conclusions, as discussed below, were available to the Law Commission prior to their consultation process with their findings tending to contrast to the very narrow focus adopted by the Law Commission. They thus throw further doubt on whether these cases truly represent clear examples of the pivotal role of the expert evidence in these verdicts. They thereby diminish support for the idea that the reliability of evidence should receive specific attention in order to address these unsafe convictions.

5.2: The FearID Project

The successful appeal of *Mark Dallagher* triggered a large international research collaboration, funded by the European Union, known as the Forensic Ear Identification Project (FearID).[36] Running between 2002 and 2005, the main aim of this project was 'to solidify the scientific basis'[37] for 'the individualisation of an ear-print to a person'.[38] This was achieved by drawing on knowledge and research from various disciplines,[39] institutions and countries.[40] It is important to first appreciate that this project was conducted prior to the Law Commission consultation yet its findings do not feature within their proposal.

Crucially, this project was not concerned with issues of uniqueness regarding ear structure[41] as it was recognised that this focus may encourage unwarranted certainty from expert testimony. This effect was key to the appeal of *Dallagher* and subsequently to the Law Commission reform. The absence of any reference to this important project therefore is a serious omission especially considering that it had already received judicial recognition within

[36] I Alberink & A Ruifrok, 'Performance of the FearID earprint identification system' (2007) 166 Forensic Science International 145.

[37] *ibid.*

[38] 'Forensic Ear Identification Research 'Project aim' (*Artform,* 2004) <http://artform.hud.ac.uk/projects/fearid/fearid.htm?PHPSESSID%20=%209c4fd025eec23ee10262d9e226ff73d0> accessed 20 March 2019.

[39] Human anatomy, biometrics, image processing, statistics and pattern recognition.

[40] 'Forensic Ear Identification (FearID) project was (…) divided over nine institutes, including police academies, universities, the Netherlands Forensic Institute and two commercial partners, in Italy, the Netherlands and the UK.' Alberink & Ruifrok (n36) 145.

[41] 'From a statistical point of view, this notion is fundamentally unprovable and hence meaningless'. Alberink & Ruifrok (n36) 145.

the Court of Appeal.[42] In rejecting notions of uniqueness, the aim of this project was to take information available from ear prints in order to devise a system for comparing prints and giving the strength of the match as a probability assessment.[43] It was tasked, amongst other things, with standardising procedures for collecting and recording the print evidence, understanding the stability and variability of ear prints, constructing databases, providing statistical analyses of ear print features and designing the appropriate metrics for print identification.[44] Rather than relying on generic judicial assessments (incorrectly centred on ideas of uniqueness) this scientific approach represented a far more appropriate response as a means of assessing what conclusions could be drawn from the evidence in the future.[45]

Thus, the scientific horse has been correctly placed before the legal cart with the highly complex information generated from this project illustrating the inadequacy of a judicial solution to the perceived deficiencies in the methodology.[46] Furthermore, the use of ear prints as a biometric identification system has continued to gain momentum in the security field and is now considered by some in this area as one of the 'best solutions to access any secured property'.[47] Therefore the potent use of this parameter as an identification system is juxtaposed to the Law Commission stance that it is a fundamentally unreliable method for

[42] See *R v Kempster [*2003] EWCA Crim 3555.

[43] Alberink & Ruifrok (n36) 145.

[44] FearID (n38).

[45] Whilst any meaningful analysis of the results and conclusions from this study are both unnecessary for, and outside the boundaries of, this thesis it is nevertheless sufficient to note that the use of ear-prints as evidence has a been shown to provide useful assistance to the criminal justice system. See the papers referenced within this section for an overview of some of the findings.

[46] For example, see Alberink & Ruifrok (n36). Also:
Lynn Meijerman, Sarah Sholl, Francesca De Conti, Marta Giacon, Cor van der Lugt, Andrea Drusini, Peter Vanezis and George Maat 'Exploratory Study on Classification and Individualisation of ear prints' (2004) 140 For Sci Int 1, 91;
Hartmut Kieckhoefer, Martin Ingleby and Gary Lucas,
'The physical formation of ear-prints: optical and pressure mapping evidence'
<http://artform.hud.ac.uk/projects/fearid/rd/WP2_report2.pdf> accessed 26 March 2019.

[47] Ramesh Kumar Panneerselvam, Kl Sailaja and Shaik Mehatab Begum, 'Human Identification Based on Ear Image Contour and Its Properties' in *Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 (ISMAC-CVB)* (D Pandian et al (ed), Springer 2018) 1527.

this purpose. Avoiding any consideration of the findings from this large study has allowed the Law Commission to continue to promote the idea that ear-print evidence is fundamentally unreliable. Instead it is apparent from both the case analysis and the findings of the FearID project that it is the certainty attaching to the expert *testimony* that is of concern. It is thus important to recognise that in failing to incorporate this information within their reform agenda the Law Commission has fallen into the trap of confusing unreliable expert *evidence* with that of unreliable expert *opinion*.

When considered within the specific facts of a case this falls within the common law test of probative value versus prejudicial effect thereby negating the need for a validity-based enhanced reliability test.[48]

5.3: The Kennedy Report

This thesis now returns to the lessons learned, changes made, and investigations undertaken as a result of the successful appeals in the last three reference cases. The first major step was the publication of a report in September 2004 after the successful appeal of Angela Cannings.[49] This report recorded the findings of a Working Group drawn from members of the Royal College of Paediatrics and Child Health, the Royal College of Pathology and other agencies involved in child protection.[50] It was chaired by a leading QC Baroness Helena Kennedy hence why it is known colloquially as 'The Kennedy Report'. This working group therefore represented an important inter-disciplinary conversation around this difficult

[48] See *R v Kempster*. Although quashing the conviction, they nevertheless held that '[w]e have no doubt that evidence of those experienced in comparing ear-prints is capable of being relevant and admissible. The question in each case will be whether it is probative'.

The Law Commission, *The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com CP190, 2009) 11 f/n 14.

[49] The Royal College of Pathologists (RCP) and The Royal College of Paediatrics and Child Health, 'Sudden Unexpected Death in Infancy: A Multi-Agency Protocol for Care and Investigation. Chaired by Baroness Helena Kennedy QC' (RC Path 2004) <www.sudiscotland.org.uk/wp-content/uploads/2015/06/The_Kennedy_Report_2004.pdf>
accessed 12 January 2019.

[50] *ibid* at 1. 'The Working Group has included not only a number of paediatricians and pathologists, it has also had the benefit of experience from a number of Government departments, a Director of Social Services, a coroner, two very senior police officers and a member of the Foundation for the Study of Infant Deaths'.

subject thereby attempting to couple the legal cart to the scientific horse. The importance of communication between the fields of science and law was later recognised by Parliament in the HCSTC report that receives attention later in this chapter. Furthermore, the Kennedy Report stands in contrast to subsequent attempts to define the legal limits of expert evidence. For example, the Caddy review discussed in the next chapter, and the Law Commission reform under review within this thesis both represented discrete attempts to solve the issues surrounding the evidential value of expert evidence by the scientific and legal disciplines respectively. Thus, they each provided only one side of the debate thereby lacking a coherent response towards this cross-disciplinary issue.

The coherent, holistic approach of the working party encouraged open debate as to 'how systems and procedures might be improved'.[51] It also recognised that 'a compulsory national protocol for the investigation of a sudden unexpected death in infancy (was) now vital'.[52] This comprehensive report therefore understood that the whole system - from the discovery of a deceased infant to a potential court case - was in need of reform and standardisation. This would enable provision of a 'framework for a compassionate, professional investigation of such deaths'.[53] Whilst at first it may appear as if the Kennedy report and that of the Law Commission reflect different aims it is important to recognise that they are both responses to the issues raised within the cases of *Clark* and *Cannings.* Subsequently they are directly concerned with the need to increase both the reliability of the expert evidence and that of the resulting opinion.

As such, central to the Kennedy report, was the recognition of the need to eliminate any inherent prejudice against the parent[54] and ensure that a full and detailed post-mortem, performed by a paediatric pathologist, resulted in 'all the proper examinations [being] conducted'.[55] This flowed from the recognition by The Court of Appeal that a well conducted,

[51] RCP (n49) 1.

[52] RCP (n49) 2.

[53] RCP (n49) 2.

[54] For example, as to the cause of death the report felt that ""unascertained" has now come to have a stigma attached to it, suggesting the death was suspicious.' RCP (n49) 10. This term was used repeatedly throughout the trial of *Sally Clark* and *Angela Cannings*.

[55] RCP (n49) 4.

detailed and reliable post-mortem provides the foundation for any discussion regarding potential criminal charges. It also necessarily informs the opinions of the experts as to the cause of death.[56] Thorough and detailed post-mortems are especially important in an area as difficult and complex as the sudden and unexpected death of an infant.[57] Indeed the Kennedy Report felt that it was *essential* for standardised protocols and clear guidance to be issued for medical professionals to reduce conflict and uncertainty.[58] This point goes directly to the heart of the Law Commission proposal as in both the appeals of *Clark* and *Cannings* the quality of the post-mortem procedures were brought into question.[59] Expert evidence can only be as reliable as the information available to support an opinion.

Therefore, when this information is poor or incomplete conflict and disagreement will abound that will not be solved by recourse to judicial reliability assessments alone. It is then worth considering whether the presence of more robust post-mortem procedures would have reduced the conflicting expert opinions thus rendering the need for an enhanced reliability

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[56] See *R v Sally Clark* (2003) EWCA Crim 1020 [18]: 'The initial post mortem is critical to any conclusion as to the cause of death';

'[T]he case hinged on the reliability of Dr Williams, the pathologist who carried out the post mortems.'
R v Sally Clark 2000 WL 1421196 [10].

[57] The sheer quantity of experts called at the trials of the women in the reference cases bears testimony to the complexity and conflicting nature of the expert evidence. The trial of Sally Clark involved 9 experts for the Crown and 5 for the defence [Louis Blom-Cooper & Terence Morris, *With Malice Aforethought* (Hart Publishing 2004) 75;

Angela Cannings had 16 experts called for the defence alone 'Oliver Lewis interview with Bill Bache 'We Can Afford Justice!' (2014) 82 The London Advocate 6 *(Oliver Lewis,* 2014) <www.lccsa.org.uk/wp-content/uploads/2014/07/London-Advocate-issue-82.pdf> accessed 18 May 2017];
and the trial of *Lorraine Harris* had 4 experts called for the Crown and 3 for the defence [(2005) EWCA Crim 1980 [13]-[14]].

[58] RCP (n49) 4.

[59] 'Professor Berry expressed the view that the post mortem examination whilst it may have been "done in the way that many forensic post mortems are undertaken", was not sufficiently thorough "to document possible injuries that might indicate a pattern of care of the child"'. *R v Sally Clark* (2004) EWCA Crim 1020 at [62];

"He was extremely concerned at the paucity of information about these children, without, as far as we can see, criticising those responsible for the post mortems carried out on Gemma, Jason and Matthew." *R v Angela Cannings* (2004) EWCA Crim 1 [2615].

test unnecessary. Indeed, this is an example of where the scientific community has taken the lead in attempting to increase the reliability of the evidence whilst maintaining a dialogue with the legal field. This means that the law is not left alone to wrestle with the problems of unreliable expert opinions or try to resolve instances of unwarranted certainty detached from any scientific input. Although the Kennedy Report considered specifically the role of the expert witness within the legal process, it chose to focus mainly on issues arising from the adversarial system such as competence,[60] potential bias[61] and unjustified certainty.[62] These issues are central to the reference cases analysed in Act 1 as they directly influence the reliability of expert evidence. As such they will returned to in chapter 10.

The report did however note the potential role of the expert witness and the quality of their evidence in miscarriages of justice.[63] However, this did not form the main focus of the subsequently developed protocol. As a result, it only touched briefly on the problems associated with the foundational unreliability of expert evidence[64] and the gatekeeping function of the judiciary.[65] However the report refrained from listing factors to guide this decision other than those generally developed via the common law. Therefore, there was no recommendation for the introduction of an enhanced reliability test. Rather the Kennedy Report represents a holistic, systemic, foundational approach to investigating infant deaths in these circumstances. It thus laid the basis for robust procedures to enhance the reliability

[60] 'Lawyers often try to press the professional expert to expand their testimony into areas where they have no expertise and he or she can end up expressing a hunch with alarming certainty' RCP (n49) 5.

[61]'[T]he expert witness should constantly remind himself or herself that they are independent and not there to win for a side (…) Those regularly involved with child abuse can find it hard to be dispassionate and indeed sometimes become hawkish' RCP (n49) 4.

[62] 'There is also the temptation, particularly in the very adversarial arena of the criminal courts, to be pushed into certainties where there are none' RCP (n49) 4.

[63] 'Unfortunately, doctors are occasionally drawn into error because they base their testimony on medical belief rather than scientific evidence' RCP (n49) 4.

[64] 'It is also important that the courtroom is not a place used by doctors to fly their personal kites or push a theory from the far end of the medical spectrum' RCP (n49) 5.

[65] '[Judges] should ensure that courts are not used to push a theory with an insufficient scientific base' RCP (n49) 8.

of the expert evidence instead of relying on the legal process to evaluate the evidence alone within this highly complex area and in the absence of standardisation or quality control.

5.4: The Attorney General's Review 2004

Alongside the Kennedy Report a review of criminal cases that 'potentially involved sudden infant death syndrome' was initiated by the Attorney General in 2004.[66] 297 cases were identified with 28 felt to raise a legitimate concern about the medical evidence adduced at trial - 3 of these being comparable to the *Angela Cannings* case.[67] As a result of these investigations, 6 cases were referred to the Criminal Cases Review Commission (CCRC) who decided subsequently that only 2 should be further referred onto the Court of Appeal.[68] Two parallel reviews of cases from the Family Court produced similar results.[69]

Whilst the Law Commission chose the cases of *Sally Clark* and *Angela Cannings* to support their claim that the reference cases represented the 'tip of a larger iceberg'[70] of wrongful convictions caused by unreliable evidence, the review by the Attorney General does not necessarily support this premise with regard to potential misdiagnosed SIDS deaths. This indicates that the hazard of wrongful convictions based on unreliable expert evidence in these situations has not been clearly isolated or assessed by the Law Commission prior to their reform proposal. This is an important first step in any risk response strategy and thus it will be dealt with in Act 3 of this thesis. The results of the Attorney General's review indicate that in fact the common law is working effectively, if not perfectly, even in the face of malign influences such as bias and unjustified certainty in these circumstances. As such, the enhanced reliability test is an unnecessary and inappropriate reform which sits in contrast to the recommendations contained within the Kennedy Report as discussed above.

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[66] HC Deb vol 416 column 1215 (20 January 2004).

[67] HL Deb vol 667 column 1657 (21 December 2004).

[68] Jonathan Gornall, 'Standing Up for Justice' (2007) 334 BMJ 1139, 1141.

[69] 34,042 cases reviewed; 5 involved serious disagreement between medical experts in view of the *R v Cannings* appeal; care plan unchanged in 3; 1 care plan changed in light of new evidence received; 1 awaiting further consideration of medical evidence by the court.
HC Deb vol 426 column 1294W (16 November 2004).

[70] The Law Commission CP190 (n48) [2.26].

5.6: The House of Commons Science and Technology Committee Report

Following closely behind the Kennedy Report and the case review by the Attorney General, came the House of Commons Science and Technology Committee Report (HCSTC) entitled 'Forensic Science on Trial'.[71] In a similar vein to the Kennedy Report above, this document was also influenced by the successful appeals of *Sally Clark* and *Angela Cannings* although its initial motivation was different, and its remit was wider.[72] As the Law Commission proposal was in direct response to this report it therefore represents important scenery in front of which their reform was played out.

Concerns regarding the inappropriate use or misinterpretation of forensic evidence were not new. In a similar vein to the House of Lords report a decade earlier[73] the HCSTC report recognised that blame for these miscarriages of justice did not rest solely in the hands of the expert witness.[74] However, in contrast to the earlier report they stopped short of concluding that the errors identified were firmly rooted in the past.[75] Whilst the earlier report concerned itself primarily with remedying the image problem associated with forensic science at the time,[76] 'Forensic Science on Trial' closed by expressing extreme concern as to the 'lack of safeguards to prevent such miscarriages of justice from happening (…)'[77] and the apparent

[71] HCSTC, 'Forensic Science on Trial Seventh Report of Session 2004–05' (HC 96-ii, 2005) <www.publications.parliament.uk/pa/cm200405/cmselect/cmsctech/96/96i.pdf> accessed 28 April 2017.

[72] 'Our aim was to investigate the likely impact of the Government plan to develop the Forensic Science Service as a public-private partnership on the competitiveness of the FSS and on the effective provision of forensic science services to the criminal justice system'. HCSTC (n71) 5.

[73] House of Lords Select Committee on Science and Technology, 'Fifth Report' (1993).

[74] '[S]ome of the blame for what went wrong belongs to the wider criminal justice system.' *ibid* 14;
'These cases represent a systems failure.' HCSTC (n71) [54].

[75] '[W]hatever may have been the case in the 1970s, the quality of public forensic science services in the United Kingdom today is high and rising.' House of Lords Select Committee on Science and Technology (n73) [1.31];
'Our witnesses point to (…) an assurance that the scientific mistakes of the 1970s *could not* be repeated.' (emphasis added) House of Lords Select Committee on Science and Technology (n73) [1.31].

[76] 'However, it is clear to us that forensic science has an image problem. We hope that this report will help to establish the true picture'. House of Lords Select Committee on Science and Technology (n73) [1.33].

[77] HCSTC (n71) [189].

failure of the criminal justice system to keep pace with the increasing use and complexity of forensic science evidence.[78] As a result the report put forward *a* 'number of recommendations (that they believed) could improve the quality and treatment of expert evidence and decrease the potential for miscarriages of justice due to flawed expert evidence.'[79] It was this acknowledgement that the issues with forensic evidence ran deeper than a mere image problem that directly influenced the Law Commission to produce their consultation document in 2009.[80] This consultation process culminated in the final report published in 2011,[81] which laid out the recommendations in the form of a draft bill to guide judges in their assessment of whether expert evidence proffered for trial was sufficiently reliable to be admitted.[82]

However, despite this consultation flowing directly from the HSCTC report this chapter will illustrate that the Law Commission fundamentally misinterpreted the calls for reform contained in the HCSTC report. As a result, recommendations more relevant to their expertise and authority were overlooked. Instead they took a purely legal approach to resolve a matter that clearly required primary input from, and communication with, the scientific community. In the absence of a dialogue between these two disciplines the Law Commission condensed the recommendations contained within this report by concentrating on a small cluster of high-profile appeals. Consequently, this thesis will later argue that their response was driven by the outrage caused by the chosen reference cases rather than to a specifically defined hazard or clear recommendations for a legislative change. In order to advance this argument, the relevant insights and recommendations flowing from the HCSTC report will be introduced here.

[78] *ibid.*

[79] HCSTC (n71) [189].

[80] Law Commission CP190 (n48) [2.31].

[81] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011)

[82] *ibid.* See also appendix A.

5.6.1: A 'Gate-Keeping Test'

One of the key recommendations put forward by the HCSTC report was that a 'gate-keeping' test should be introduced for expert evidence.[83] It was this concept that was seized upon by the Law Commission and is central to their subsequent proposal. However, this section will put forward the argument that it was never the intention of the HCSTC to invoke a purely legal response to this recommendation. Subsequently, misinterpretation by the Law Commission, has resulted in the introduction of an enhanced judicial reliability test that is an inappropriate response to the HCSTC recommendation.

It must be appreciated that there are several gate-keepers within the criminal justice system that are charged with weighing and filtering evidence at different stages within the process.[84] However, in 1993 there was an important judgment handed down from the USA Supreme Court (Civil Division).

Daubert v Merill Dow Pharmaceuticals Inc[85] *(Daubert)* established the concept of 'gate-keeper' within the collective legal mind to mean the judge and his function in deciding whether expert evidence is sufficiently reliable to be admitted into the trial process. Consequently, this seminal judgment amended the statutory admissibility standard for expert evidence in both the civil and criminal courts of the USA Federal Rule of Evidence (FRE) 702 therefore moved away from the single requirement of 'general acceptance' as previously used to establish sufficient reliability.[86] Instead it took account of the five '*Daubert* factors'[87]

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[83] HCSTC (n71) 88. Recommendation [55].

[84] For example: scene of crime officers, forensic scientists, Crown Prosecution Service, Counsel to name a few.

[85] 509 US 579 (1993).

[86] See *Frye v United States* 293 F. 1013 (D.C. Cir 1923).

[87] (1) whether the expert's technique or theory can be or has been tested—that is, whether the expert's theory can be challenged in some objective sense, or whether it is instead simply a subjective, conclusory approach that cannot reasonably be assessed for reliability; (2) whether the technique or theory has been subject to peer review and publication; (3) the known or potential rate of error of the technique or theory when applied; (4) the existence and maintenance of standards and controls; and (5) whether the technique or theory has been generally accepted in the scientific community. Legal Information Institute, 'Rule 702. Testimony by Expert Witnesses' (*Cornell Law School)* <www.law.cornell.edu/rules/fre/rule_702> accessed 22 September 2017.

arising from this judgment in an effort to assist the judiciary with their assessment. Although the FRE 702 was amended in 2000 to incorporate the *Daubert* judgment it nevertheless refrained from codifying the factors specifically. This was to avoid introducing procedural change to the judicial gate-keeping function that might 'create difficult questions for appellate review'.[88] It was also recognised that the factors were neither 'exclusive nor dispositive'[89] and that they may not necessarily all apply in all cases.

It is however, the specific Daubert factors on which the Law Commission based their test for the reliability of expert evidence. Despite *Daubert* being an in depth and highly influential judgment the use of this standard has nevertheless attracted some criticism around its theoretical underpinning and practical application. Research studying admissibility decisions in international jurisdictions has indicated that specified standards may in practice have little influence over the evidence admitted.[90] In addition, the resultant effect of applying these standards is not consistent, especially within different courts or for the parties involved.[91] Furthermore, in the absence of strong advocacy, *Daubert* has been described as being 'almost

[88] *ibid.*

[89] Legal Information Institute (n87).

[90] 'Indeed, admissibility standards seem to have little discernible impact on the quality of forensic science and forensic medicine evidence. This applies to jurisdictions with common law and statutory standards, and includes jurisdictions that expressly stipulate the need for reliability'. Gary Edmond, Simon Cole, Emma Cunliffe, and Andrew Roberts, 'Admissibility Compared: The Reception of Incriminating Evidence (ie: Forensic science) in Four Adversarial Jurisdictions' (2013) 3 U Denv Crim L Rev 31, 108.

[91] 'This article has addressed a puzzling feature of expert evidence in the United States under *Daubert*, that not only is civil expert evidence more closely scrutinized for admissibility by the courts than criminal expert evidence, but criminal prosecutors and civil defendants appear to be treated more favorably than criminal defendants and civil plaintiffs.' Deidre Dwyer, '(Why) Are Civil and Criminal Expert Evidence Different?' (2007) 43 Tulsa L R 381, 396;

'Since *Daubert*, judges have become more active gatekeepers. While these judges have become more active in policing expert testimony, they have done so without a concrete standard for reliability. The resulting broad discretion creates uncertainty and outcomes that vary from court to court.' C Welch, 'Flexible Standards, Deferential Review: *Daubert's* Legacy of Confusion' (2006) 29 (3) Harv J L & Pub Pol'y 1085.

irrelevant'.[92] Without robust challenge to the admissibility of the evidence from opposing counsel even a more stringent reliability test will remain unused.

Unfortunately, the defence acknowledged the weakness of their challenge to the evidence after the trial of *Sally Clark*. In light of this research expressing doubt over the effectiveness of a Daubert style test in practice it is extraordinary that the Law Commission dismissed the concerns so readily, especially as the findings directly impacted on one of their reference cases. Their immediate recourse to this standard therefore, lends credence to the central argument of this thesis that the reform was being driven by factors other than an objective analysis and appreciation of the risks surrounding the use of expert evidence within criminal trials. Thus, despite the desire of the Law Commission to bring 'clarity and certainty to the law and legal processes governing the admissibility of expert evidence'[93] there is research supporting the view that their reform is likely to be an ineffective reliability theatre that changes nothing in practice.

It is however, recognised that the HCSTC report does indeed briefly discuss the development of the *Daubert* standard[94] whilst also expressing caution that 'dogged adherence'[95] to the factors may limit the use of novel but foundationally reliable methodologies. Nevertheless, they found the idea of introducing a test to objectively establish the robustness and evidence-based merit of expert evidence as 'highly attractive'.[96]

Yet, on closer examination, there is no evidence to suggest that the HCSTC supported a rigid statutory route for an admissibility test nor did they refer to FRE 702 as an example. Rather than calling for a purely legal response to this issue, it is clear from the HCSTC report that the main thrust is one of drawing together the disparate spheres of law and science to achieve

[92] P Neufeld, 'The (Near) Irrelevance of *Daubert* to Criminal Justice and Some Suggestions for Reform' (2005) 95 Am J Public Health, S107.

[93] The Law Commission CP190 (n70) 79.

[94] HCSTC (n71) [172].

[95] HCSTC (n71) [173].

[96] *ibid.*

the necessary guidance for the judiciary. This is an important point that has been recognised in *Daubert* jurisdictions[97] thus requiring some further elaboration here.

The importance of shared communication and constant feedback permeated through the HCSTC report in an effort to address the 'fundamental gulf between the philosophy of science and the philosophy of law'.[98] By emphasising that recent miscarriages of justice should be seen as systems failures rather than being the product of flawed expert evidence alone it was thus necessary to ensure that those involved within the system as a whole were brought together rather than effecting piecemeal change in their own particular discipline. Therefore, whilst acknowledging that the judiciary must be supported to enable them to perform their gate-keeping function more robustly, the thrust of the report was that increased scientific input was required to prevent miscarriages of justice and to stay abreast of the rapidly developing field of forensic science.[99]

Efforts by the HCSTC to increase the discourse between these two communities as a means of resolving conflict and uncertainty is evidenced by the call to establish a number of interdisciplinary bodies or communication channels. Firstly, they recommended that a Science and Law Forum should be formed to allow regular feedback from expert witnesses to the legal system about their courtroom experiences.[100] Secondly, a Scientific Review Committee should be established[101] within the Criminal Cases Review Commission to monitor complaints about expert evidence working closely with the final, and for the purposes of this thesis, most important organisation – the Forensic Science Advisory Council (FSAC).[102] Critically it was the FSAC that was chosen to develop the gatekeeping test for expert evidence

[97] "Moreover, the synergy of law and medicine would enhance the development and implementation of appropriate standards and controls for reporting scientific results in writing and in court."
Neufeld (n92) S113.

[98] HCSTC, 'Forensic Science on Trial; Vol II Oral and Written Evidence' (2005) EV55 Q415 <https://publications.parliament.uk/pa/cm200405/cmselect/cmsctech/96/96ii.pdf> accessed 25 July 2017.

[99]'The complexity and role of forensic evidence are ever increasing and we have not seen evidence to reassure us that the criminal justice system has kept pace with these developments, or will be able to do so in the future' HCSTC (n71) [189].

[100] HCSTC (n71) [51].

[101] HCSTC (n71) [57].

[102] HCSTC (n71) [51].

in recognition of the fact that '[j]udges are not well-placed to determine scientific validity without input from scientists'.[103] From this they concluded that '[t]he absence of an agreed protocol for the validation of scientific techniques prior to their being admitted in court (was) entirely unsatisfactory'.[104] It was also recognised in Parliament that the formation of all of these new bodies was 'to promote mutual understanding between scientists and lawyers and to enable scientists to have greater input into the legal process'.[105] Indeed some influential witnesses called by the HCSTC agreed that 'the initial scientific deliberation belongs to science not law'.[106]

Therefore, the new FSAC was tasked with developing this gatekeeping test 'in partnership with judges, scientists and other key players in the criminal justice system'.[107] It thus reflected the interdisciplinary approach dictated by the desire to increase communication between law and science. The FSAC was in place in 2007[108] and as recommended by the HCSTC, it comprised of members from across the criminal justice and scientific communities. This council was also supported by several specialist working groups tasked with specific areas for review and reform such as Evidence Assessment Quality Standards (EAQSWG) and Forensic Pathology (FPWG). Both of these groups were in place prior to the Law Commission consultation and have specific relevance to the development of a gatekeeping role especially in the context of the reference cases discussed earlier in Act 1 of this thesis.[109]

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[103] HCSTC (n71) [55].

[104] HCSTC (n71) [173].

[105] HC Deb vol 445 column 146WH (20 April 2006).

[106] HCSTC (n98) Ev 55 Q413 & Ev 25 Q195.

[107] HCSTC (n71) [173].

[108] Forensic Science Regulator 'Forensic Science Regulator Newsletter No 6' (*Bafo,* 30 November 2007) <www.bafo.org.uk/wp-content/uploads/Forensic-Regulators-newsletter-No-6-Nov-2007.pdf> accessed 19 March 2021.

[109]The EAQWSG was charged with 'providing advice on and developing standards for all matters related to the assessment, interpretation and presentation (…) of forensic science evidence used in the criminal justice system'. 'Terms of Reference for the Evidence Assessment Quality Standards Specialist Group' (*Assests Publishing)* [2] <www.gov.uk/government/uploads/system/uploads/attachment_data/file/505123/evidence-terms-of-ref.pdf> accessed 26 July 2017;

The FPWG was charged with "providing advice on forensic pathology quality standards, reviewing current standards, proposing remedies for any shortcomings, developing and publishing guidance". Gov.uk,

Again, these groups engendered a multidisciplinary approach, being established to provide advice whilst reviewing and developing standards within their own discipline with reference to 'common law, statute, subsidiary legislation and case law'.[110] It is surprising therefore that the Law Commission did not seek to directly involve these parties in its consideration as to whether strengthening the reliability assessment was an appropriate response.

In holding regular meetings, the FSAC, alongside the EAQSWG and FPWG, was well positioned to continually monitor forensic science developments and provide advice to both the scientific and legal fields. This in turn would have provided a more targeted and fluid mechanism, allowing reliability standards to evolve over time rather than be rooted in a bright line and statutory format with limited flexibility.

In view of the holistic and responsive desire of the HCSTC there was no specific call for the Law Commission alone to be tasked with taking this recommendation further and developing the test along statutory lines. Interestingly reference to the concept of reliability occurred on just three occasions within the HCSTC report and only when quoting from those persons involved in the oral evidence sessions. Subsequently there are no references either criticising the application of the legal 'sufficiently reliable' standard itself or for calls for it to be reviewed. As the Law Commission consist of members from judicial or legal fields only and was established in order to enact legal reform, the development of their reliability test is a legal rather than a multidisciplinary response therefore they have misinterpreted the recommendations within the HCSTC report. Thus, in describing the proposal and subsequent consultation as 'their contribution'[111] to the process their document nevertheless fails to fully integrate the communication pathways so desired. The promotion of this route in the absence of any suggestion that the gatekeeping test should be developed by lawyers in a statutory format may also have influenced the response of the Government to the final report and their

'Membership' <www.gov.uk/government/organisations/forensic-science-regulator/about/membership> accessed 26 July 2017.

[110] Alberink & Ruifrok (n37) and, The Forensic Pathology Specialist Group 'Terms of reference' (*The National Archives,* 2011) <http://webarchive.nationalarchives.gov.uk/20130104061239/http://www.homeoffice.gov.uk/publications/agencies-public-bodies/fsr/forensic-terms-of-ref> accessed 22 September 2017.

[111] The Law Commission CP190 (n70) [3.17].

ultimate rejection of enacting the draft bill.[112] It may also indicate why there was limited support for a statutory solution from the consultation responses.

In a nod towards the collaborative approach, the Law Commission state in their consultation document that '[t]he view of scientists themselves should be given *considerable weight* when *formulating a test* to determine the evidentiary reliability of scientific evidence'.[113] However, they only make the passing claim that they 'discussed (their) provisional proposal with a number of academics, legal professionals and the Forensic Science Regulator'.[114] It is unclear from this statement how much input there actually was from the scientific community in the *formulation* of the test but the minimal reference to the process by the FSAC in June 2008 would suggest that their input was negligible.[115] This is supported by the fact that the Law Commission proposal, consultation and report receive little mention within the FSAC meeting minutes after this date.

Furthermore, in 2010 the newly formed End User Specialist Group (EUSG) was working with the Forensic Science Regulator (FSR) in order to produce a Code of Conduct for forensic science providers along with an 'enhanced gate-keeper role for small/occasional experts'.[116]

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[112] Ministry of Justice, The Government's response to the Law Commission report: "Expert evidence in criminal proceedings in England and Wales" (Law Com No 325) (*Ministry of Justice,*2013) <www.gov.uk/government/uploads/system/uploads/attachment_data/file/260369/govt-resp-experts-evidence.pdf> accessed 25 September 2017.

[113] The Law Commission CP190 (n70) [4.59] (emphasis added)

[114] The Law Commission CP190 (n70) [iii].

[115] '(The Forensic Science Regulator) informed the FSAC that the Law Commission had provided the papers circulated and had a meeting with officials from his office. At that meeting the Commission provided a document setting out its proposals in more detail. He noted that he was meeting the Commission in July to discuss these matters and would seek permission to circulate the more detailed proposal.'
FSAC, '5th Meeting Minutes of the FSAC' (*The National Archives Europe)* [11.1] <http://tna.europarchive.org/20100419081706/http://www.police.homeoffice.gov.uk/publications/operational-policing/Forensic_Science_Advisory_C52835.pdf?view=Binary> accessed 26 July 2017.

[116] End User Standards Specialist Group 'Minutes of Meeting held on 2 March 2010' (*The National Archives*, 02 March 2010) [4.3] <https://webarchive.nationalarchives.gov.uk/20130104071855/http://www.homeoffice.gov.uk/publications/agencies-public-bodies/fsr/end-user-sg-02032010mins> accessed 31 January 2021.

This was to include guidance for experts providing reports to the criminal justice system that would ensure compliance with Part 33 of the Criminal Procedure Rules (CrPR).[117] As this overlapped with the Law Commission consultation it was agreed that the FSR would contact the Law Commission directly[118] and that a representative would be invited to attend the next EUSG meeting.[119] Whilst giving the impression that a dialogue was being initiated between the scientific and legal fields the second EUSG meeting was not held until nearly two years later. By this time the FSR Code of Practice and Conduct had been published[120] as had the Law Commission report nine months earlier. Unsurprisingly no reference is made to any representative of the Law Commission attending this second meeting in 2012.[121] It would thus appear that ultimately the legal and scientific fields forged ahead with their own agendas resulting in two sets of guidelines that are similar in both their style and intention. This raises the question as to whether the Law Commission test was needed at all thereby supporting the premise that it is nothing more than unnecessary theatre. However, the Law Commission test introduces specific scientific terminology such as 'validity' 'reliability' and 'accuracy' that then raises a further question as to whether this will cause problems for the criminal justice system in the future. Whilst the FSR recognised the importance of assessing 'the validity of the science behind the field'[122], chapter 10 will later argue that these scientific terms cannot be used interchangeably and that their usage in any given context must be clearly defined. Thus, establishing this assessment must initially fall to the scientists who can then inform and direct the judiciary. This opinion receives support from the fact that in 2008 the FSR was

[117] FSR, 'Codes of Practice and Conduct for forensic science providers and practitioners in the Criminal Justice System' (2011) [25.2.2]. See appendix B.

[118] Specifically to discuss the need for experts to disclose 'significant criticisms against their record'. This is possibly in response to the issue of Meadow's evidence in the cases of *Clark* and *Cannings*.

[119] The National Archives (n116) [4.5].

[120] FSR (n117), published in December 2011.

[121] End User Standards Specialist Group 'Minutes of Meeting held on 7 February 2012' (*The National Archives,* 07 February 2012) <https://webarchive.nationalarchives.gov.uk/20130104060601/http://www.homeoffice.gov.uk/publications/agencies-public-bodies/fsr/end-user-sg-07022012mins> accessed 31 January 2021.

[122] FSAC (n115) [1.46].

already beginning to establish 'overarching validation standards'[123] with a view to then producing quality standards for each individual expert field. This would imply that the FSR and the FSAC were better placed to assess the validity issues around expert evidence due to both the composition of their membership and their ongoing relationship with the specialist advisory groups from the different expert disciplines. The introduction of an enhanced reliability test may therefore serve to confuse this process and provide false assurance as to the quality of certain techniques and processes.

It is noted that the FSR was one of the respondents to the consultation process and that he was also part of a Working Party that was involved in discussions with the Law Commission as to the workability of their proposal *after* the consultation period had ceased.[124] Consisting of eight participants, this group nevertheless showed a legal bias with the FSR, a Forensic Psychiatrist and the editor of the UK Register of Expert Witnesses providing the only scientific input.[125] Recourse to this group my help explain why the proposed reliability test shifted substantially between its initial conception and final, opinion centric recommendation – a matter that will be returned to within Act 3.

Finally, it is worth remembering the reference cases chosen by the Law Commission and analysed in in Act 1. These showed a heavy bias towards instances of child harm and the difficulties surrounding the expert opinion evidence in these often-complex situations. In response to the Law Commission proposal academic commentary was beginning to surface that doubted the efficacy of developing a judicial gate-keeping test for these types of cases. Rather it called for the introduction of specialist panels to perform this role.[126]

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[123] Forensic Science Regulator, 'Forensic Science Regulator Newsletter No 9' (*Bafo,* 27 March 2008) <www.bafo.org.uk/wp-content/uploads/Forensic-Regulators-newsletter-No-9-March-2008.pdf> accessed 14 September 2017.

[124] The Law Commission No.325 (n81) [1.45].

[125] The Law Commission No.325 (n81) 209.

[126] J Hartshorne & J Miola, 'Expert Evidence: difficulties and solutions in prosecutions for infant harm' (2010) 30 Legal Studies 2, 279.

5.6.2: Systems Failures

The HCSTC report was keen to stress that expert witnesses should not shoulder the blame alone in cases where expert evidence has featured as grounds for a successful appeal.[127] Rather they recognised that these failures in the administration of justice were due to 'flaws in the court process and legal system'[128] in its entirety and that flawed expert evidence was 'unlikely to have led, *in isolation*, to a significant number of miscarriages of justice'.[129] Concentrating on the notion of systems failures rather than apportioning individual blame to either judges or witnesses, their recommendations were designed to improve the 'handling of expert evidence in Court'[130] thereby providing support for the judiciary and 'ongoing scientific scrutiny of expert evidence'.[131]

Act 1 illustrated that the reference cases chosen by the Law Commission to support their proposal do not unambiguously demonstrate that unreliable expert evidence was to blame for the convictions being declared unsafe on appeal. Neither is it readily apparent that the judicial assessments of reliability were fundamentally flawed. Many other factors could have been brought to bear on the juries' verdicts with some being more readily distinguishable than others. For example, poor defence strategies,[132] the admission of bad character evidence,[133] potential biases[134] and an over-reliance on the scientific evidence culminating in a Crown Prosecution Service that was willing to bring prosecutions without clear evidence that a crime had even been committed.[135] This concept of a systems failure was neatly summarised in a judgment from the criminal court of Kentucky USA, just prior to the Law

[127] HCSTC (n71) [170].

[128] *ibid*.

[129] HCSTC (n71) 3 (emphasis added).

[130] *ibid*.

[131] HCSTC (n71) 3.

[132] See Chapter 2: *R v Sally Clark*.

[133] See Chapter 1: *R v Dallagher*.

[134] Such as role and cognitive biases.

[135] See Chapters 3 and 4: *R v Cannings, R v Harris*.

Commission proposal. In this judgment it was held that 'the court is only a gatekeeper, and a gatekeeper alone does not protect the castle'.[136]

Without delving into detail about systems theory, which remains firmly outside the boundaries of this thesis, it is however, important to appreciate at this point that the criminal trial process represents a 'complex' rather than a 'simple' system. The nature of this system directly effects the ability to pin-point any individual causal route for an occurrence and, as the matter of causation will be dealt with in the next Act, this issue will be returned to at the relevant point therein.

5.6.3: Training for Expert Witnesses

A key recommendation within the HCSTC report was in direct response to the findings of The Kennedy report as referred to above. This recommendation considered the training of expert witnesses to assist with both their understanding of the legal process and 'the general principles of (the) presentation of evidence'[137] to be an *essential* requirement. Specific attention was also drawn to the presentation of statistical evidence such as that seen in the case of *Sally Clark*.[138] Indeed, the reference cases chosen by the Law Commission and discussed earlier in Act 1, illustrate that either the method of presenting expert testimony or overstatement as to the weight attaching to the evidence is central to the concerns regarding these verdicts. This being the case they do not necessarily provide convincing examples of unreliable expert evidence being admitted too readily into the criminal trial process by a laissez-faire admissibility test. Unfortunately, the training of expert witnesses, being outside the scope of the Law Commission proposal, received only passing reference, therefore this important issue remained unaddressed by their reform.[139]

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[136] *Commonwealth of Kentucky v. Raymond Martin*, *Commonwealth of Kentucky v. Christopher A Davis* 2006-CA-002236-MR, 2006-CA-002237-MR (13 June 2008).

[137] HCSTC (n71) [144].

[138] HCSTC (n71) [162].

[139] 'We recognise that procedures may need to be introduced in forensic scientific laboratories to ensure that tangential information which is likely to give rise to significant unconscious bias should be kept back from

5.6.4: Training for Judges and Lawyers

Alongside training for expert witnesses, the HCSTC report also recommended that there should be compulsory training for lawyers in forensic evidence and annual updates for judges on scientific developments. Despite agreement from the Law Commission that training for all lawyers and judges was an important consideration to run alongside their reform,[140] this thesis argues that it remains woefully inadequate. It was recognised during the evidence presented to the HCSTC that there was already resistance coming from the judiciary towards attending training on the forensic sciences.[141] Currently training on the admissibility of expert evidence occurs as part of a case management training module included within a prospectus of seminars that judges elect to attend. The Judicial College have indicated that in practice, case management training will be undertaken by all judges every two to three years as a minimum.[142] However, whether this is sufficient in both frequency and content is questioned here especially as it is undertaken by a leading QC with no indication that there is any input from the scientific community. This is in direct contrast to the thrust of the HCSTC recommendations that there should be better communication between law and science. As it stands, the training will not necessarily help judges in understanding novel forensic techniques or how to interpret questions such as error rates or margins of uncertainty. Indeed, a recent report from the House of Lords Select Committee on Science and Technology (HLSCST) has indicated that there is a lack of resource for both lawyers and judges regarding forensic science and importantly no formal training.[143]

In a void of supporting information and training opportunities for understanding the relevant indicia of reliability and their correct application to the evidence at hand, the enhanced

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scientific experts, or training provided to reduce the risk of such bias, but this is not a concern we can address in our Bill.' The Law Commission No.325 (n81) 66 f/n/33.

[140] The Law Commission CP190 (n70) [6.72] to [6.74].

[141] '[I]t is hard to get them to but when they do come, they love it and they all say, "We had no idea of the detail."' HCSTC (n98) EV25 Q195.

[142] E-mail response from the Judicial College for the purposes of this thesis.

[143] Parliament.uk, 'Chapter 5: The use of forensic science in the criminal justice system' (2019) [134] <https://publications.parliament.uk/pa/ld201719/ldselect/ldsctech/333/33308.htm#footnote-073> accessed 14 May 2019.

reliability test will remain nothing more than theatre with judges being forced to return to the familiar 'general acceptance' test alone to make their assessments.[144] Furthermore, there is the attendant problem that a lack of true understanding will produce inconsistent or inappropriate decisions on admissibility – a matter will be returned to in chapter 10.

It is recognised here that the introduction of Primers is a welcome initiative in assisting judges and lawyers in understanding the scientific basis and evidential value of expert evidence. These documents have been designed to put science into everyday language whilst explaining the strengths, weaknesses and limitations of expert evidence. Crucially they represent the start of the collaborative approach, so desired by the HCSTC, with scientists informing the judiciary. However, this collaboration comes at a price. Due to the very nature of this interdisciplinary communication the development of the primers has been complex and slow with only two being available since 2017.[145]

Even if the Law Commission had clearly demonstrated that the enhanced reliability test was a much needed and appropriate reform, it would only ever be truly effective if all those involved within the criminal justice system were aware of the criteria and committed to this normative approach. The rejection by the Government to place the enhanced reliability test on a statutory footing has resulted in its incorporation into the CrPR via a Practice Direction. Awareness and adherence to the CrPR is thus a necessity for the effective application of these reliability assessments. Previous studies however would suggest that this may not always be the case. One pilot study conducted in 2012[146] investigated compliance with the CrPR as were in force at the time. Although this pre-dates the 2014 amendment and the inclusion of the specific reliability test for expert evidence, it nevertheless highlighted the fact that compliance with the rules in general was lower than expected. Some courts viewed them as

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[144] 'Although there was little consensus about the relative importance of the guidelines, judges attributed more weight to general acceptance as an admissibility criterion'. Sophia Gatowski, Shirley Dobbin, James Richardson, Gerald Ginsburg, Mara Merlino and Veronica Dahir, 'Asking the Gatekeepers: A National Survey of Judges on Judging Expert Evidence in a Post-*Daubert* World' (2001) 25 Law & Hum Behav 433.

[145] C Offord, 'UK Judges Receive Primers on Forensic Science' (*The Scientist*, 01 March 2018) <www.the-scientist.com/notebook/uk-judges-receive-primers-on-forensic-science-30023> accessed 02 February 2019.

[146] Penny Derbyshire, 'Judicial case management in ten Crown Courts' (2014) Crim L R 1, 30-50.

irrelevant[147] with some considering that the details within the CrPR are 'a desert to 95 per cent of the Bar and a very large proportion of the judges'.[148]

Unfortunately it is unknown if this same lack of engagement is persisting with the more recent, targeted initiatives to assist lawyers in their understanding of expert evidence in court, such as the Primers introduced above.[149] If the rules are not firmly entrenched within the criminal justice process then the addition of strict criteria for the assessment of the reliability of expert evidence will be nothing more than 'window dressing' for the practical application of common law principles.

5.6.5: Pre-Trial Meetings

There was a common thread running through the reference cases discussed in Act 1, particularly those involving the death of an infant. This is the often-substantial disagreement between the expert witnesses due to the uncertainty as to the conclusions that can be drawn from, and the subsequent weight that can be attached to, the medical or scientific findings. As a result, the medical testimony involved a procession of expert witnesses with evidence given over a number of days. The HCSTC report therefore recommended that pre-trial meetings should become 'a matter of routine'[150] in order to identify areas of agreement and disagreement This suggested area of reform will receive further discussion below.

5.6.6: Jury Research

Since 1981 any research into jury behaviour and understanding within the domestic criminal justice system has had to comply with section 8 Contempt of Court Act.[151] This section was

[147] *ibid* 35.

[148] Penny Derbyshire (n146) 35.

[149] 'The Inns of Court College of Advocacy, in conjunction with the Royal Statistical Society, has produced a guide for barristers on statistics and probability, and how to understand statistical evidence in court. The Inns of Court College of Advocacy has also produced a guide to the preparation, admission and examination of expert evidence. These are potentially useful resources but it is not clear how widely used they are by legal practitioners.' Parliament.uk (n143) [132].

[150] HCSTC (n71) [48].

[151] Now in s20 Juries Act 1974 as enacted by s74 Criminal Justice and Courts Act 2015.

introduced in the wake of another *cause celebre*[152] to solidify the convention that juror deliberation and decision making was not to be disclosed for publication. It thus provided stronger protection for the sanctity of the jury room. However, when enacted this legislation was more far- reaching than originally intended or envisaged by Government. Thus there has been some academic expression for reform of section 8 so as to prevent its restrictive nature from effectively frustrating attempts to research facets of juror decision making.[153] The HCSTC report was clear in its support for an amendment to section 8 by appreciating that:

> [j]ury research is vital to understand how juries cope with highly complex forensic evidence. Jury research would also be instructive for understanding differences in the way that jurors respond to oral and written reports by experts, and how easy they find interpretation of these reports. We recommend that section 8 of the Contempt of Court Act be amended to permit research into jurors' deliberations.[154]

Published in March 2005, the HCSTC report chronologically bridged the gap between a Department of Constitutional Affairs (DCA) consultation[155] and their final conclusion. Consequently, the Government response to the HCSTC report deferred to this process awaiting the final recommendations from the DCA.[156] Unfortunately, the DCA consultation did not specifically focus on expert evidence and thus its conclusion was a general consideration of whether section 8 should be amended. Whilst not adverse to repealing

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[152] The Law Commission, 'Contempt of Court Appendix A: Background to the Contempt of Court Act 1981' (2012) No.209, A176 <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp209_contempt_of_court_appendix-a.pdf > accessed 02 December 2019.

[153] 'Contempt of Court (1): Juror Misconduct and Internet Publications' (2013) No.340, 98.

[154] HCSTC (n71) [166].

[155] DCA, 'Jury Research and Impropriety: A consultation paper to assess options for allowing research into jury deliberations and to consider investigations into alleged juror impropriety' (*The National Archive,* 21 January 2005) <https://webarchive.nationalarchives.gov.uk/+/http://www.dca.gov.uk/consult/juryresearch/juryresearch_cp0405.pdf> accessed 03 February 2019.

[156] HCSTC, 'Forensic Science on Trial: Government Response to the Committee's Seventh Report of Session 2004–05' (2005) publications.parliament.uk [52] <https://publications.parliament.uk/pa/cm200506/cmselect/cmsctech/427/427.pdf> accessed 03 December 2019.

section 8, the Government was concerned that no amendment should be made 'until there (were) specific and detailed questions to be answered that (could not) be investigated without altering statute'.[157] This failure to amend section 8 was subsequently described in Parliament as 'a squandered opportunity'[158] indicating a reluctance to obtain data to further understanding as to how juries deal with complex expert evidence. Therefore, calls for further research into jury decision making were not new at the time of the Law Commission proposal. This important issue will thus be further elaborated upon in chapter 7.

5.7: **The Attorney General's Review 2006 Addendum**

Further to his original case review in 2004, the Attorney General undertook a further review of cases dealing specifically with Shaken Baby Syndrome (SBS) in 2006.[159] These cases had originally been identified at the earlier review, with the case of *Lorraine Harris* being referred to the Court of Appeal as a result. Following her successful appeal, the Attorney General returned to this matter, and the remaining 88 convictions for SBS. 10 were identified for further investigation in light of the reduced cogency of the triad of pathological findings following the appeal of *Harris*. Out of these 10, 3 raised concern as to the safety of the convictions with only 2 involving the role of expert evidence in the verdict. In conclusion it found that 'the vast majority of cases [did] not give rise to concern'[160] over the expert evidence adduced at trial by the prosecution. This conclusion supported the findings of the earlier review and, at least in the area of infant death, do not support the Law Commission claim that these cases represent the tip of the iceberg.[161] There was also no criticism of the

[157] DCA, 'Jury Research and Impropriety: Response to Consultation CP 04/05' (*The National Archives*, 08 November 2005), 16 <https://webarchive.nationalarchives.gov.uk/20070508230000/http://www.dca.gov.uk/consult/juryresearch/jury_research_response1108.pdf> accessed 03 December 2019.

[158] HC Deb vol 445 column 147WH (20 Apr 2006).

[159] HL Deb vol 678 column 1079 (14 February 2006).

[160] *ibid.*

[161] There has however been some criticism levied at the criteria used to exclude cases from the review thereby leading to a potential underdetermination of wrongful verdicts. See D Tuerkheimer, "The Next Innocence Project: Shaken Baby Syndrome and the Criminal Courts" (2009) 87 (1) Wash U L Rev 1, 25 f/n 149.

admission of this evidence at trial or indications that the gate-keeping role of the judge was not being robustly applied under common law principles.

This chapter earlier referred to the potential irrelevance of an enhanced reliability assessment when faced with a weak defence strategy. Surprisingly, this view finds further support from a paper quoted by the Law Commission in support of their proposal.[162] Furthermore, in this paper the author also states that '[i]n the course of (their) research, (they had) not been made aware of any case in which the testimony of defense experts challenging the basis for an SBS diagnosis was excluded on *Daubert* or *Frye* grounds' either.[163] Importantly it proceeds to commend the principle handed down in the appellate judgment in *Harris* followed by the Attorney General's Review, and the resulting institutional response within the criminal justice system of England and Wales[164] - a matter that will be returned to later in this chapter. In short, this reference undermines the foundational basis of the Law Commission proposal and the ultimate effectiveness of an enhanced reliability test in cases of infant death.

5.8: The Goudge Report

Despite the emphasis placed by the Law Commission on the need for a statutory reliability test it is worth noting that concerns regarding the quality of forensic science or the credibility of some expert witnesses are not issues confined to our domestic jurisdiction. In 2008, the Honourable Stephen Goudge of the Ontario Court of Appeal undertook a review of paediatric forensic pathology following specific concerns as to the professional competence of Dr Charles Smith, a Paediatric Pathologist.[165] This long and detailed report consisting of 4 volumes and 985 pages is relevant to the Law Commission proposal and thus to this thesis. It

[162] *ibid* 32.

[163] *ibid* 32 f/n 194.

[164] 'Lord Goldsmith's systemic review and the Court of Appeal decision that preceded it have appreciably altered the course of SBS prosecutions (so that) in the future there will be demands for each case to be assessed individually, on the evidence available, rather than on a formula which has now been proved to have weaknesses'. Tuerkheimer (n161) 25 f/n 149.

[165] Hon. Stephen T Goudge, 'Inquiry into Pediatric Forensic Pathology in Ontario' (2008) vol 3 (*Ministry of the Attorney General*, 1 October 2008) <www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html> accessed 28 April 2017.

therefore requires some further elaboration as it too provides a backdrop to the reform. However, a detailed analysis of all of the findings is not necessary for the current purpose.

Unlike the wider Law Commission consultation which aimed at addressing concerns with expert evidence as a whole, the Goudge Report focused purely on issues surrounding sudden unexpected infant death. Furthermore, it was in response to potential miscarriage of justice cases linked to the work of one individual pathologist, Dr Smith. As part of this enquiry the review adopted an international approach thereby considering cases and concerns derived from other jurisdictions. As a result this included the appeals of *Clark, Cannings* and *Harris* and the role of Professor Meadow in these miscarriages of justice. It also took note of the reviews conducted by the Attorney General into unexpected infant death convictions as detailed above.[166] The debate surrounding the diagnostic value of the triad of pathological findings in cases of suspected SBS was discussed at some length. As a result of this enquiry 169 recommendations were made covering a range of roles and procedures around the prosecution of infant death with many echoing the findings and recommendations of the Kennedy Report as discussed above. Importantly the Goudge inquiry also took note of pertinent changes made to the trial procedure in other jurisdictions such as the introduction of pre-trial meetings in the courts of England and Wales.[167] As a result of targeting a specific problem area the inquiry was able to provide an in-depth analysis with tailored recommendations for this controversial field. In contrast the Law Commission consultation presents as a somewhat undetailed and muddled approach to the reliability of forensic science in its totality. However, their choice of exemplar cases seems to indicate that their major concern lies within the area of convictions for child abuse. Surprisingly, The Goudge report, published a year before the Consultation process, does not receive any reference within the initial Law Commission proposal document. There is a brief mention within the final report but only after having been raised by some of the consultation responses. Despite differences in the legal landscape between the two jurisdictions it nevertheless is a detailed, analytical document that would have provided a solid foundation on which to base a discussion around implementing further changes to criminal procedure.

[166] *ibid* 518.

[167] Goudge (n165) 510.

5.9: Royal Colleges of Pathology, Opthamology and Paediatrics Report

The disagreement surrounding the cogency of the triad of pathological findings in shaken baby syndrome continued as a focus for medical professional bodies. Therefore, concerted efforts were made following the successful appeal of *Lorraine Harris* to bring together those professionals of conflicting opinion. These working parties were designed to interrogate research data and experience thereby allowing areas of agreement and disagreement to be delineated. In 2010 the Royal College of Pathologists published a report from a meeting held in 2009 to discuss these very issues.[168] Importantly it was stressed that the meeting should be 'conducted in a collegiate spirit of scientific investigation, putting aside the adversarial processes that might be more appropriate in other circumstances'.[169] The emphasis on scientific discovery and knowledge with its removal from the confines of the criminal trial process was an important step in placing the scientific horse before the legal cart. This approach was compatible with both the HCSTC recommendation for scientist led assessments of validity and rules for effective case management at the time.[170] A similar document had already been produced in 1999 as a result of a collaboration between The Royal College of Paediatrics and Child Health and The Royal College of Ophthalmologists.

However, this was updated in 2004 and then in 2013 thereby reflecting the increase in research data and an appreciation that scientific discovery is on a continuum.[171] These documents were available prior to the Law Commission consultation and represent a far more appropriate method for attempting to settle issues of cogency with regard to the medical

[168] The Royal College of Pathologists of London, 'Report of a meeting on the pathology of traumatic head injury in children' (2011) Shaken Baby and Sudden Infant Death Syndromes <http://shakenbabyandsuddeninfantdeath.blogspot.com/2011/01/sbs-report-of-meeting-on-pathology-of.html> accessed 28 January 2020.

[169] *ibid* 2.

[170] 'The court may direct the experts to (…) prepare a statement for the court of the matters on which they agree and disagree, giving their reasons.' The Criminal Procedure (Amendment No.2) Rules 2006, [33.5 (2)(b)].

[171] Royal College of Paediatrics and Child Health, 'Abusive Head Trauma and the Eye in Infancy' (*RCOPHTH,* June 2013) 9 rcophth.ac.uk<www.rcophth.ac.uk/wp-content/uploads/2014/12/2013-SCI-292-ABUSIVE-HEAD-TRAUMA-AND-THE-EYE-FINAL-at-June-2013.pdf> accessed 20 January 2020.

findings in these controversial cases. Despite the obvious difficulty in reaching total agreement between experts, the Law Commission nevertheless choose to believe that a change to the admissibility test for expert evidence was required. Instead it is an unnecessary legal intervention that is a mere theatrical representation of improving the reliability of expert evidence entering the criminal trial process.

5.10: Changes to the Criminal Justice System

As previously stated, three of the four reference cases chosen by the Law Commission to support their proposal deal with the difficult and complex issue of infant death. The analyses of these cases in Act 1 illustrated that there was no convincing argument that the unreliability of expert evidence sat at the heart of these convictions being declared unsafe upon appeal. Rather these highly fact specific cases gave rise to some general legal principles that did not relate directly to the unreliability of the evidence or that would have been prevented by an enhanced judicial admissibility assessment. This section argues that prior to the Law Commission consultation these matters had already been either addressed by, or crystallised within, the legal process. Therefore, this lends further support to the argument that the enhanced reliability test was an inappropriate and unnecessary reform.

Following *Cannings* appeal the principle that a trial should not proceed when it 'exclusively or almost exclusively (depends) on a serious disagreement between distinguished and reputable experts'[172] was enshrined in Archbold Criminal Pleading, Evidence and Practice[173] – 'the standard legal reference work in the criminal courts' at the time.[174]

Then, immediately following the successful appeal of *Harris*, measures were initiated by a number of agencies to address the further concerns raised in the three appeals. Firstly, the CPS and the Association of Chief Police Officers (ACPO) began to implement new guidelines[175]

[172] (2004) EWCA Crim 1 [178].

[173] (Richardson P. (Ed), Sweet & Maxwell, 2008) 10-67.

[174] S O'Neill, 'Decision between Archbold and Blackstones legal reference books may end up in court' *The Times* (London, 03 January 2018) <www.thetimes.co.uk/article/decision-between-archbold-and-blackstones-legal-reference-books-may-end-up-in-court-x069vbwn6> accessed 10 May 2019.

[175] CPS 'Guidance Book for Experts – Disclosure: Experts' Evidence and Unused Material'

with specific regard to disclosure by expert witnesses including any information that may impact on their credibility or competence. Included in this document was guidance as to the contents of the Expert's report which further built on that referred to by the Court of Appeal in *Harris*.[176] The contents of an Expert's Report was subsequently clarified via an amendment to the Criminal Procedure Rules (CrPR).[177] Furthermore, these recommendations were also incorporated into Archbold.[178]Secondly, the Director of Public Prosecutions issued new guidance to prosecutors with regard to prosecuting cases of 'shaken baby' syndrome. This legal guidance was in place as early as February 2006[179] and as a result of the *Harris* judgment concluded that '[e]ach case will clearly turn on its own facts but it would appear unlikely that a charge of murder can be justified where the only evidence available is the triad of injuries' (original emphasis).[180] This change in policy preceded the Law Commission proposal by three years thereby immediately rendering their suggestion of a reliability test as a means of preventing prosecutions based on the triad of injuries alone, as redundant. It was also incorporated into Archbold by 2008.[181]

However, the Law Commission refer to this policy change only in their final report and following further appellate judgments from 2010. Describing it as 'recently published updated guidance'[182] it seems apparent that the Law Commission were unaware of the prosecution policy changes already implemented by the Director of Public Prosecutions some years

(*The National Archives,* March 2006) <http://webarchive.nationalarchives.gov.uk/20081112160519/http://www.cps.gov.uk/publications/docs/experts_guidance_booklet.pdf> accessed 28 April 2017.

[176] (2005) EWCA Crim 1980 [271].

[177] The Criminal Procedure (Amendment No.2) Rules 2006 [33.3].

[178] Richardson P. (Ed) (n173) 10-67.

[179] This legal guidance was cascaded down to prosecutors via an internal e-mail from the Director of Public Prosecutions. It was not however published on the CPS external website until 30/09/08. (Personal e-mail correspondence with Geoff Carr, Operations Directorate, CPS HQ, London).

[180] Ken Macdonald QC, 'Guidance On The Prosecution Approach To Shaken Baby Syndrome Cases' (2006) The National Archives <http://webarchive.nationalarchives.gov.uk/20090104012201/http://www.cps.gov.uk/legal/s_to_u/shaken_baby_and_sudden_infant_death_syndromw/> accessed 10 April 2017.

[181] Richardson P. (Ed) (n173) 10-67.

[182]The Law Commission No.325 (n81) 75 f/n 60.

before. Finally, in response to the HCSTC report as discussed above, the Criminal Procedure Rules Committee began to consider additional rules allowing for pre-trial meetings of experts in an effort to identify areas of disagreement[183] - another procedural mechanism the importance of which was addressed by the court in the appeal of *Harris*.[184] Subsequently rules concerning pre-trial hearings were introduced alongside those regarding the contents of the expert's report into the CrPR via an amendment in 2006.[185] This change in criminal procedure was aimed at reducing the medical or scientific complexity and argument that frequently surrounds cases such as those discussed in Act 1. These meetings allow the scientists to formulate the type and amount of scientific or medical evidence that needs to be placed before the jury for their consideration. This is in line with the HCSTC recommendation that scientists must actively assist the judiciary in their decisions of admissibility by taking the lead in agreeing key areas of dispute rather than waiting for an edict from the judiciary to decide the merits of their opinions. The Law Commission however, sought to expand the use of pre-trial meetings between experts into a power for the judge to order a judge-led pre-trial meeting between both experts and advocates where significant disagreement persisted.[186]

It is unclear why they felt that this was necessary to assessments of sufficient reliability as they were aware that any attempt to elicit further information regarding the expert opinion had already been blocked by the Court of Appeal.[187] Neither was it a robust attempt by the Law Commission to truly address one of their key objectives – that of jury understanding of complex evidence. Reducing the volume and complexity of the evidence can only be performed by the experts within that field. Furthermore, some of the responses arising from the consultation cautioned against providing a 'dry-run' for experts prior to the trial.[188] Others

[183] 'In addition, the Criminal Procedure Rules Committee is considering new rules that would provide explicitly for pre-trial discussion between experts to identify areas of agreement or disagreement and so save court time'. HL Deb vol 678 column 1081 (14 February 2006).

[184] *R v Harris* (2005) EWCA Crim 1980 [273].

[185] Criminal Procedure (n177) [33.5].

[186] In their response the Government held that the change to the CrPR was sufficient therefore any further expansion of this procedure was rejected by the Government on a cost/benefit basis. See MOJ (n112).

[187]The Law Commission No.325 (n81) 71 f/n 50.

[188] *ibid*.

felt that in isolation from the facts of the specific case, there was no advantage to be gained from judicial intervention at this point.[189] In light of these points this thesis believes that attempts to engage the judiciary at this early stage ran the risk of usurping the role of the jury by linking admissibility of evidence to the accuracy or correctness of the competing views. Decisions on the diagnostic value and weight of expert evidence must precede the legal admissibility decision that is firmly embedded within the case itself thereby allowing the scientific horse to be placed before the legal cart.

Considering the backdrop to the Law Commission reform, it is difficult to find any solid support for their proposal from the various independent reports and reviews as discussed above. None of these investigations give any special attention or singularly appropriate the blame for these miscarriages of justice to the reliability of the evidence given by the expert witnesses. Furthermore, a review of the cases in both the criminal and civil courts failed to highlight any endemic problem with the expert opinion. There is also little support from the appeal process itself as the unreliability of the expert evidence at the time of the trial in the reference cases did not constitute grounds for quashing the convictions.

This chapter has begun to reveal how both the legal and scientific disciplines reacted at the time to the reliability issues raised within the reference cases chosen by the Law Commission. The chapter that now follows will add further texture to this backdrop by turning its attention to Low Copy Number DNA profiling. Specifically, it will be concerned with the report emanating from the review conducted in order to assess its reliability. The analysis undertaken within his chapter will illustrate that the review was a missed opportunity to address the specific evidential issues surrounding an important, defined forensic technique. Consequently, the review was subject to criticism from the both the scientific and legal communities and ultimately left the courts to interpret the legal standing of the scientific evidence adduced. In addition, the Law Commission make passing reference to judicial concern about the reliability of LCN prior to its temporary suspension from use within the criminal justice system. [190] This reference is thus used as a means of support for their proposal that an enhanced reliability test is required to prevent unreliable expert evidence from

[189] The Law Commission No.325 (n81) [5.49].

[190] The Law Commission CP190 (n70) 16 f/n42.

entering the criminal trial process. Of critical importance however, is the fact that it was this very technique that provided the crucial defence evidence for *Dallagher* at his retrial. Therefore, the brief, asymmetrical methodology adopted by the Law Commission has created this evidential dichotomy within their proposal. Yet this tension has gone unnoticed thereby allowing them to present this case as a proven wrongful conviction of the innocent in support of their reform.[191]

[191] See chapter 1.

Chapter 6: In the Wings – The Caddy Review

6.1: Introduction

Although 'The Caddy Review' did not flow directly from the HCSTC report or form an integral part of the Law Commission proposal, it nevertheless represents an important document in relation to unreliable expert evidence, forming part of the backdrop to the final reform.
Standard DNA profiling has long been considered as the forensic technique with 'the strongest scientific grounding'.[1] It has thus attracted the accolade of being the 'Gold Standard'[2] of forensic evidence. Therefore, it is understandable that there has been a desire to extend its evidential reach by increasing the sensitivity of the method so as to obtain profiles from ever decreasing amounts of DNA. In 2000 The Forensic Science Service (FSS) announced that they had achieved this by way of an in-house adaptation to the standard methodology.[3] This was called Low Copy Number DNA profiling (LCN). However, these ultra-sensitive analyses are beset with issues that may make profile interpretation difficult or unreliable. These include the presence of mixtures of DNA, limitations surrounding the ability to obtain a full profile and stochastic variation.[4] These issues have in turn fed directly into scientific and legal hesitancy as to the reliability of the methodology.

The pivotal moment for admissibility of LCN came in December 2007 following the judgment handed down after the trial of *Sean Hoey* for the 1998 terrorist bombing in Omagh.[5] Evidence obtained by the LCN method and presented for the prosecution, was heavily criticised by the presiding Judge, Weir J. This resulted in a temporary suspension of the LCN method for evidential purposes. The scientific nadir however, had been reached prior to this following

[1] J Gabel, 'Forensiphilia: Is the Public Fascination with Forensic Science a Love Affair or a Fatal Attraction?' (2010) 36 2 New Eng J on Crim & Civ Confinement 233, 251.

[2] Natasha Gilbert, 'DNA's Identity Crisis' (2010) 464 Nature 347.

[3] P Gill, J Whitaker, C Flaxman, N Brown and J Buckleton, 'An investigation of the rigor of interpretation rules for STR's derived from less than 100pg of DNA' (2000) 112 Forensic Sci Int 17.

[4] The observance of random or chance events that may result in a failure to reproduce the same profile on repeat testing. 'Stochastic' (Biology Online) <www.biology-online.org/dictionary/Stochastic> accessed 06 January 2020.

[5] *R v Hoey* (2007) NICC 49.

the high-profile murder of Rachel Nickell in 1992. As a result, the Government commissioned a review into the science behind three commercially available ultra-sensitive DNA methods to be led by Professor Caddy[6] ('The Caddy Review'). In light of the HCSTC report, this review represented an ideal opportunity to bring together the scientific and legal communities to interrogate the limitations and reliability of these techniques. This would have found further support from the words of Weir J. who referred directly to the findings of the HCSTC report in his judgment. Unfortunately, this coherent approach was not realised. This thesis has already argued that the purely legal response by the Law Commission to the recommendations contained within the HCSTC report was an inappropriate course of action. This was due to a failure to appreciate the call for a coherent approach across both the scientific and legal domains. Equally damaging to a reliability assessment of expert evidence is a response conducted by the scientific community alone without the relevant input from the legal field as to its understanding and evidential requirements. In the absence of a dialogue between these two discrete fields even reliable scientific techniques or medical opinion remain adrift from their correct position within the trial process. Despite the evidential importance of LCN and its subsequent suspension from use within the criminal justice system, this chapter will reveal that the Caddy review was unfocused, brief and hasty. As a result, the law received little guidance as to the application and weight of LCN within the criminal trial setting thereby remaining with the responsibility for defining its evidential boundaries. By interrogating the final report published after this review ('The Caddy Report') this chapter will illustrate that the Caddy Review represented a missed opportunity within the timeframe of this thesis to effect real change by implementing a multi-disciplinary, thorough and targeted response to a specific forensic methodology.

Before this analysis can occur, it is first necessary to place the Caddy Review within the correct historical context. In order to achieve this, this chapter will begin by considering the two cases as introduced above, that were central to the subsequent review of the technique.

[6] Brian Caddy, Graham Taylor and Adrian Lineacre, 'A Review of the Science of Low Template DNA Analysis' <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/117556/Review_of_Low_Template_DNA_1.pdf> accessed 10 December 2019.

6.2: The Historical Context of the Caddy Review

6.2.1: The Killing of Rachel Nickell

The murder of Rachel Nickell in 1992 on Wimbledon Common was a shocking and brutal event that was extremely high profile and well documented.[7] Attention was also directed at the failure of the Police to successfully identify and convict the person responsible for her murder, until 18 years after the event.[8] This was due, in part, to poor policing practice[9] but, more importantly for the purpose of this paper, it was also due to the relative infancy of DNA profiling at the time of the murder.[10]

Since its discovery in 1984, standard DNA profiling has been under continuing development in an effort to allow profiles to be obtained from smaller samples, or from DNA that had been structurally degraded.[11] In 1992 however, despite developments in both DNA detection techniques and the methods employed to view the resulting profiles, the method lacked the sensitivity that is associated with current DNA profiling systems. Therefore, at the time it was only capable of detecting four loci[12] and required more source DNA to produce a profile.[13]

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[7] Matthew Weaver, 'Rachel Nickell: a case history' *The Guardian* (London, 18 December 2008) <www.theguardian.com/news/blog/2008/dec/17/rachel-nickell-case-history> accessed 16 October 2013.

[8] Editorial, 'Police errors led to Rachel Nickell' *BBC News* (London, 3 June 2010) <www.bbc.co.uk/news/10216328> accessed 16 October 2013.

[9] *ibid.*

[10] National Policing Improvement Agency, 'The Journal of Homicide and Major Incident Investigation' 6, 1, 19 (*The Police Library,* Spring 2010) <http://library.college.police.uk/docs/J_Homicide_MII/J_Homicide_6.1.pdf> accessed 06 June 2019.

[11] This may be caused by the passage of time, heat, chemicals etc.

[12] For DNA profiling purposes a locus consists of a pair of alleles (one inherited from each parent). These alleles are copies of areas known as short tandem repeats (STR) of non-coding DNA. These are highly variable areas that can therefore be used to help identify individuals;
For further detail see The Royal Society, 'Forensic DNA Analysis – A Primer for the Courts' (*The Royal Society,* November 2017) <https://royalsociety.org/-/media/about-us/programmes/science-and-law/royal-society-forensic-dna-analysis-primer-for-courts.pdf> accessed 09 December 2019.

[13] 'Since 2014 in the UK, 16 loci are examined. In some Scottish cases, 23 loci are examined'. Forensic Context, 'What Every Lawyer Needs to Know About DNA17 Profiling' (*Forensic Context,* 08 October 2015)

This meant that the technology available at the time was insufficiently sensitive to produce a DNA profile from the samples taken from Rachel Nickell's body.

In 2001 as a result of the development of the LCN technique, the FSS re-examined tapings taken from the body of Rachel Nickell in the hope that a profile would now be obtained from the DNA of the person responsible for her death. Unfortunately, this again proved unsuccessful.[14] The case continued to be reviewed by the FSS until 2004 when a request for the taping samples was received from a company called Forensic Alliance.[15] This company also wished to subject the samples to their own, newly developed, ultra-sensitive DNA profiling technique.

Critically, the process developed by Forensic Alliance involved quantification of the DNA prior to attempting the profiling process. The result obtained indicated that the levels of DNA were such that an enhanced procedure was unsuitable.[16] They thus subjected the samples to standard DNA profiling which had been increasing in sensitivity since 1999. As a result, both a major DNA profile from Rachel Nickell and a minor DNA profile from a male contributor were found, whereas the FSS using only their LCN technique, had consistently failed to produce either.[17] The minor profile provided a random match probability of 1 in 12 million[18]

<www.forensiccontext.com/what-every-lawyer-needs-to-know-about-dna17-profiling/> accessed 9 December 2019;

At the time of the Caddy review the optimal amount of DNA required for standard profiling was 1 ng. See Caddy (n6) [1.6].

[14] National Policing Improvement Agency (n10) 19.

[15] Est 1997. Now known as Eurofins. Forensic Access, 'Professor Angela Gallop CBE'*(Forensic Access)* <www.forensic-access.co.uk/our-people/management/professor-angela-gallop-cbe/> accessed 06 June 2019.

[16] If DNA levels are too high for the ultra-sensitive technique, then inhibition of the process can occur thereby producing false negative results. Inhibition was also known to occur with certain chemicals ie; indigo dye; National Policing Improvement Agency (n10) 19.

[17] M Silverman, Written in Blood (Bantam Press 2014) at 344.

[18] National Policing Improvement Agency (n10) 19.

to Robert Napper.[19] He was charged and subsequently pleaded guilty to the manslaughter of Rachel Nickell on the grounds of diminished responsibility.

6.2.2: The Gold Group

The potential for failure to produce DNA profiles from other crime scene samples analysed by the FSS LCN method understandably generated great concern. Joan Ryan, the Parliamentary Under-Secretary for State for the Home Department, was informed of the situation by the police service, but not until November 2006.[20] In response she immediately commissioned the Association of Chief Police Officers (ACPO) to establish a 'Gold Group'[21] to conduct 'an operational review of current forensic practices involving this (LCN) technique, any remedial action and establish if there are any cases that might need reinvestigation'.[22]

Chief Constable Tony Lake[23] was instructed to conduct this review to ensure that the method now used reached 'the necessary standards'[24] and that it was 'adequate for purpose'.[25] He was to obtain expert assistance from 'scientists, police and others with a specialist knowledge of the issues including an independent DNA expert'.[26] By February 2007 it was reported to parliament that this review was almost complete.[27] In view of an assessment of changes made

[19] At the time his DNA profile was finally detected, paranoid schizophrenic Robert Napper was being detained in Broadmoor for the killing of a mother, Samantha Bissett, and her 4 year old daughter Jazmine in November 1993 - just over a year after the killing of Rachel Nickell.

[20] HC Deb vol 457 column 61WS (22 February 2007).

[21] In response to a critical incident a 'Gold Group' is established to 'provide impartial support, advice and analysis'. Kent Police, 'M118 Critical Incident Management'. <www.kent.police.uk/about_us/policies/m/m118.html> accessed 01 October 2013.

[22] HC Deb (n20).

[23] Association of Chief Police Officers (ACPO) Lead on Forensics.

[24] HC Deb (n20).

[25] HC Deb (n20).

[26] HC Deb (n20).

[27] HC Deb (n20).

to the LCN method the Gold Group stated that there was now no reason for concern about the method currently in use.[28]

As a result of this finding the Gold Group were satisfied to allow the reanalysis of samples identified as being potentially affected by the issue of inhibition.[29] This was named 'Operation Cube' and involved the reanalysis of 4,841 samples that had been processed using the original LCN technique up until September 2005.[30] Subsequently 885 new profiles pertaining to 342 crimes were obtained where previously no profile had been produced. This resulted in 15 cases now having potentially new or significant lines of inquiry with 2 of those cases resulting in prosecution and conviction.[31]

Despite having been satisfied that the now modified technique was indeed reaching the required standard for the retesting of the Operation Cube samples, the Gold Group nevertheless recommended that a more thorough review should be conducted into the scientific method behind the LCN technique.[32] It was this decision that signalled the start of the Caddy Review in November 2007. Although the review was triggered specifically by the problems encountered with the FSS LCN process, it was decided that it should in fact consider all of the ultra-sensitive profiling methods available. This was because scientific issues regarding the analysis of such small amounts of template DNA were common to all techniques, now collectively known as Low Template DNA (LTDNA).[33]

It is important therefore, to establish that the Caddy review flowed directly from the Rachel Nickell case. This is contrary to a popular belief that it was brought about as a direct result of

[28] HC Deb (n20).

[29] HC Deb (n20).

[30] HC Deb vol 515 column 633W (9 September 2010).

[31] It was subsequently stressed in Parliament that 'only two of the fifteen cases [had] resulted in prosecution and conviction' and that 'in neither case did DNA play a significant part'. *ibid.*

[32] The Forensic Science Regulator, 'Response to Professor Brian Caddy's Review of the Science of Low Template DNA Analysis' (*Gov.uk,* 07 May 2008) [1.2.7] <<www.gov.uk/government/uploads/system/uploads/attachment_data/file/117557/response-caddy-dna-review.pdf> > accessed 21 May 2015.

[33] *ibid* [1.2.5].

the judicial commentary from the trial of *Sean Hoey* for the Omagh bombing[34], which follows next.

6.2.3: The Omagh Bombing

On Saturday August 15th 1998, at the climax of a political settlement aimed at ending 30 years of violent conflict in Northern Ireland, a large car bomb was detonated in the main street of Omagh – a busy market town in County Tyrone. Alongside extensive property damage, the explosion caused the deaths of twenty-nine people and two unborn children, with injuries being sustained by more than two hundred and fifty people. All of the victims were civilians. This incident is now acknowledged as being the worst single atrocity in the history of the troubles within Northern Ireland. Naturally the desire to bring those responsible to justice was of paramount importance, not only for the people of Northern Ireland, but also for those involved within the political peace process itself.

In 2002, Colm Murphy was convicted of conspiracy to cause an explosion with regard to the Omagh bombing.[35] He was at the time the only person charged with an offence in connection with the incident and he was subsequently sentenced to 14 years imprisonment.[36] A year later, Murphy's nephew Sean Hoey, was charged with '58 counts related to the alleged offences of murder, conspiracy to murder, causing explosions, conspiracy to cause explosions

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[34] For example: 'The fallout of the acquittal of Sean Hoey led to the appointment of the Caddy Commission by the Forensic Science Regulator (…)'. M Naughton & G Tan, 'The need for caution in the use of DNA evidence to avoid convicting the innocent' (2011) 15 E&P 245, 248;

'The judgment in Hoey was quickly followed by a review conducted on behalf of the new Forensic Regulator (Caddy Review) (…)'. A Jamieson, 'LCN DNA analysis and opinion on transfer: *R v Reed and Reed*' (2011) 15 E&P 161;

"A challenge to the reliability of low copy number (LCN) DNA profiling in the trial of Sean Hoey in Belfast Crown Court in Northern Ireland (…) prompted the UK's new Forensic Science Regulator (…) to commission a review of low template DNA profiling techniques."

Jason Gilder, Roger Koppl, Irving Kornfield, Dan Krane, Laurence Mueller and William Thompson , 'Comments on the review of low copy number testing' (2009) 123 6 Int J Legal Med 535.

[35] See *The People (DPP) v Colm Murphy* (2005) 2 IR 125, [1].

[36] Rosie Cowan '14 years for Omagh terrorist: Relatives of bomb victims applaud as dissident republican is jailed for conspiracy' *The Guardian* (London, 26 January 2002) 2.

and possession of explosive substances with intent to endanger life or cause serious damage to property'.[37] These charges arose from 13 bomb or mortar attacks, or attempted attacks, including the bombing in Omagh.

In January 2005, prior to the start of *Hoey's* trial, Murphy's appeal against his conviction was upheld.[38] Although initially rejected by the trial Court, it was successfully argued at appeal that interview notes had been altered and that the Garda officers involved had lied under cross examination. This in turn 'cast some doubt on the conduct of the investigation as a whole and that accordingly all interview notes were tainted and there was a real possibility that the evidence of the other interrogating officers might be unreliable'.[39]
Subsequently it was held that the conviction was unsafe and a retrial was ordered.
It was against this legal backdrop that the trial of *Hoey* began on 25th September 2006. Because of the terrorist nature of the offences it was conducted in front of a single judge with no jury present.[40]

Considered at the time to be 'one of the biggest murder trials in legal history',[41] LCN evidence was to play a crucial role for the prosecution as they attempted to link *Hoey* to the recovered bomb parts from the numerous locations. During the course of the trial however, it was discovered that certain police personnel had again lied with regard to their evidence. There were also major flaws in the handling and examination of the exhibits sent for LCN analysis.

Therefore, in his judgment Weir J. echoed the sentiment of the Court of Appeal Judges in the previous trial of Colm Murphy, by concluding that the conduct of these witnesses made it 'impossible (…) to accept any of the evidence of either witness since I have no means of knowing whether they may have told lies about other aspects of the case'.[42] With both of the

[37] *R v Hoey* (n5) [1].

[38] *Murphy* (n35) [141].

[39] *ibid*.

[40] Known as a 'Diplock Court' it was designed to prevent the risk of juror intimidation by dispensing with the jury.

[41] Matthew Moore 'Omagh Bombing: Sean Hoey found not guilty' *The Telegraph* (London, 20 December 2007) <www.telegraph.co.uk/news/uknews/1573193/Omagh-bombing-Sean-Hoey-found-not-guilty.htm>l accessed 21 May 2014.

[42] *R v Hoey* (n5) [50].

prosecutions brought in association with the Omagh bombing incident mired in accusations of lies and procedural failure, the prosecution were faced with the enormous challenge of proving the reliability and cogency of the LCN evidence against *Hoey* in order to prove their case.

In ruling against them, Weir J held that there was insufficient validation with regard to both the science and the methodology of LCN analysis and therefore this cast doubts on 'its reliability as an evidential tool'.[43] *Hoey* was subsequently acquitted on all charges in January 2007 although the judgment was not handed down until December of that year.

As a direct result of this critical judgment, ACPO, with agreement from the CPS, immediately launched an interim suspension on the use of LCN analysis in any future criminal investigations. They also conducted a review of current cases involving LCN evidence in order to address any implications and issues arising from the judgment prior to any further use of this forensic evidence.[44] In January 2008 they declared that they 'had not seen anything to suggest that any current problems exist with LCN'[45] and that 'LCN DNA analysis provided by the FSS should remain available as potentially admissible evidence'.[46]

It must be remembered that the Caddy review had already been initiated in November 2007 following the issues highlighted with LCN in the killing of Rachel Nickell. However, during the trial of *Hoey*, it became apparent to the reviewers that 'there were likely to be difficulties associated with (the) LTDNA analyses'[47] adduced as evidence for the prosecution and as a direct result of this realisation, they proceeded to consider the arguments raised in order to incorporate them into the report.[48]

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[43] *R v Hoey* (n5) [64].

[44] The Crown Prosecution, 'Review of the use of Low Copy Number DNA Analysis in current cases: CPS statement' (*CPS,* 2008) <www.cps.gov.uk/news/latest_news/101_08/index.html> accessed 20 June 2014.

[45] *ibid.*

[46] *ibid.*

[47] Caddy (n6) [6.1].

[48] 'Following the initiation of this review (…) the reviewers felt it desirable to study the evidence given by forensic scientists during the trial in order to evaluate whether or not additional problems associated with the use of LTDNA could be identified'. Caddy (n6) [6.1].

6.4: The Caddy Review

6.4.1: The Changing Scope

Having provided the chronological background to the Caddy review, what becomes immediately apparent is that the Caddy reviewers were forced to either shift or widen the scope of their enquiry. This followed from the criticisms levelled by Weir J, and his lack of confidence in the use of these profiles for evidential purposes.[49] These criticisms were based partly on the fact that a negative control swab had produced a profile from *Hoey*[50] and that one of the original profile interpretations had provided a match to a 14 year old boy with no connection to Omagh or the bombing.[51]

Consequently, a review that was initially required to examine 'the science behind LCN'[52] because of a *failure* to detect DNA profiles was then forced to incorporate a *legal* challenge as to the validity, reproducibility and therefore, the reliability of LCN DNA profiles when actually produced and used in court. Furthermore, both the police and FSNI were subjected to criticism by Weir J for their informal approach to 'labelling, storage and examination'[53], and their lack of 'stringent measures'[54] to prevent contamination, of samples. He went on to describe the police as having a 'cavalier disregard for their integrity'[55] and subsequently requested the Police Ombudsman to investigate the 'deliberate and calculated deception'[56] of a Scene of Crimes Officer and a Detective Chief Inspector. This rebuke served to widen the scope of the review further so that it included police procedures at the scene of crime[57] as

[49] *R v Hoey* (n5) [64].

[50] Partial trial transcript sent to author for the purposes of this thesis (5 May 2016).

[51] Forensic Bioinformatics, 'DNA technique which sparked controversy during Omagh bombing trial is "scientifically sound"' *(Forensic Bioinformatics)* <www.bioforensics.com/news/LCN_4-08-1.html> accessed 12 November 2013.

[52] The Forensic Science Regulator (n32) [1.2.3].

[53] *R v Hoey* (n5) [59].

[54] *R v Hoey* (n5) [46].

[55] *R v Hoey* (n5) [59].

[56] *R v Hoey* (n5) [50].

[57] Caddy (n6) [2.2].

well as the manufacturing processes of items used both at the crime scene and the laboratory.[58]

6.4.2: The Speed

In view of the widening scope placed on the review panel it was conducted incredibly quickly, taking a mere six months from commencement in November 2007 until the final conclusions were published in the Caddy report. Although the final report - due for release at the end of February[59] - was delayed until April 2008, it was unlikely that the reviewers had sufficient time, especially over the Christmas and New Year period, to consider the legal argument of Weir J in any great depth. The five objectives clearly laid out within the introduction of the report bear testimony to the breadth of the issues, both scientific and legal, that were to be addressed.[60] Furthermore, interim results from the review had already been made available to the Crown Prosecution Service (CPS) as early as January 2008.[61] From the outset, the executive summary accompanying the report, describes the review as having been 'detailed', with all three LTDNA techniques being declared 'sound'. Yet the introduction within the report itself would appear to be at odds with this statement by explaining that there was 'insufficient time to make a detailed comparison of all aspects of LTDNA analysis between all three forensic providers'.[62] It is difficult therefore to agree fully with the conclusion that all three methods are fit for purpose when in depth comparisons had not been undertaken and

[58] Caddy (n6) [2.3].

[59] *ibid*.

[60] 'i) the examination of LTDNA profiling techniques, ii) advising on their scientific validity and recommending best practice, iii) commenting on the interpretation of the results including their presentation within the criminal justice system, iv) to advise upon the creation of a national minimum technical standard and finally v) to suggest any other relevant recommendations.'
Caddy (n6) [1.1].

[61] 'In its work so far, the review has found nothing that would indicate any serious flaw in the scientific principles.' CPS, 'Review of the use of Low Copy Number DNA analysis in current cases: CPS statement 14 January 2008' *Insidetime* (Botley, 14 January 2008) <https://insidetime.org/download/miscarriage_of_justice/dna/DNA_Low_Copy_No_CPS_Statement_2008.pdf > accessed 06 June 2019.

[62] Caddy (n6) [1.2].

the reviewers have been forced to make assumptions regarding the information provided because of these time constraints.

Furthermore, despite the CPS opining that the judgment from *R v Hoey* was 'long and complex'[63] and would need studying 'very carefully',[64] the Caddy report is brief, being a mere 10,300 words long.[65] Section 7, 'LCN in the criminal justice system', is just 461 words in length reaching its conclusion that LTDNA profiling is 'fit for purpose' two thirds of the way through this part. It is interesting therefore, that despite its title, this section contains no reference to any form of evidential admissibility standard such as *Frye*[66], *Daubert*[67] or *Bonython*[68] nor engages in any discussion involving the required 'burden of proof' – both of which were raised by Weir J with regard to the LCN evidence.[69] The composition of the review panel as discussed in the next section would appear to have contributed to this lack of legal interrogation.

It is interesting therefore, that the reviewers felt constrained in the interests of time. With such an important issue at stake and both the legal and scientific communities eagerly awaiting the outcome,[70] the speed of the review and the brevity of the report could indeed indicate that the reviewers were responding to the pressures created by the suspension of the use of LCN in criminal trials. It has thus opened up the whole process to the criticism that it was 'responding to the practical needs of the criminal justice system'[71] rather than attempting to undertake an in depth, academic study as to the reliability of the LTDNA techniques for use within the criminal court system. With such a wide scope it is hardly

[63] Sean O'Neill, 'CPS to review all cases that use Omagh-type DNA' *The Times* (London,21 December 2007) <www.thetimes.co.uk/tto/news/uk/article1916830.ece> accessed 16 October 2013.

[64] *ibid.*

[65] Excluding 21 recommendations, references, acknowledgements and glossary.

[66] *Frye v. United States*, 293 F. 1013. (DC Cir 1923).

[67] *Daubert v Merrill Dow Pharmaceuticals Inc.* 509 US 579 (1993).

[68] *R v Bonython* (1984) SASR 45.

[69] *R v Hoey* (n5) [64] and [61].

[70] Stephen Lineham QC, 'Deoxyribonucleic Acid: Heroes, villains, low copy number and the latest cases' (*St Phillips Chambers,* 2011) <http://issuu.com/stphilipschambers/docs/crime_brief_issue_8_final> accessed 12 October 2013.

[71] 'Science in Court' (2010) 464 (7287) Nature 325 <www.nature.com/nature/journal/v464/n7287/full/464325a.html> accessed 23 October 2013.

surprising that the report concludes with 21 recommendations of which 19 are specifically determined as for the Forensic Science Regulator to address. It has thus invited the charge that it reads like a 'directory of problems'[72] rather than providing unqualified support for the robustness of the technique. Consequently, the Caddy review appears to have side-stepped the central issues of scientific validity and legal reliability all together.

It is clear that extending the reach of the 'Gold Standard' has a corresponding decrease in reliability. Therefore, care must be taken to fully appreciate the risks associated with extrapolating the powerful evidential value of DNA profiling. Nevertheless, the opportunity to understand both the methodology of LTDNA and then to use this to define the boundaries as to its use and evidential reliability has been squandered.

6.4.3: The Composition of the Review Panel

Examination of the trial transcript indicates that Weir J. appreciated the 'intellectual and philosophical conflicts'[73] between scientists and lawyers when dealing with forensic evidence in court. It is thus of specific importance to this thesis that Weir J. went on to reference the HCSTC report in his judgment when expressing his concern as to the status of the LCN technology as an evidential tool. Quoting directly from the text contained therein he echoed the desire for a coherent approach to validation of this methodology from 'judges, scientists and other key players'.[74] Despite this reiteration, the Caddy review that followed was a science-based exercise that stopped short of involving the legal community either during or after the review. It therefore failed to situate the evidential value of the findings within the trial context. Indeed, the panel of experts appointed to conduct the review was always to be comprised of three scientists. A legal representative was never considered for the review panel and none were acknowledged for their input at the close of the report.[75] This may explain why a consideration of the legal admissibility requirements was not present. This is a

[72] Allan Jamieson & Dr Rhonda Wheate, 'Fit for Purpose? The Review of Low Template DNA' The Forensic Institute <www.barristermagazine.com/archivedsite/articles/issue31/Jamieson.html> accessed 12 November 2013.

[73] Trial transcript (n50) 22.

[74] *R v Hoey* (n5) [64].

[75] Caddy (n6) 33.

curious omission considering the weight that the Caddy report held in the reinstatement of the LCN technique for evidential purposes following its suspension after the Omagh bombing judgment.[76]

This is likely a direct result of the widening scope of the review as discussed earlier, which expanded to include issues of evidential reliability alongside the underlying scientific methodology. As a result, the report itself concluded that there was an urgent need for a 'legal and scientific consensus'[77] regarding profile interpretation at both a national and international level thereby highlighting the need for legal input. Although chronologically preferable, a scientific assessment conducted in a legal void ultimately fails to attach the legal cart to the scientific horse at all. This leaves the Court alone in its attempts to decipher the reliability and the probative value, of the technique in question. This can result in bright line legal thresholds being drawn that misunderstand or oversimplify the limitations of the underlying science[78] - a point that will receive further elaboration in the final chapter of this thesis. Looking at the panel composition further, the Forensic Science Regulator was clear as to the requirements when instructing the review. Alongside Caddy, 'a person of standing in the field of science, with experience of carrying out substantial inquiries in the public sector'[79]it was also to comprise of '[t]wo DNA experts – *each* acknowledged authorities in the field of DNA profiling *for forensic science purposes* (…)'.[80] Whilst Dr Adrian Lineacre was an experienced DNA caseworker and Senior Lecturer in forensic science, Dr Graham Taylor was Head of Genomic Services at Cancer Research UK.[81] His expertise and interests were centred on healthcare and diagnostics and research for this thesis can find no evidence of any forensic experience or application within his long and distinguished career in the field of DNA

[76] Jamieson & Wheate (n72).

[77] Caddy (n6) [3.10].

[78]"However a challenge to the validity of the method of analysing Low Template DNA by the LCN process *should no longer be permitted* at trials where the quantity of DNA analysed is above the stochastic threshold of *100-200 picograms* in the absence of new scientific evidence." (emphasis added) See LCN in *R v Reed & Reed* [2009] EWCA Crim 2698 [74].

[79] The Forensic Science Regulator (n32) [1.2.7].

[80] *ibid* (emphasis added).

[81] The Forensic Science Regulator (n32) [1.2.9].

sequencing. [82] Whilst his input would no doubt be valued with regard to laboratory methodology, he nevertheless does not fit the criteria as laid down for members of the review panel.[83] It is also not immediately clear what, if any, practical experience the reviewers have with regard to LCN profiling – the importance of which has been emphasised by the Courts when considering the expert witness testimony and the reliability of LTDNA evidence.[84]

Further criticism has also been levied at the members of the review panel. It has been claimed that they failed to consult with anyone 'who had expressed contrary opinion on the merits of the FSS Ltd's LTDNA technique'.[85] They therefore stand accused of seeking only to elicit opinions and supporting evidence from those with a vested interest in the technology.[86] Without investigating this claim in any depth, it is clear that no critics of the technology were present in the acknowledgements. Furthermore, of the twenty five scientific papers referenced within the report, fifteen have the lead author as a member of the FSS.[87] The remaining ten papers deal with issues such as DNA recovery from exhibits, inhibitors of the analytical process or general advances in PCR and sequencing technology. Four of these ten papers are not specific to forensic application and none are specific to LTDNA profiling. It has since been acknowledged[88] that informal overtures were made to Professor Jamieson.[89]

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[82] Graham Taylor, 'Genetics Advisory Committee Newsletter No 17' (*The Royal College of Pathologists of Australasia*, April 2013) 5 <www.hgsa.org.au/documents/item/198> accessed 15 October 2013;
See also Graham Taylor 'Graham Taylor Former Scientific Director profile' (*Linkedin)* <www.linkedin.com/in/graham-taylor-b05a0228/?originalSubdomain=uk> accessed 07 June 2019.

[83] Caddy at (n6) [1.2.7].

[84] For example, *R v Reed & Reed* (2009) EWCA Crim 2698, *R v Weller* (2010) EWCA Crim 1085. 'He bases much of his knowledge of DNA and the analysis of Low Template DNA on papers and discussion with other scientists; he does not conduct laboratory research. (…) his expertise on the interpretation of DNA profiles is limited, without any relevant first hand laboratory or research experience.' [106] – [107].

[85] Robert Moles, 'Press release regarding the Caddy Review of LTDNA' (*Forensic Institute,* 15 April 2008) <www.theforensicinstitute.com/news/press-release-caddy-review-april-2008.html> accessed 15 October 2013.

[86] *ibid.*

[87] Dr P. Gill being cited as lead author in 7 of these papers.

[88] Forensic Institute, 'The Caddy review – an update following the judgment in *Reed*' (*Forensic Institute,* 2010) <www.theforensicinstitute.com/news/caddy-review.html> accessed 15 October 2013.

[89] DNA Expert at The Forensic Institute, Glasgow.

Jamieson is a published critic of the LCN technique and also appeared as a defence expert witness in the Omagh Bombing trial along with Dr Dan Krane. In view of the comments made by Weir J, it may well have been appropriate to invite either Jamieson or Krane to join the review panel. Their inclusion would have provided more balance to the inquiry by a critical assessment of the scientific data provided by the companies concerned. This may have allowed for further questions relevant to the making a robust validity assessment. Also, their experience of the legal process could have provided a valuable link between the scientific and legal fields thereby starting the process of a coherent multi-disciplinary approach to the issues surrounding LCN.

One final point of interest regarding the panel composition was that the two scientists with forensic experience were, at the time, both appointed by Strathclyde University. Dr Peter Gill, the developer of the LCN technique and thus central to the Caddy review investigation, became an employee of the same institution from 1st April 2008.[90] The report thus leaves itself open to an accusation that it predominantly represents the view of one institution as opposed to a forensic science 'community'.[91] Furthermore, the three criminal justice systems within the UK[92], although alike in some ways, do bear significant procedural differences, with the Scottish system being the most extensively devolved.[93] It is curious therefore, that a judgment arising from the criminal court of NI that cast doubt on the evidential reliability of LCN testing, should be investigated primarily by a Scottish review panel. Their findings then directly informed the decision to continue using this technology for evidential purposes within not only NI but also England and Wales.

[90] Caddy (n6) [1.3].

[91] Interestingly the main antagonist towards the LCN methodology founded the Forensic Institute based in Glasgow. There is thus a danger that the findings emanating from and the criticism of, the Caddy report become lost in the fog of a dispute between two Scottish institutions rather than being perceived as an independent enquiry into the validity of LCN for evidential purposes.

[92] England & Wales, NI and Scotland.

[93] Shuttleworth, K and Paun, A 'Criminal Justice and Devolution' (*Institute for Government,* 1 July 2020) <https://www.instituteforgovernment.org.uk/explainers/criminal-justice-devolution> accessed 30 March 2021).

6.4.4: Two Different Versions of The Caddy Report

It was explained earlier in this chapter that the Caddy review was forced to expand its scope following the judgment handed down in *R v Hoey*. This in turn appears to have led to some confusion with the resultant report, as two slightly, but crucially different versions of this document are in circulation. The first discrepancy concerns the methodology adopted by the reviewers when considering the issues raised in the above trial. In one version it states that '[t]he reviewers felt it desirable to read the transcripts of the trial in order to evaluate whether or not additional problems associated with the use of LTDNA could be identified'.[94] The other version of the report replaces 'read the transcripts of the trial' with 'study the evidence given by forensic scientists during the trial'.[95]

Although the transcript may well provide a detailed report of the expert *testimony* given at trial and the *interpretation* of the science behind it, it is argued here that this does not equate to 'studying the evidence' that was given at the trial. As the Caddy report was commissioned specifically to review the science behind LCN testing, the phrase 'study the evidence' may lead one to believe that the reviewers actually studied the scientific data and laboratory records of the FSS with regard to this trial evidence rather than merely reviewing the arguments and cross-examination as presented in Court. The analyses of the reference cases in Act 1 illustrated that even a reliable methodology may be presented with an unwarranted certainty as to its conclusions. Thus, there can be confusion between the reliability of expert *evidence* and that of expert *testimony* if these criteria are not clearly defined. It is therefore crucial to situate 'unreliability' within its correct domain so that the appropriate risk response strategy can be developed. However, this confusion appears to have infiltrated the final Caddy Report also.

The second, and arguably more important inconsistency centres on the conclusions drawn by the reviewers as to whether LCN has truly been validated. One version states that 'scientific

[94] Caddy report found at Bioforensics, <www.bioforensics.com/download-articles/> accessed 05 June 2019.

[95] Caddy report found at gov.uk <www.gov.uk/government/uploads/system/uploads/attachment_data/file/117556/Review_of_Low_Template_DNA_1.pdf> accessed 05 June 2014.

validation of the approach is complex and still being developed'[96] whereas the other states that 'scientific validation of the approach is *complete* although developing aspects of *evidence interpretation* are still on-going'.[97] These statements are clearly different in meaning and therefore it is unclear as to the exact view held by the review panel. Regardless of which report is referenced, LCN had been in use for 7 years by the time of the Caddy review, yet it is apparent that interpretation of the results for evidential purposes had not been fully decided. It is unknown at present why there are in fact these two variations of the Caddy report in existence and it is also difficult to speculate with any certainty as to whether one version precedes the other. However, the difference in wording, although possibly inadvertent, is fundamental in understanding the processes underpinning the review.

6.5: Lack of Consensus

6.5.1: Profile Interpretation

It is immediately apparent that there is not even a consensus as to the meaning of the term LCN or LTDNA itself. For example, during the trial of *Hoey*, Gill defined LCN as a method of profile 'interpretation' often employed when a low level, minor DNA component is obtained from within a mixture, by standard DNA profiling methods.[98] It was stated that the stochastic variation and issues surrounding profile interpretation are present when the DNA is at low level regardless of whether standard or enhanced DNA profiling methodology has been employed. The Caddy report on the other hand, refers to LTDNA analysis as 'an ultra- sensitive *technique*'[99]– that is, a set of particular, practical steps employed to increase the sensitivity of the profiling process. The Caddy review clearly agrees with Weir J. that there is an urgent need for a consensus between the legal and scientific communities with regard to profile interpretation. However, this underlying definitional difference meant that there was not even a consensus within the scientific field about this matter with each provider creating their own method-specific guidelines.[100] Without a basic scientific consensus as to profile

[96] Bioforensics (n94) [9.2].

[97] Gov.uk (n95) [9.2] (emphasis added)

[98] Trial transcript (n50) (4-5).

[99] Caddy (n6) [1.8] (emphasis added).

[100]Caddy (n6) [3.10].

interpretation it is nigh on impossible for the law to assess admissibility and cogency even with an enhanced reliability test.

Whilst considering a paper from the Technical UK Working Group (TUWG)[101] as 'a step in the right direction'[102] the report clearly states that whilst this indicates a growing consensus as to profile interpretation it is nevertheless only between the service providers, and that ultimately it contains insufficient detail or input from other interested parties. Crucially it is stated that it takes no account of the legal arguments involved.[103] Despite these reservations, the TUWG paper is again referenced within the report under the heading of 'LCN in the Criminal Justice System' and is used to illustrate the fact that the 'UK forensic science community has developed interpretation guidelines to assist with (…) the increase in the number of mixed profiles and low level minor profiles'[104] obtained by these more sensitive techniques. This paper was a response to the International Society of Forensic Genetics (ISFG) recommendations for mixture interpretations which stated that:

> [o]ur discussions have highlighted a significant need for continuing education and research into this area. We have attempted to present a consensus from experts but to be practical we do not claim to have conveyed a clear vision in every respect in this difficult subject. For this reason, we propose to allow a period of time for feedback and reflection by scientific community.[105]

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[101] Peter Gill, Rosalind M Brown, Martin Fairley, Lara Lee, Maureen Smyth, Neil Simpson, Brian Irwin, Jim Dunlop, Matt Greenhalgh, Kerry Way, Emma J Westacott, Steven Jon Ferguson, Lisa Victoria Ford, Tim Clayton, June Guiness, Technical UK DNA working group,
'National recommendations of the Technical UK DNA working group on mixture interpretation for the NDNAD and for court going purposes' (2008) For Sci Int'l Genet 2(1), 76.

[102] Caddy (n6) [3.11].

[103] *ibid*.

[104] Caddy (n6) [7.2].

[105] P Gill, C H Brenner, J S Buckleton, A Carracedo, M Krawczak, W R Mayr, N Morling, M Prinz, P M Schneider, B S Weir and DNA commission of the International Society of Forensic Genetics 'DNA commission of the International Society of Forensic Genetics: Recommendations on the interpretation of mixtures' (2006) 160 (2-3) For Sci Int'l 90.

Despite these conclusions, these papers are nevertheless referenced in the Caddy Report as support for interpretation guidelines having already been developed.[106] However, earlier in this same report it was held that the information contained therein lacked detail and was incomplete in certain aspects.[107] Also the further reference to the TUWG paper within this particular section of the Caddy report is at odds with the earlier concern of the reviewers that it lacked consideration of the legal arguments involved. In addition, the use of the phrase 'forensic science community' by the reviewers should be substituted for the phrase 'forensic science providers' based on their earlier argument that it is this community that is actually represented within this document.[108]

It is important to appreciate that without input and critique from a wider forensic science community the interpretation guidelines will only ever reflect the work and opinion of those who stand to gain from promoting their own methodology.[109] Equally it reflects a pro-prosecution bias and thus needs to receive more balance on review. Unfortunately, the composition of the review panel did not benefit from this opposing scientific viewpoint as discussed earlier. Furthermore, the concept of 'general acceptance' in the scientific community permeates many international admissibility standards[110] and receives

[106] 'The forensic science community in the UK has developed interpretation guidelines to assist with these types of cases'. Caddy (n6) [7.2].

[107] 'Scientific papers provided by the FSS indicate that a consensus accepting the general process leading to profiles generated by a validated LTDNA regime has been accepted by the international community such as ENFSI and the European DNA Profiling Group (EDNAP) but these agreements do not provide experimental details of the initial validation process. Nor is it clear if or how they address alternative proposals for dealing with incomplete data.' Caddy (n6) [3.21].

[108] It is also of note that the lead author for both papers was Dr P Gill the developer of the original LCN methodology for the FSS.

[109] '[A]ll of the major suppliers of the UK and Ireland who contribute to the UK national DNA database'. Gill and others (n101).

[110] In the USA the 'general acceptance' test arising from *People v Frye* was the recognised admissibility standard prior to the *Daubert* ruling. The *Daubert* test and the FRE 702 however also require consideration of 'general acceptance' when assessing admissibility;
The Australian case of *R v Bonython* is the favoured admissibility standard for the Courts of England and Wales. Consisting of three stages, the second stage asks 'whether the subject matter of the opinion forms part of a body of knowledge or experience which is sufficiently organised or recognised to be accepted as a reliable

countenance within the Law Commission enhanced reliability test.[111] Issues regarding commercial sensitivity of new methodologies may also prevent true acceptance within the scientific community as details and techniques remain shielded from scrutiny. Care must be taken therefore, not to provide the illusion of general acceptance when the community is so narrowly defined or has been selected to reflect a particular, desired outcome.[112]

6.5.2: Methodology

The potential for stochastic variation to occur when performing these highly sensitive profiling techniques is a well-documented and accepted problem.[113] These effects impact directly on the reliability and reproducibility of the profiles generated. The Caddy report acknowledges 'that failure rates for LTDNA analyses are high'[114] however this statement must be contrasted with the recognition that there is no consensus within the scientific community as to what constitutes a 'success'.[115] The review chooses then to concentrate on the production of 'useable partial profiles'.[116] A method utilised to increase the reliability of the resulting profile is to repeat the number of times the analysis is performed.[117] How many

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body of knowledge or experience'. However, as the Law Commission point out there remains confusion as to how this is being interpreted by the Courts;

See The Law Commission, *The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [3.5]-[3.17].

[111] 'The extent to which any material upon which the expert's opinion is based has been reviewed by others with relevant expertise (for instance, in peer-reviewed publications) and the views of those others on that material.' *Criminal Practice Directions Amendment No.2 2014* [2014] EWCA Crim 1569 [33A.5(d)] https://www.judiciary.uk/wp-content/uploads/2014/07/Criminal-Practice-Directions-Amendment-No-2.pdf accessed 06 January 2020;

'Whether there is a range of expert opinion on the matter in question; and, if there is, where in the range the opinion lies and whether the expert's preference for the opinion proffered has been properly explained.' *ibid* (g).

[112] 'The *Frye* rule of "counting heads" in the scientific community is not an appropriate way to determine the admissibility of a scientific procedure in evidence (…)' *Harper v State,* 292 S.E.2d 389 (Ga. 1982).

[113]Caddy (n6) [1.7].

[114] Caddy (n6) [2.6].

[115] *ibid.*

[116] Caddy (n6) [2.6].

[117] This will be dependent on the amount of material available for testing which is an important limitation.

replicates should ideally be used however, is the crucial question. In *R v Hoey* the test was performed twice but it was revealed at trial that a third test had been conducted that destroyed the consensus obtained from the first two results.[118] This issue has led to the USA insisting on three replications[119] whilst other commentators have suggested that seven should be used to ensure a more accurate result.[120] The review acknowledges the need for repetition of the process to dispense with any confusion caused by these effects and also the problem arising from *R v Hoey*. Nevertheless, it holds with the view that 'usually twice is sufficient'[121] for this purpose. When considering the findings at trial as discussed above, this is a strange conclusion to draw. The comments of Weir J that were responsible for halting the use of LCN in the criminal justice system, thereby triggering the expansion of this review into the methodology, clearly stated that twice was not sufficient to provide a consistent profile in that case.

Nevertheless, the reviewers support the stance that usually two replications will suffice by declaring, that in instances such as that encountered with the replicates in *R v Hoey*, 'the same does not mean identical'.[122] Whilst it is appreciated that the limitations of testing at these ultra-sensitive levels means that reproducibility may prove problematic, it is not clear from the report what level of similarity or difference is acceptable for evidential purposes. There is also documented concern that in order to obtain a useable profile some scientists may adopt the 'composite profile' technique.[123] This is where partial profiles from different replicates, or even samples, are combined to provide a more detailed or full profile. This technique is thus criticised for allowing the subjective choice of the scientist to dictate which parts of the profiles to combine and also to opine as to their meaning.

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[118] *R v Hoey* (n5) [62(10)].

[119] *R v Hoey* (n5) [62(9)].

[120] P Taberlet, S Griffin, B Goossens, S Questiau, V Manceau, N Escaravage, L P Waits, and J Bouvet, 'Reliable genotyping of samples with very low DNA quantities using PCR' (1996) 24 Nucleic Acids Res 3189.

[121] Caddy (n6) [1.7].

[122] Caddy (n6) [3.15].

[123]Allan Jamieson, 'So you think DNA is objective?' (*Forensic Institute,* 2009) <www.theforensicinstitute.com/news-articles/views-and-opinions/dna-profile-interpretation/so-you-think-dna-profiling-is-objective> accessed 12 June 2019.

The associated question of how confidence levels are assigned to profiles obtained from replicates that are not identical,[124] has been totally ignored by the review despite being considered by some to be of great importance in determining the robustness of the technique.[125] Furthermore, no consideration was given to the type, number or meaning of the control samples necessary for running alongside the analysis despite the problem occurring with the negative control in *R v Hoey*.[126]

6.5.3: International Jurisdictions

In his judgment Weir J. was specifically concerned about the lack of international agreement as to the technique.[127] As such, the review panel were specifically charged with answering a key question. This was 'whether or not the processes involved in LTDNA analyses have been adequately validated and (…) accepted by the international forensic community'.[128] Whilst recognising that the validation of the LCN technique has received limited international acceptance the report nevertheless enthusiastically listed a number of countries that used LTDNA technology.[129] It failed to mention that, at the time of the review, both the Irish and Scottish Courts refused to allow LCN as evidence in criminal trials[130] and had no immediate plans to allow its introduction.[131] New York State was included but the rejection of the

[124] 'The number of replicate analyses, the number of times an allele is observed, and the degree of confidence (quantitatively or qualitatively) need to be better defined.' Bruce Budowle and others, 'Validity of Low Copy Number Typing and Applications to Forensic Science' (2009) 50 (3) Croat Med J, 207, 214.

[125] 'We strongly recommend that the issue of replicates be addressed.' *ibid.*

[126] Trial transcript (n73)

[127] Caddy (n6) [6.2].

[128] Caddy (n6) [3.13].

[129] Caddy (n6) [3.20].

[130] John Dolan 'DNA under the microscope' (*Law Society Gazette*, October 2007) 24 https://www.lawsociety.ie/globalassets/documents/gazette/gazette-pdfs/gazette-2007/october2007.pdf> accessed 12 June 2019.

[131] Allan Jamieson & Dr Rhonda Wheate, 'Fit for purpose? The Review of Low Template DNA' The Barrister <www.barristermagazine.com/archivedsite/articles/issue31/Jamieson.html> accessed 12 June 2019.

technique by the FBI in general was omitted.[132] Furthermore, the acceptance of the technology for criminal justice purposes by the New York Court[133] has since been criticised for its flawed reasoning.[134] It was also unclear whether all the countries stated allowed LTDNA for evidential rather than intelligence gathering or identification purposes. Importantly however, the cross examination of Gill during the trial of *Hoey*, exposed differences between the procedures adopted by the FSS and the New York laboratory. It followed from this revelation that if the New York rules were applied in this case then the significance and reliability of the evidential profile obtained was greatly reduced if not destroyed altogether.[135] This highlights the inconsistent approach to the methodology across international boundaries and the significance for interpretation of the result if different criteria are applied. The Caddy report also acknowledged that some countries do not operate their own LTDNA system but nevertheless accept this evidence in their Courts when performed by the FSS for example.[136]

The recognition of this important fact does not lend any support to the notion of international validation but may rather indicate the international perpetuation of an unreliable, insufficiently validated technology. This goes to the heart of the Omagh bombing judgment and the concern of Weir J that the LCN process had not received sufficient validation and international acceptance so as to be reliably regarded as able to produce profiles of evidential quality.[137] With the lack of coherence between the laboratories and the obvious void in legal input the reviewers recommended that the Forensic Science Regular should start to work with the stakeholders to develop guidance on profile interpretation. Yet despite this lack of

[132] Jeff Wise, 'Under the microscope: Legal Challenges to Fingerprints and DNA as Methods of Forensic Identification' (2004) 18 (3) Int 'l Rev L Computers & Tech 425.

[133] *People v. Hemant Megnath* (2010 N.Y. Slip Op) 20037.

[134] 'The use of PCR for analysis of very low levels of DNA in the field of pre-implantation genetic diagnosis (PGD) has been used to justify general acceptance of LCN analysis in the wider scientific community. This argument is flawed.' Angela Van Daal, 'LCN DNA Analysis: Limitations Prevent "General Acceptance"' (2010) Promega <www.promega.co.uk/resources/profiles-in-dna/lcn-dna-analysis-limitations-prevent-general-acceptance/#referenceList> accessed 12 June 2019.

[135] Trial transcript (n50) 87-91.

[136] Caddy (n6) [3.20].

[137] *R v Hoey* (n5) [63] - [64].

agreement in this fundamental area the Caddy report was still able to conclude that LTDNA was 'fit for purpose.

6.6: **Validation**

Advising upon the scientific validity of the three LTDNA techniques that were currently in use was a key objective of the Caddy review. However, due to the commercialisation of forensic science services, there was a reluctance to release data due to the commercial sensitivity of the developed processes. [138] Indeed the reviewers acknowledge that obtaining raw experimental data from the FSS was difficult.[139] Whilst much emphasis was placed on the compliance of the FSS with the UK Laboratory Accreditation System (UKAS) and the ISO 17025 standard, the evidence was far from compelling that this was actually the case. For example, it was acknowledged during the trial of *Hoey* that 'the only validation of LCN profiles and their accuracy'[140] was an internal process by the FSS that allowed them to declare that LCN was 'reliable, robust, reproducible and fit for purpose'.[141] It is clear from the judgment that Weir J was dissatisfied that this represented true methodological validation. He proceeded to express doubt that 'two journal articles describing a process invented by the authors can be regarded, without more, as having validated that process for the purpose of its being confidently used for evidential purposes'.[142] This critique of the validation process is borne out by the Caddy review in the recognition that this did not follow the normal approach to validation.[143] Nevertheless, the reviewers were still prepared to reach the opinion that the LCN technique was fit for purpose based on eventually receiving a rather mosaic presentation

[138] 'For completion, we would normally wish to see such validation independently ratified by another such laboratory to conform to normal scientific practice of repeatability by an independent laboratory. The commercialisation of forensic science makes this very difficult (…)' Caddy (n6) [9.2];

This confidentiality has been documented as thwarting attempts to assess validity and therefore preventing general acceptance both her and with international providers;

See Natasha Gilbert, 'DNA's identity crisis' (2010) 464 Nature 347

See van Daal (n134).

[139] Caddy (n6) [3.17].

[140] Trial transcript (n50) 81.

[141] Caddy (n6) [6.2].

[142] *R v Hoey* (n5) [64].

[143] Caddy (n6) [3.17].

of validation data and on the rather weak reassurance by UKAS that the FSS 'must have provided them (…) with material of the kind expected'.[144] The fact that the report recognised that this information 'should always be kept by the accredited laboratory and should be readily available for inspection'[145] should have prompted the review panel to explore why the FSS had such trouble in producing the requested data and to question the procedures in place for laboratory accreditation. Some support for the validation of the LCN process was found in data presented by the other two service providers of LTDNA testing. However, their techniques were not identical to that which was routinely performed by the FSS. Crucially they contained a quantification step prior to analysis the importance of which was demonstrated by the failure of LCN to obtain profiles in the Rachel Nickell case. It was thus a modified version of the technique that was validated and not the original method that invited such criticism. This confidence in LCN validation, however, is not supported by the comments of the other service providers which are discussed in the next section of this chapter. The Caddy review found further support for 'the proper validation of this methodology'[146] from 'additional experimental data'[147] emanating again from the FSS and from a Dutch DNA service provider utilising the LCN technique. Rather than representing independent validation[148] this thesis argues that these new data sources are again from interested parties with a commercial interest in a successful outcome rather than an indication of acceptance within the wider scientific community.

Whilst declaring LTDNA fit for purpose, the report then proceeds to note that the FSS has '*undertaken* to develop and align its validation procedures with the recommendations of the ENFSI[149] and SWGDAM'.[150,151] This statement lends support to the whole thrust of this debate in that the validation procedures undertaken by the FSS were neither sufficient nor readily

[144] *ibid.*

[145] Caddy (n6) [3.17]

[146] *ibid*

[147] Caddy (n6) [6.4].

[148] Caddy (n6) [3.20].

[149] European Network of Forensic Science Institutes.

[150] Scientific Working Group for DNA Analysis Methods.

[151] Caddy (n6) [3.17] (emphasis added).

available for critique at the time of the Caddy review. Indeed, the relevant SWGDAM validation guidelines, issued in 2003,[152] outline a robust procedure. These guidelines state that 'prior to using a procedure for forensic applications, a laboratory *must* conduct internal validation studies'[153], whilst emphasising the importance of sufficient documentation to support these studies,[154] 'documented quality assurance parameters and interpretation guidelines'.[155] They further require peer-reviewed publication of both the scientific principles and the validation data. Thus, it is argued here that the reviewers should have insisted on these criteria being met prior to making the declaration that the LCN technique was 'fit for purpose'.

6.7: Comparison of Techniques

The review acknowledged the fundamental need for a direct comparison between the two different approaches adopted by the service providers. Consequently, it referred to a pending scientific paper by one of these providers that was due for publication.[156]

However, that is as far as the discussion goes, as it is apparent that the reviewers did not seek to obtain a draft paper nor the raw data on which it was based. This scientific paper was authored by scientists from the Laboratory of The Government Chemist (LGC) and was published in a forensic science journal in September 2008.[157] However, it was in fact first submitted to the journal in February of that year – prior to the release of the Caddy review findings in April. This indicates that the reviewers were indeed in a position to request this paper and consider its findings during the course of the review. In the absence of this data the Caddy report recommended that an 'independent study should be undertaken to assess

[152] FBI, 'Revised Validation Guidelines Scientific Working Group on DNA Analysis Methods (SWGDAM)' (2003) <www.fbi.gov/hq/lab/fsc/backissu/july2004/standards/2004_03_standards02.htm> accessed 06 November 2013.

[153] *ibid* [1.2.2].

[154] FBI (n152) [1.2.2.1].

[155] FBI (n152) [1.2.2.2].

[156] Caddy (n6) [3.6].

[157] Luke Forster, Jim Thomson & Stefan Kutranov, 'Direct comparison of post-28-cycle PCR purification and modified capillary electrophoresis methods with the 34-cycle "low copy number"(LCN) method for analysis of trace forensic DNA samples' (2008) 2 Forensic Sci Int Genet 318.

the advantages and disadvantages of the two different approaches to LTDNA analysis'[158]. In response to this, the Forensic Science Regulator proposed that the DNA Analysis Specialist Group (DNASG) should 'review any further actions'[159] once the quoted paper was published rather than conducting an independent study as recommended by the Caddy review.[160]
It must be remembered that the research for this paper was conducted by the LGC, a LTDNA service provider and commercial competitor to the FSS. Nevertheless, their paper when published concluded that their in-house method produced profiles with 'the same or *better* quality and sensitivity' than the LCN technique and crucially, their 'staged' method of analysis allowed for the optimisation of the technique for the amount of DNA contained within the sample.[161] This finding directly relates to the problems associated with the Rachel Nickell case and the inhibition of the reaction due to high levels of template DNA.

It was also claimed that the staged approach allowed for a wider range of DNA concentrations to be successfully profiled from just one primary analysis of the sample. This ultimately meant, that overall, less of the sample would be used in the production of consensus profiles – a fact that may be of great relevance to, for example, the defence who may wish to perform their own testing procedures.

Another advantage put forward by the authors was that their approach to the procedure negated the need to reanalyse a new primary sample under ultra-sensitive conditions when standard profiling has produced poor quality results. This reduced the risk of stochastic

[158] Gilbert (n2), Recommendation 15.

[159] The Forensic Science Regulator, 'Response to Professor Brian Caddy's review on the science of low template DNA analysis' (*Gov.uk,* 07 May 2008) 26 <www.gov.uk/government/uploads/system/uploads/attachment_data/file/117557/response-caddy-dna-review.pdf> accessed 13 June 2019.

[160] On further enquiry with the Forensic Regulators Office for the purposes of this thesis, it would appear that no official report was issued with regard to this paper and neither was an independent study requested, although it is believed that the paper was discussed at the DNASG. The result of these discussions was that no method was shown to be inferior and that the choice of process used was down to laboratory preference. At this time the DNASG membership included representatives from LGC, Orchid Cellmark and the FSS.

[161] Forster (n157) 328 (emphasis added).

variation occurring across the testing procedures, and the associated difficulty with profile interpretation, which was more likely to occur with the original LCN technique.

Therefore, as their method enabled the magnification, and thus confirmation, of the original profile produced by the standard profiling method, the authors concluded that their method gave 'greater *evidential* strength'[162] to the interpretation of the profiles. This statement would undoubtedly have been of great interest to the Caddy review that were tasked with considering LTDNA profiling within the criminal justice system. Their failure to seek out the findings from this research meant that the review panel missed an important opportunity to consider evidence that went to the heart of their inquiry.

Indeed, the Caddy report recognised that both Orchid Cellmark and the LGC would only use the LCN method 'as a last resort'[163], preferring their own in-house methods to that developed by the FSS. It is again unfortunate that their reasons for making this statement were not explored any further by the reviewers.

Therefore, the lack of independent scrutiny undermines the conclusion that all LTDNA methods are robust and fit for purpose and fails to consider that all the methods may be equally unreliable for evidential purposes. Indeed, the second remit for the reviewers clearly states that they were charged with '[advising] upon the scientific validity of [the] techniques, having regard to any novel issues raised (…) and the variations in approach adopted by different providers, recommending *best practice* in light of current scientific knowledge and opinion'[164] – a task that they apparently avoided.

This failure to fully compare the different methodologies in detail, and thus dictate best practice, invites the criticism that the driving force behind the review was the speedy resumption of LTDNA testing in the criminal justice system.

[162] *ibid* (emphasis added).

[163] Caddy (n6) [3.17].

[164] Caddy (n6) [1.1 (ii)] (emphasis added).

6.8: 'Fit for Purpose'

The widening objective of the review following the judgment in *R v Hoey* provides some explanation as to why the report has been criticised for finding LCN as 'fit for purpose'[165] without actually defining what 'the purpose' was meant to be.[166] Joan Ryan originally used the phrase 'adequate for purpose' with regard to the retesting of samples for Operation Cube, [167] whereas Weir J was concerned with the legal purpose, namely 'its reliability as an evidential tool'.[168]

Weir J. discriminated between evidential and intelligence gathering[169] uses for LCN profiling within the criminal justice system whereas the Caddy report, in its brevity, failed to make this distinction clear. This omission was despite raising the matter within the introduction to the report as the primary issue for consideration.[170] As discussed earlier, the Caddy Report failed to define what constituted useable from a practical point of view. Now they omit to define for what purpose the profile is considered useable for. Without clarification there is a danger of an underlying assumption that useable equates to evidentially 'reliable' or 'correct' especially in light of the elusiveness of 'success' as discussed earlier. Crucially, both versions of the Caddy report in circulation are clear that the issue of interpretation for evidential purposes is far from settled.[171] Consequently the current lack of consensus on the statistical value of profiles and their interpretation 'is bound to create confusion in a court setting'.[172] It is thus difficult to agree that the LTDNA methodologies are indeed fit for the purpose of use in court.

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[165] Caddy (n6) [7.4].

[166] Jason Gilder, Roger Koppl, Irving Kornfield, Dan Krane, Laurence Mueller and William Thompson, 'Comments on the review of low copy number testing' (2009) 123 6 Int J Legal Med 535.

[167] Parliament.uk (n20).

[168] *R v Hoey (*n5) [64].

[169] *R v Hoey* (n5) [62].

[170] Caddy (n6) [1.1].

[171] See discussion earlier within this chapter.

[172] Caddy (n6) [9.3].

This chapter has illustrated that the Caddy review was ineffective in providing a true endorsement for the evidential use of LTDNA profiling within the criminal justice system.

Despite the recommendations flowing from the HCSTC report two years earlier there was no dialogue between the scientific and legal spheres. Consequently, the Caddy Report represented a scientific consideration of the technique with no real input from the legal field as to its evidential reliability. As illustrated within this Act, this conversational detachment has constantly run through attempts to situate expert evidence within the criminal trial and to delineate the boundaries as to its weight and reliability. Despite the evidential importance of DNA profiling the Caddy review does not even appear to be a dedicated attempt by the scientific community to resolve the technical issues associated with this technique. For example, after being forced to expand the remit of the review to include the Omagh bombing judgment, it was nevertheless concluded in less than six months. Furthermore, this time period included Christmas and New Year – a time span that almost certainly fails to appreciate the scientific and legal complexity of LTDNA profiling. It therefore fails to recognise the importance of assessing the reliability of ultra-sensitive DNA profiling techniques when used for the administration of justice. The subsequent muddled and repetitive Caddy report is conspicuous in its brevity, lacking both depth and detail with regard to the scientific and legal arguments, choosing instead to deflect many of these important issues for future action by the Forensic Regulator via the 21 recommendations at the close of the report.

Nevertheless, this review provided independent support for the decision by ACPO and the CPS to reinstate LTDNA profiling following its interim suspension after the Omagh bombing trial and, although it remains a controversial and criticised document, its significance in the history of LTDNA profiling should not be underestimated.

Act 3: The Performance

Act 1 of this thesis concerned itself with the analyses of the reference cases chosen by the Law Commission to support their proposal. Act 2 then went on to reflect what changes had been made, and opportunities missed, by the criminal justice system in order to address the concerns raised with regard to expert evidence. This third Act, consisting of two chapters, will return to the Law Commission consultation process, assessing their key objective to avoid wrongful acquittals or convictions by focusing on the quality of the reform as a risk response strategy.

The prologue to this thesis introduced the concept of the Sandman risk equation, Risk = Hazard + Outrage (R=H+O) and explained that its function will be as a heuristic vehicle to articulate and explain the Law Commission response to concerns regarding unreliable expert evidence. Prior to Sandman's restatement of risk, the traditional approach used by risk assessors in many disciplines, was to collect data (either hard or soft)[1] in order to assess the probability of an adverse event occurring, and then multiplying this by the magnitude or severity of the outcome.[2] Therefore, in simple terms these risk assessment professionals considered risk as a function of 'Probability x Magnitude' (R = P x M) alone. Sandman however, reframed P x M as representing H, or in other words the 'technical hazard', to arrive at his equation outlined above. This was in recognition of the fact that this professional approach to risk does not take into consideration the factor of public outrage and it is thus this element that will form the finale to this thesis.[3] This Act however, will concentrate on the technical hazard – P x M.

[1] Peter M Sandman, 'Responding to Community Outrage: Strategies for Effective Risk Communication' (2012) American Industrial Hygiene Association, 6 <http://petersandman.com/media/RespondingtoCommunityOutrage.pdf> accessed 12 October 2018.

[2] *ibid*.

[3] Sandman has recognised that the nomenclature may cause some confusion but nevertheless it serves to articulate the different elements involved in influencing a risk response.

The first and most critical step in any risk response strategy is the correct identification of the potential hazard[4] and it is to this matter that this Act initially turns. Within the parameters of the Law Commission consultation, the need for clarification as to the understanding and usage of key concepts is also important because of the nature of the process itself. As the consultation required discussion and response from a variety of professionals and organisations from both within and across various disciplines it was therefore crucial to clarify the adopted terminology in order to facilitate successful interdisciplinary communication. Without this there is a risk that terms will attract varying interpretations across those involved within this consultation process which in turn may serve to obfuscate deeper discussion and analysis regarding the chosen reference cases. Furthermore, clear and consistent use of conceptual definition or subject matter forms the bedrock for the motivation underlying the proposed reform and informs as to the method required to achieve the desired result.

The first chapter of this Act will therefore argue that the hazard underlying the reform was not clearly defined in the first instance. Not only did this potentially introduce confusion from the outset by may also have inadvertently fuelled the outrage surrounding the reference cases. This failure in getting to the heart of the issue in these cases allowed the Law Commission to merge discrete concepts in the belief that they would all be solved by recourse to an enhanced reliability test. Therefore, their superficial approach lends support to the central claim of this thesis that it was outrage driving the reform rather than an objective and targeted analysis of the hazards within their chosen reference cases. This then builds on the

[4] 'Risk identification is the critical first step of the risk management process (…)' Mitre Systems Engineering Guide, 'Risk Identification' <www.mitre.org/publications/systems-engineering-guide/acquisition-systems-engineering/risk-management/risk-identification> accessed 12 October 2018;
'Risk identification is the initial and most critical step of the process (…)' J Spacey, 'Simplicable' (2016) <https://simplicable.com/new/risk-identification> accessed 12 October 2018;
'Project Risk identification is the most important process in the Risk Management Planning.' Rajman Md Rawi, 'Project risk identification for new Project Manager' *(Project Manager Times,* 15 April 2014) <www.projecttimes.com/articles/project-risk-identification-for-new-project-manager.html> accessed 12 October 2018;
Please note that the above references are viewed from the traditional risk assessment process whereby 'outrage' is not considered. Therefore, the use of the word 'risk' equates to the 'hazard' when utilising Sandman's approach.

argument developed throughout the preceding chapters that the Law Commission have introduced a reform that is likely to be both an inappropriate and unnecessary 'reliability theatre'.

Following on from this reasoning, the second chapter of this Act will then turn to consider what data was actually available to support or refute the need for the proposed reform thereby attempting to address the probability factor (p) in the risk response equation. The complex nature of the criminal trial and data recording limitations meant that there was a lack of convincing frequency data available. As the scale of the hazard was not estimated, nor probability assessments as to future occurrences calculated, the Law Commission are left with nothing tangible to support their proposal. They are thus required to rely on changes to the legal admissibility standard in the hope that it will prevent future errors.[5] Whilst this data void was recognised by the Law Commission[6] this chapter will illustrate that certain limited information was available that may have helped guide their agenda. Furthermore, recent research into this topic has revealed that their initial focus on the reliability of the methodology or experience underpinning the expert evidence was erroneous. This finding lends support to the claim made in the first chapter of this Act that the key objectives were not clearly established or defined.

[5] The Law Commission are not alone in adopting this approach. See Rachel Dioso-Villa 'A Repository of Wrongful Convictions in Australia: First Steps Toward Estimating Prevalence and Causal Contributing Factors' (2015) 17 FLJ 163, 174. 'Rather, Australian legal scholars and researchers have referenced the international literature to argue that causes and prevalence rates may well be similar to those in Australia and have focused their efforts on legal changes to admissibility standards and appeal and post-appeal review procedures to prevent current and future occurrences. Part of the problem that may account for this lack of research is that there is no information on wrongful convictions that is systematically collected, reviewed or retained in Australia.' 173.

[6] 'In short, it is not possible to ascertain the exact number of cases where a miscarriage of justice has occurred on the basis of the admission of unreliable expert evidence.' The Law Commission, *The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [C.11].

Chapter 7: An Undefined Hazard

7.1: Introduction

In an effort to define the key concepts and expose the underlying aims of the Law Commission proposal, the first part of this chapter returns to the key objective of the reform: '[a]voiding miscarriages of justice, whether wrongful acquittals or wrongful convictions, is, in our view, a policy objective which does not need further justification'.[1] Whilst this is an aim with which few would take issue, the phrases 'miscarriage of justice' and 'wrongful conviction' are not only difficult to define but often attract distinct and differing meanings within the legal framework and academic commentary. Furthermore, some commentators, especially the media, may conflate the meanings for ease of presentation or to gain maximum impact as notions of innocence infiltrate their narratives. This chapter will begin therefore by interrogating the usage of these terms by the Law Commission as they applied to their chosen reference cases. This issue will then be further developed in chapter 10 where it will be situated within the outrage factor (O) in the Sandman equation.

In order to understand both the separation and interdependence attaching to these two terms it is first necessary to consider the adversarial criminal trial itself. The differing perceptions that it attracts as to the nature and purpose of this legal process provides a framework in which to understand how these terms are incorporated or commonly understood by those involved within the legal system or within the public at large and the media.

7.2: The Objective of the Criminal Trial

The ultimate objective of the criminal trial process has long attracted academic commentary but for the purposes of this thesis an in-depth analysis of this work is not required. However, recognition of two of the principle theories may help inform the assumptions underlying the use of these terminologies locating them within the framework of this thesis.

[1]The Law Commission, '*The Admissibility of Expert Evidence In Criminal Proceedings In England And Wales: A New Approach to the Determination of Evidentiary Reliability*' (Law Com No CP190, 2009) [C.14].

At its widest the trial process is held to be primarily a truth finding apparatus with the main goal being the discovery of the actual objective guilt or innocence of the defendant. Importantly, this approach is the one most commonly adopted by the media in its reporting of individual successful appeals.[2] It is argued that this perception, also gaining support from political rhetoric,[3] directly influences public confidence in the criminal justice system which is also a stated concern of the Law Commission.[4] Therefore this approach feeds directly into notions of wrongful convictions of the innocent which in turn may fuel outrage directed toward the criminal justice system. As this important point sits at the heart of this thesis it will be returned to in chapter 9 in the Finale. In contrast, there is a narrower interpretation as to the purpose of the criminal trial and this is the one primarily adopted by academic writing and judicial study. Described by some as 'a search for truth subject to conditions'[5] it represents the idea that the discovery of objective truth, whilst at the heart of the trial process, is subject to limitations imposed by the legal system.

As the adversarial system is, by design, contentious, it is necessarily governed by rules and procedures that allow it to be conducted in a manner that is both regulated and fair. As a result of the correct application of these regulatory checks and procedures it is the desired outcome that the verdict will indeed reflect the factual truth of the case. However, the standard of guilt nevertheless remains as 'beyond reasonable doubt', and the acceptable level for acquittal stops at 'not guilty' rather than 'innocent'. The presumption of innocence, legal burden of proof, laws of evidence and judicial direction are some of the techniques used to moderate the fairness of the proceedings and indicate that procedure takes precedence over the truth finding function. Therefore, guilt is a legal construct rather than the discovery of

[2] R Nobles and D Schiff, 'The Criminal Cases Review Commission: Reporting success?' (2001) 64, 2 Mod L R 281.

[3] 'Public discourse is reinforced by political discourse that also states that the intention of criminal trials is the conviction of the guilty and the acquittal of the innocent.' M Naughton, 'Wrongful Convictions and Innocence Projects in the UK: Help, Hope and Education' 4 (*The Innocence Network*, 2014) <www.innocencenetwork.org.uk/wp-content/uploads/2014/09/wrongful-convictions-innocence-project.pdf> accessed 30 May 2017.

[4] The Law Commission CP190 (n1) [C.25].

[5] S Heaton, 'A critical evaluation of the utility of using innocence as a criterion in the post conviction process' (2013) UEA ePrints at 33 <https://ueaeprints.uea.ac.uk/48765/1/2013HeatonSJPhD.pdf> accessed 30 May 2017.

objective proof.[6] At its narrowest interpretation it is held by some academics that uncovering factual truth is not a function of the criminal trial system at all.[7] The fact that there is no clear agreement as to the key purpose of the criminal trial itself serves to inform the difficulty with, and the variety of interpretations surrounding, the term miscarriage of justice.

7.3: **Miscarriages of Justice or Wrongful Convictions?**[8]

In line with the disagreement as to the main objective of the adversarial criminal trial, the phrase 'miscarriage of justice' also attracts no standard definition or universally accepted parameters. Whilst academics have written extensively[9] on the common terminologies used relating to verdicts that have been quashed on appeal there is still no recognised definition on which all are agreed. At this point it is useful to appreciate that at its widest interpretation a miscarriage of justice can be an umbrella term for a number of processes whereby the State breaches the rights of an individual. This approach has gained traction in light of the Human Rights Act 1998, specifically with regard to Article 6 as enshrined in the European Convention on Human Rights.[10] Thus, a miscarriage of justice can occur in a variety of ways,[11] at different points and through a number of actors within the machinery of the State.[12] This reflects the

[6] Richard Nobles & David Schiff, 'Understanding Miscarriages of Justice: Law, the Media, and the Inevitability of Crisis' (OUP 2000) 93.

[7] For example, '[t]hat is why a criminal trial is not "a search for truth". Scientists search for truth. Philosophers search for morality. A criminal trial searches for only one result: proof beyond a reasonable doubt.' Professor Alan Dershowitz, 'The Criminal Trial Is Not About Justice for the Victim' *HuffPost* (New York, 7 September 2011) <https://www.huffpost.com/entry/the-criminal-trial-is-not_b_893207> accessed 01 March 2017.

[8] Because of the thrust of the Law Commission proposal and their selection of the reference cases, this chapter will focus on wrongful convictions rather than wrongful acquittals. The arguments however can be adapted to apply to both scenarios.

[9] For example, Michael Naughton, and Richard Nobles & David Schiff, as referenced throughout this chapter.

[10] M Naughton, 'Redefining Miscarriages of Justice' (2005) 45 Brit J Criminol 165, 174.

[11] For example, '[d]eficient processes at arrest or trial; unjust laws (ie: women's inability to access the now repealed provocation defence); no factual justification for the applied treatment or punishment (ie: innocence); disproportionate response (ie: excessive sentencing); failing to protect rights of others (ie: failure to prosecute, jury nullification) and the application of laws that are unfair (ie; the now repealed "year and a day rule")'. See 'A Review of Justice in Error' (C Walker & K Starmer (eds) Blackstone Press 1999) 33.

[12] For example, police, CPS, scientists, lawyers, judge, jury etc.

more systems-based approach to miscarriages of justice as referred to in the HCSTC report.[13] However, as the Law Commission proposal is concerned with the criminal trial process itself, this section will centre on the use of the term miscarriage of justice arising at the point of trial.

To those who focus on the rules of engagement within the combative format of the adversarial criminal trial, a miscarriage of justice is interpreted in its wider form. It thus reflects a failure in the trial process that has upset the balance of procedural fairness. It does not directly speak towards the innocence of the accused. Therefore, a miscarriage of justice can either stand apart from, or intertwined with, factual innocence, but does not define it. When considering miscarriages of justice from a purely procedural view it has also been postulated that those convictions overturned at first appeal should not be included. This is because the mechanisms of the criminal justice system have provided the necessary procedural safeguards to correct any error within a process that will never achieve perfection.[14] Viewed from within this very narrow framework, three of the four reference cases chosen by the Law Commission would not be considered to be miscarriages of justice at all.[15]

To those who hold the discovery of guilt or innocence as both the main objective and the result of the trial process there is a tendency to merge a miscarriage of justice with that of factual innocence. Described by some as a 'judicial fallacy'[16] this mode of thinking also has an historical basis that continues to exert an influence on discussions in this area today.[17]

[13] 'We emphasise that where miscarriages of justice have arisen in association with problems in expert evidence, this reflects a systems failure'. HCSTC, 'Forensic Science on trial' (HC 96-1, 2005) 3.

[14] H Quirk, 'Identifying Miscarriages of Justice: Why Innocence in the UK is Not the Answer' (2007) 70(5) MLR 759, 761.

[15] *Dallagher, Cannings* and *Harris*.

[16] Naughton (n10) 166.

[17] In 1957, prior to the establishment of the CCRC, the organisation 'Justice' was formed and began investigating potential miscarriages of justice. However, due to funding constraints and resource limitations their enquiries were restricted to those cases that alleged actual innocence. As a result, the term 'miscarriage of justice' came to be seen unquestionably as a marker of innocence thereby providing a definitional starting point that continues into present day discussions. See Naughton (n10) for full explanation.

Therefore, when used in this context, a miscarriage of justice is just another expression for the conviction of an innocent person. This conflation is also often found within media communications of high-profile cases. Researchers in this area[18] have thus contended that the modes of communication employed within the spheres of the media, politics and law result in differences in interpretation of common terminology such as 'miscarriage of justice' with its meaning being 'established by the operations of each of these separate systems'.[19] It has been observed that even when academic commentary initially adopts a broad approach to the definition of a miscarriage of justice it is nonetheless required to introduce other parameters so as to bring understanding to the discussion.[20] Therefore 'wrongful conviction' provides one practical and frequently used distinction.[21] However, the term 'wrongful conviction' also attracts some discussion as to its true meaning. Attempts to define it are thus often muddled or unclear. This definitional opacity allows some to present the view that 'miscarriage of justice' and 'wrongful conviction' can indeed be used synonymously with the exact meaning determined by the context of the discussion.[22]

Again, one method of interpretation is that any breakdown in the procedural safeguards of the trial process will inevitably result in a wrongful conviction whether the defendant is factually innocent or not.[23] So whereas certain circumstances may dictate that a miscarriage of justice has indeed led to the wrongful conviction of an innocent party this may not always

[18] Richard Nobles and David Schiff are two such researchers who have contributed much to the debate surrounding the interaction between law and the media. For example: 'A Story of Law and Miscarriage: Law in the Media' J Law & Soc 31 2004, 2 221, 1 and their other publications referenced throughout this chapter. Although a detailed overview of their findings is beyond the boundaries of this thesis, it is however, relevant to draw the above point from their extensive research.

[19] Nobles & Schiff (n2) 297.

[20] '[A]ll (of) those who attempt to define the term adopt a fairly broad approach, but then seek to refine that approach to differentiate cases according to notions of "concern for truth" or as "core cases" or "external to the system', Heaton (n5) 65.

[21] This can include instances where no crime has actually been committed therefore any prosecution will automatically be a wrongful conviction. This particular scenario is pertinent to three of the reference cases as discussed previously in Act 1.

[22] Heaton (n5) 70.

[23] Nobles & Schiff (n2).

be the case. Furthermore, factual innocence may not be able to be decisively demonstrated as it is acknowledged that convincing proof to support this is extremely difficult to establish.[24] It is also of importance to recognise that neither the Court of Appeal nor the CCRC are directly concerned with innocence as a necessary condition for application for leave to appeal. Leave to appeal is granted by the Court when there is a belief that the conviction maybe 'unsafe'[25]and the CCRC apply the 'real possibility test' rather than dealing directly with claims of innocence.[26]

Information obtained from these institutions can only indicate convictions that are held to be unsafe but do not directly instruct as to either the number of miscarriages of justice, wrongful convictions or both.[27] For example, a procedural error may result in a conviction being declared as unsafe by the Court of Appeal but does not necessarily indicate that the verdict was wrong or the defendant innocent. A successful appeal may result in the ordering of a retrial which can find a different jury returning another guilty verdict.[28] Even a successful appeal without a retrial does not necessarily indicate innocence as there may be many reasons as to why a retrial cannot or will not be ordered.[29] On occasion, this has caused the

[24] Usually due to advancements in forensic science methodology and in particular the advent of DNA profiling. For example, *R v Hodgson* [2009] EWCA Crim 490, *R v Shirley* [2003] EWCA Crim 1976. However, this may not always be as decisive as first thought. See *R v Dallagher* in chapter 1.

[25] Criminal Appeals Act 1968 Part 1 ss2.

[26] 'We may refer a conviction if: 1. there is a real possibility the conviction would be overturned if it were referred; and 2. this real possibility arises from evidence or argument which was not put forward at trial or appeal (or there are exceptional circumstances); and 3. the applicant has already appealed or applied unsuccessfully for permission to appeal (or there are exceptional circumstances).'
CCRC, 'Guidance for Legal Representatives' (*CCRC*, 2015), 1
<www.ccrc.gov.uk/wp-content/uploads/2015/08/CCRC-Guidance-for-Legal-Representatives.pdf> accessed 06 March 2017.

[27] Further limitations arising from the use of data from these organisations will be returned to in the next chapter.

[28] No re-trials occurred following the successful appeals in these reference cases. There is thus no further information as to whether the original guilty verdict would have been repeated despite the fresh evidence presented at appeal. If so, this would undermine notions of innocence and thus wrongful conviction.

[29] Lapse of time making evidence difficult to obtain or witnesses cross-examined, time already served, publicity surrounding the case.

Court of Appeal to express their unease at declaring a conviction unsafe but without the opportunity to order a retrial.[30] It must be appreciated therefore that actual proof of innocence tends to be an exception contained within successful appeals.

Furthermore, the declaration of an unsafe conviction may not automatically indicate a miscarriage of justice in that the emergence of new evidence or advancement in scientific discovery may serve to cast doubt on the original verdict although the trial procedures employed were without fault. Against this backdrop of definitional opacity this chapter now turns to the Law Commission proposal and their use of these key terms.

7.4: 'Miscarriage of Justice' and 'Wrongful Conviction' Within the Framework of the Law Commission Proposal

At the heart of the Law Commission proposal are the four reference cases cited, and others alluded to without much detail, as evidence of miscarriages of justice.[31] At first glance this term appears to support the motivation behind the reform in that inadmissible evidence was allowed to enter the trial thereby affecting the fairness of the trial procedure. However, it becomes a little less clear when this term is used interchangeably with that of wrongful conviction. This is evidenced throughout the Law Commission documents but also specifically with regard to the reference cases which are alternately described as both miscarriages of justice and then wrongful convictions.[32]

Despite the often implied notion of innocence that attaches to the term wrongful conviction, the Law Commission proposal could be understood to mean a wrongful conviction in its widest sense. This would mean that the conviction was wrong because of a procedural failure alone with no comment on factual innocence implied or otherwise considered. Yet it would

[30] 'Notwithstanding the presence of disturbing features about the appellant's behaviour and her account of events (…) We have been extremely concerned whether following the quashing of the convictions the interests of justice as a whole do not require us to order a new trial (…) and, not without some hesitation, we have decided not to do so.' *R v Donna Anthony* [2005] EWCA Crim 952 [97-98].

[31] 'This is evident from the recent miscarriages of justice outlined in Part 2 of this paper.' The Law Commission CP190 (n1) [4.11].

[32] 'In the past eight years, there have been at least 11 wrongful convictions (…). The most well-known cases are *Dallagher, Clark (Sally), Cannings* and *Harris and others'*. The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011) 170.

appear that factual innocence actually sits at the heart of the proposed reform as this issue permeates throughout the consultation and final report.[33] This assumption of innocence may help explain why the Law Commission devoted little time to analysing the reference cases in a more symmetrical and objective manner. Furthermore, as the reference cases are based on appellate judgments alone, the Law Commission are also implying that these convictions, determined as nothing more than 'unsafe', are either miscarriages of justice, wrongful convictions or both. The analyses of these cases in Act 1 did not provide cogent support for the unreliability of the expert evidence nor for the assumption of innocence, even when DNA evidence was present. Rather there was a tendency for overreliance on the expert testimony to bring about a prosecution when there was little other supporting evidence.

As a result of these findings it may have been more appropriate to describe these cases as 'dubious convictions'[34] instead of appealing to notions of innocence. In addition, it was shown that new or previously undisclosed evidence was crucial to the success of the appeals. So, despite the attention that these cases have attracted from academic commentary and the media, they actually fail to be definitive examples of either a miscarriage of justice or a wrongful conviction of the innocent due to the admission of the expert evidence into the trial. Rather any miscarriage of justice could equally have resulted from a deficiency in some other part of the criminal justice system.[35] As argued earlier, the absence of jury research into this area makes it difficult to assess the impact of the expert evidence on the final verdict. Consequently, reform in this area will generally have to be grounded upon assumption and speculation. Therefore, by declaring the reference cases as wrongful convictions, and situating them within an innocence framework, the Law Commission are beginning to stray

[33] For example: 'we should also draw attention to the fact that the absence of an effective test for excluding unreliable expert evidence may have far wider implications. If the innocent are convicted or, for that matter, the guilty are acquitted (…)' The Law Commission CP190 (n1) [2.33];
'If no crime has been committed, but an individual has been wrongfully convicted (or) where an individual has been wrongly convicted for a crime committed by another individual (…)' The Law Commission No.325 (n32) 175.

[34] P J van Koppen, 'Chapter 12: Blundering Justice' *Serial Murder and the Psychology of Violent Crime* (R N Kocsis (ed), Humana Press 2008).

[35] Some of these issues were discussed in the relevant case analyses and in chapter 5.

into the province of the jury in attempting to determine not just the reliability of the scientific basis of expert evidence but also the weight of its conclusions.

The Court of Appeal itself has advocated exercising caution in their judgments so as to not encroach upon the original verdict. In *R v Pendleton* the court stressed that '[t]rial by jury does not mean trial by jury in the first instance and trial by judges of the Court of Appeal in the second.' [36] It would now appear that 'trial by the Law Commission' has occurred in the final analysis.

It could be argued that the distinction between these terms is purely a matter of semantics. However, it is contended here that it is crucial for the Law Commission to clearly indicate their intended meaning of the terms employed as they communicate not only within, but also across, the different groups involved within the consultation process. It is understandable that groups campaigning on specific platforms for legal change may automatically associate the concept of innocence with a miscarriage of justice without question and that on occasion academic commentary may follow this rationale.

Nevertheless, this thesis argues that this is inappropriate within a legal discussion to fail to clarify the key terminologies employed as it risks merging failures in procedure with the notion of factual innocence. This in turn can skew the motivation for legal change and drive the reform agenda either inappropriately or unnecessarily. For example, by adopting a loose approach to the definitional accuracy of these important legal concepts, it is evident that the Law Commission have misinterpreted and thus misrepresented one of their main reference sources. Central in supporting their proposal, the Law Commission cite a paper entitled 'Expert Evidence: Where Now? What Next?'[37] by David Ormerod QC.[38] This work clearly states that common ill-founded perceptions surrounding the ability of expert evidence to provide the correct answer in criminal trials will result in 'a pressing danger (…) [of] producing *unsafe convictions*'.[39] This would indicate that the author is aligning his view with the legal principle

[36] (2001) UKHL 66.

[37] (2006) 5 Archbold News 5.

[38] It also appears to have been incorrectly cited throughout the Law Commission proposal as being co-authored by A Roberts.

[39] Ormerod (n37) 5 (emphasis added).

that, subject to notable exceptions, a successful appeal generally attracts nothing more than a ruling that the conviction was unsafe. The consultation document however does not accurately reproduce this quote, instead stating that there is 'a pressing danger of *wrongful convictions*'[40] and then a 'pressing danger of *unfair convictions*'.[41] The final report also only refers to 'a pressing danger of *wrongful convictions*'.[42] At no point in the Ormerod paper are the phrases wrongful or unfair conviction employed. It is also not immediately apparent as to what an 'unfair conviction' represents in the minds of the Law Commission. It would seem to be more in line with a miscarriage of justice being a breach of the procedures designed to ensure the fairness of the trial process rather than the conviction of an innocent person. Although the substitution of these phrases may at first appear to have little relevance it is argued here that using the term 'wrongful conviction' has allowed the Law Commission to present a more compelling case for the need for reform.

7.5: Unreliable Expert Evidence, Unreliable Expert or Lack of Jury Understanding?

As discussed above, the Law Commission proposal was unclear at the outset with regard to their adopted terminology and therefore their underlying concern. This potential confusion is then exacerbated by their failure to further clearly isolate and identify the mechanism of the hazard to be addressed. Their proposal states that they intend to address 'the problems associated with the admissibility *and* understanding of expert evidence in criminal proceedings'.[43] These two 'problems' are quite clearly distinct in nature – the first attributed to a *laissez-faire* admissibility regime within the criminal courts allowing unreliable expert evidence to be adduced at trial; the second, to the complexity of some of this evidence, reliable or not, presenting the danger of jury misunderstanding or deference to the expert. However, on studying the reform proposal it becomes evident that the Law Commission are also confusing the hazard of unreliable expert evidence with that of the unreliable *expert*.

[40] The Law Commission CP190 (n1) 10 (emphasis added).

[41] The Law Commission CP190 (n1) 77 (emphasis added).

[42] The Law Commission No.325 (n32) 170 (emphasis added).

[43] The Law Commission CP190 (n1) [1.1] (emphasis added).

This is an important distinction that needs further exploration as the courts apply the 'sufficiently reliable test' to prevent the admission of pseudo or junk science into the trial process. Despite a lack of clarity and consistency attaching to this concept, it is nevertheless generally held to represent situations when experts present 'grossly fallacious interpretations of scientific data or opinions that are not supported by scientific evidence'.[44]

On one hand, it appears that the Law Commission are indeed attempting to address an admissibility regime that it considers too laissez-faire when it comes to admitting expert opinion evidence based on pseudo-science. Support for this proposition is found in their claims that the application of the new reliability test would successfully exclude the opinion evidence of an expert when their 'purportedly scientific analysis (is) riddled with factual inaccuracies and unwarranted assumptions'[45,46] or where 'the expert's conclusions amount to nothing more than speculation, uninformed by inferences which might reasonably be drawn from the proper application of his or her chosen methodology'.[47] Indeed, by rooting the first limb of the reliability test firmly in the origins of the *Daubert* judgment the Law Commission are mirroring a test that was designed to discern between reliable evidence and mere conjecture.[48] However, the Law Commission recognise that the current common law admissibility policy adopted by the courts 'permit(s) the adduction of any expert evidence so long as it is *not patently unreliable*'.[49] They then go on to state 'that much, but not all, expert evidence which is currently admitted would continue to be admitted'[50] under their new test. These statements are interesting as they indicate that the Courts are effectively excluding grossly unreliable evidence already by application of the flexible common law doctrine. This in turn undermines the claim that the reference cases represent the tip of a larger iceberg. If this is the case, then it is argued that the enhanced reliability test is an unnecessary distraction

[44] K Foster & P Huber, *'Judging Science: Scientific Knowledge and the Federal Courts'* (1st edn, MIT Press 1999) 17.

[45] The Law Commission CP190 (n1) [6.39].

[46] As opposed to 'only relatively minor flaws (that) should go to weight rather than admissibility'. The Law Commission CP190 (n1) [6.40].

[47] The Law Commission CP190 (n1) [6.42].

[48] Foster & Huber (n44) 112.

[49] The Law Commission CP190 (n1) [3.14] (emphasis added).

[50] The Law Commission CP190 (n1) [6.12].

for a system that is already functioning in a satisfactory manner. This lack of clarity as to the purpose of the reform goes to support the argument of this thesis that the admission of unreliable expert evidence was never a clearly defined or delineated hazard shown to be in need of address.

Whilst their initial consultation centred on a validity-based assessment of the science or experience underpinning the expert testimony, the reference cases as analysed in Act 1 failed to convincingly demonstrate that this was indeed the problem. Rather it would appear that it was the unwarranted certainty that attached itself to the expert opinion that was the key issue for the Law Commission and the Courts. Therefore, it was the unreliability of the *expert* rather than the *evidence* that sits at the heart of these cases. Furthermore, the pivotal role of the expert evidence within these cases encouraged a necessary overreliance on its probative ability. Chapter 10 will later illustrate that unwarranted certainty may sometimes be the product of several different influences that will not necessarily be corrected by a change to the admissibility criteria. In focusing on the unreliability of the evidence the Law Commission has failed to clearly establish the hazard that they wish to address. As such, no consideration was originally given to unwarranted opinion attaching to *reliable* expert evidence. The claim that the hazard is more aligned with unwarranted certainty attaching to expert evidence rather than the validity of the underlying science itself has received some support from recent research and this matter will be returned to in the next chapter. However, it is apparent that through the course of the Law Commission reform there was indeed a shift away from a validity-based gatekeeping role to one more concerned with the strength, range and safety of the expert opinion. This has attracted academic criticism that expert evidence of questionable reliability has been allowed to take a 'supporting role'[51] within the final reliability test or what is termed here as the 'reliability theatre'. Thus it is claimed that the reform has deviated from its original intention of implementing a strict threshold test for sufficient reliability.[52] Furthermore, it has been suggested that the indicia of reliability may

[51] T Ward, 'Expert Evidence and the Law Commission: implementation without legislation?' (2013) 7 Crim L R 561, 562.

[52] G Edmonds, 'Is reliability sufficient? The Law Commission and expert evidence in international and interdisciplinary perspective (Part 1)' (2012) 16 E & P 30, 55.

be difficult to apply 'in the absence of validation and evidence of accuracy'[53] for the underlying method or without more robust guidance as to what constitutes sufficient reliability.[54]

This supports the view expressed in chapter 5 that the Law Commission have failed to understand and thus implement the recommendation of the HCSTC report that called for 'the validation of scientific techniques prior to their being admitted in court'.[55] Consequently, by placing the legal cart before the scientific horse, the Law Commission has recreated little more than the common law in its current format and application[56] thereby lending support to the notion of a 'reliability theatre'. Indeed, there was a considerable overlap between the Law Commission reform and both the 2010 Criminal Procedure Rules[57] and the Forensic Science Regulator's Codes of Practice published in 2011.[58] It thus stands isolated from the overall narrative adding little to the reliability dialogue.

Another common thread, found running through the three chosen reference cases involving the death of an infant, was the often-substantial disagreement between the expert witnesses. The succession of many experts with differing explanations surrounding the evidence can cause problems for the legal process by turning the courtroom into a scientific forum that could confuse or prejudice jurors.[59] Furthermore, large numbers of expert witnesses may

[53] '[I]n the absence of formal evaluation, we do not know how to express results and derivative opinions'. *ibid* 56.

[54] M Stockdale, 'Reliability by Procedural Reform? Expert Evidence and the civil-criminal-family procedural rules trichotomy' in *Forensic Science Evidence and Expert Witness Testimony: Reliability Through Reform?* (P Roberts & M Stockdale (eds) Edward Elgar Publishing Ltd 2018) 230.

[55] HCSTC (n13) 76.

[56] 'It is suggested that a detailed reading of the evidence, together with a rigorous application of current common law tests for admission, provide a clearer means for exclusion'. A Wilson, 'The Law Commission's Recommendation on Expert Opinion Evidence: Sufficient reliability?' (2012) 3 Web JCLI <http://webjcli.ncl.ac.uk/2012/issue3/wilson3.html> accessed 27 February 2020;
'[T]he common law already provides the basis for a more rigorous approach'. Ward (n51) 561.

[57] See appendix C.

[58] As discussed earlier in chapter 5. See Appendix B.

[59] Michael Mansfield QC who represented Angela Cannings at both her trial and subsequent appeal, recognised the danger associated with calling a number of witnesses to present alternative and complex

increase the complexity of the evidence for those involved in the trial causing practical issues for the courts [60] and irritation for the judiciary.[61]

Consequently, the Law Commission premise their second concern on the fact 'that juries may find it difficult to understand or follow cross-examination aimed at revealing flaws in scientific methodology'.[62] They therefore reject the suggestion that the trial process, robustly and competently delivered, will provide the necessary protection for the delivery of justice by furnishing the jury with the ability to recognise flaws affecting the reliability and weight of the evidence.[63] As discussed earlier in chapter 5, this threat to the administration of justice had already been recognised by the HCSTC with pre-trial meetings subsequently introduced via an amendment to The Criminal Procedure Rules (CrPR).[64] However, whilst the Law Commission recognise the problems associated with the complexity of expert evidence[65] they nevertheless choose to focus attention on the reliability of the evidence itself. This results in them ignoring any potential role of the legal process on jury comprehension and does not

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medical explanations for the deaths of the infants. In a case such as this he argues that the legal process has effectively reversed the burden of proof by relying heavily on coincidence evidence thereby necessitating a succession of experts to be called, each with differing hypotheses as to the potential cause of the infant deaths. It is his belief that this may have caused the jury to conclude that the defence were 'trying to be too clever by half' by attempting to outsmart the prosecution with fanciful theories of causation.
Michael Mansfield 'Memoirs of a Radical Lawyer' (Bloomsbury 2009) 50

[60] '[T]he inappropriate or excessive use of experts, [can] increase costs, the duration of proceedings and their *complexity*" (emphasis added). Chief Justice's Working Party, 'Civil Justice Reform: Final Report' (*Legco,* 2007) <www.legco.gov.hk/yr06-07/english/bc/bc57/papers/bc570611cb2-1960-e.pdf> accessed 16 January 2017; Michael Heise, 'Criminal Case Complexity: An Empirical Perspective' (2004) Cornell Law Faculty Publications Paper 4 <scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=1003&context=lsrp_papers> accessed 27 January 2017.

[61] For example, the exclamation of Judge Weir at the trial of *Sean Hoey* for the Omagh bombing that 'this is not a scientific symposium, this is an important trial'. 'Fresh criticism of Omagh evidence' (BBC News 8 December 2006) <http://news.bbc.co.uk/1/hi/northern_ireland/6162483.stm> accessed 07 February 2012.

[62] The Law Commission CP190 (n1) [2.8].

[63] The Law Commission No.325 (n32) [1.20].

[64] Criminal Procedure (Amendment No.2) Rules 2006 [33.5] 7.

[65] The Law Commission No.325 (n32) [1.9].

address jury comprehension when the evidence *is* sufficiently reliable. In the absence of information regarding jury understanding any alternative recommendation for reform proffered by this thesis would be based equally on assumptions about jury behaviour. Nonetheless, it is contended here that it may have been more appropriate to consider an alternative practical solution, such as the concurrent presentation of expert evidence, as already successfully introduced into other courts or jurisdictions.[66] Considering the claim made by the Law Commission that they look at 'other systems of law to see how they deal with similar problems'[67] this is an important oversight. Failing that it would have been useful to follow the recommendation of the HCSTC and consider repealing section 8 of the Contempt of Court Act 1981 (CCA) if necessary. Whilst expert evidence will indeed be 'outside most *jurors'* knowledge and experience'[68] there is nevertheless some support for the fact that having twelve jurors aids understanding of the evidence by the collective effect of the

[66] The use of concurrent expert evidence, as opposed to the sequential format currently used in criminal trials in England and Wales, has received positive feedback for aiding jury understanding and for reducing the effects of role bias. It is used extensively in civil trials in Australia, where juries are still employed, and following a recent successful pilot study in Manchester, the option to adopt this format for expert evidence has been included in the Civil Procedure Rules Practice Direction 35.11. It has also begun to be adopted in criminal trials for the Land and Environment Court in Australia. See:
S Rares, 'Using the "Hot Tub": How Concurrent Expert Evidence Aids Understanding Issues' (*Federal Court of Australia*, 12 October 2013) <www.fedcourt.gov.au/digital-law-library/judges-speeches/justice-rares/rares-j-20131012#_ftn2> accessed 05 March 2020;
Lord Justice Jackson, 'Concurrent Expert Evidence – A Gift from Australia' (2016) judiciary.uk, 4 <www.judiciary.uk/wp-content/uploads/2016/06/lj-jackson-concurrent-expert-evidence.pdf> accessed 05 March 2020;
Hon Justice B Preston, 'Specialised Court Procedures for Expert Evidence' (*Law and Environment Court of Australia,* 24 October 2014) 9 <www.lec.justice.nsw.gov.au/Documents/Speeches%20and%20Papers/PrestonCJ/PrestonCJSpecialised%20Court%20Procedures%20for%20Expert%20Evidence241014.pdf> accessed 05 March 2020.

[67] The Law Commission, 'How we work' <www.lawcom.gov.uk/about/how-we-work/> accessed 03 March 2020.

[68] The Law Commission No.325 (n32) [1.14].

individuals involved.[69] Therefore, in assuming that juries work as a single entity rather than as a group of individuals, the Law Commission has not considered the fact that it is 'not whether *every single juror* understands adequately every single issue, but whether the *jury* adequately understands'[70] Research may have helped to reveal any difference between these two states and any effect on understanding of the expert evidence adduced. Arguably, a jury may be better equipped to understand complex evidence as a judge, who sitting alone, is forced to rely on his own understanding.

7.5.1: Jury Deference

If indeed there are problems with the jury's understanding of the expert evidence then the Law Commission suggest that the trial process is ineffective at preventing deference to the expert opinion. This can occur in two ways; firstly, if the evidence is of a scientific nature it may tend to carry more weight than other forms of evidence due to its perceived objectivity. Interestingly however, the Law Commission themselves seem unsure as to the true extent of this persuasive effect or 'aura of infallibility'[71] of scientific evidence, claiming that it may well have been overstated and that it has 'little or no hard evidence to support the claim'.[72] Without this evidence it is impossible to assess whether this represents a real hazard to the delivery of justice or just a fear without foundation. Secondly, it is claimed that juries are at risk of deferring to outside influences such as the experience, qualifications or the personality of the witness rather than examining the evidence presented.[73] Crucially however, the evidence presented by the Law Commission in support of their theories of jury deference is again unconvincing with a wealth of research providing evidence for the opposing view that

[69] 'With the wealth of talent almost always contained in even a randomly selected group of six to twelve individuals, it would be a remarkable case that truly defied their collective cognitive abilities.'
Allen R J, 'Expertise and the *Daubert* Decision' (1994) 84 J Crim L. & Criminology 1157, 1159.

[70] *ibid* (emphasis added)

[71] The Law Commission CP190 (n1) [2.11].

[72] *ibid.*

[73] The Law Commission CP190 (n1) [2.8].

these assumptions are in fact fallacious.[74,75] A final point of interest with regard to the issue of jury deference is the contradictory stance adopted by the Law Commission to this matter. Despite their reservations surrounding jury understanding they nevertheless go to state that jury deference to the expert is 'not necessarily a bad thing if the expert's evidence is *reliable*'.[76] It is the role of the judiciary to establish that expert evidence is of *sufficient reliability* to be admitted into trial. This is a legal standard that is crucially not concerned with deciding the accuracy of the evidence or the opinion *per se*. It is argued here that the Law Commission statement is actually confusing the judicial reliability assessment with that of the accuracy or correctness of the actual evidence. It is important that any expert evidence entering the trial process is fully interrogated and challenged for its evidentiary value via legal procedure. This is particularly true when experts provide conflicting testimony which may not

[74] '[E]ven when (…) testimony is arcane, complex and difficult to follow, jurors make conscientious and often successful efforts to deal with the substance of what they hear, and their decisions reflect such activity (…)'. M. Redmayne, 'Expert evidence and Criminal Justice' (Oxford Scholarship 2001) 110;
'In contrast to anecdote, a large body of empirical research conducted over the past 50 years has addressed issues of jury behaviour and performance, including research that speaks directly to concerns about expert evidence. (…) the existing body of research, and it is a substantial body, indicates that juries do generally perform the assigned tasks well and that the claims that juries simply defer to experts are without foundation.' N Vidmar, 'Expert Evidence, the Adversary System, and the Jury' (2005) 95 (S1) Am J Public Health S137;
'The available empirical evidence points to jurors being remarkably conscientious in their work and not demonstrably less accurate in their inferences than judges. More specifically, so far we have no empirical basis to conclude that jury credulity in over-crediting expert testimony is a serious or pervasive problem.' Dale A Nance, 'Reliability and the Admissibility of Experts' (2003) 34 Seton Hall L Rev 191;
'Empirical data do not support a view that juries are passive, too-credulous, incompetent, and overawed by the mystique of the expert.' Neil Vidmar and others, 'Juries and Expert Evidence The Jury in the Twenty-First Century: An Interdisciplinary Conference' (2001) 66 Brook L Rev 1121, 1180;
'The notion of juror incompetence (…) not only lacks empirical support but runs directly counter to mounting evidence that jurors are capable of deciding complex questions'. Michael S Jacobs, 'Testing the Assumptions Underlying the Debate about Scientific Evidence: A Closer Look at Juror Incompetence and Scientific Objectivity' 25 Conn L Rev 1083, 1115.

[75] There is an important limitation to the research both for and against the Law Commission hypothesis in that it mainly derives from the USA or from mock jury studies. Therefore, the relevance of the findings to the criminal justice system of England and Wales cannot necessarily be extrapolated. The requirement for jury research in England and Wales will be discussed next.

[76] The Law Commission CP190 (n1) [2.5] (emphasis added)

only be complex but also involve a number of witnesses over a prolonged timeframe. Rather than supporting selective deference this thesis argues that it would have been more appropriate for the Law Commission to consider potential adjustments to the legal procedure to assist juries in understanding the expert evidence before them; changes such as 'concurrent evidence' as introduced above.

If juries are failing to correctly apply the evidence, then this hazard may be associated with the risk of wrongful verdicts occurring. However, there is a lack of any substantive evidence from the domestic jurisdiction to support that this is indeed happening let alone with worrying frequency. Attempting to affect legal change in an informational void or without a clear indication as to the extent and nature of the risk invites the criticism that the reform is nothing more than 'theatre', designed to address an amalgamation of issues perceived as problematic. As a result of this lack of clarity and supporting evidence, the subsequent response may have limited beneficial effect but importantly, may cause difficulties for the courts in future appeals.[77] The issue of jury deference to the expert was raised by the Court in the successful appeal of *Sally Clark*. This view is then perpetuated by the Law Commission with regard to this case and the others discussed specifically or referred to in number only.[78] Therefore, at this point it is worth revisiting the appeals of *Sally Clark* to consider this issue within the parameters of this specific case.

[77] "Trial courts should be allowed substantial discretion in dealing with *Daubert* questions; any attempt to codify procedures will likely give rise to unnecessary changes in practice and create difficult questions for appellate review." D Capra, 'The *Daubert* puzzle' (1998) 32 Ga L Rev 699 at 766. A view that is repeated by legislation in the USA. See FRE 702.

[78] 'The real possibility of jury deference to expert opinion evidence means that the admission of unreliable expert evidence is likely to distort the jury's understanding of the facts, adversely affect its deliberations and result in erroneous conclusions, as evidenced by a number of wrongful convictions in recent years. In the past eight years, there have been at least 11 wrongful convictions caused by (or involving) unreliable prosecution expert evidence, suggesting a real, ongoing problem. The most well-known cases are *Dallagher, Clark (Sally), Cannings* and *Harris and others'*.

The Law Commission No 325 (n32) 170.

7.5.2: *R v Sally Clark* Revisited

Whilst the Law Commission focus mainly on the statistical evidence in the framework of the second appeal and the non-disclosure of other vital evidence, little note is taken of the attitude of the previous Court of Appeal. A crucial argument presented by defence counsel at this first appeal was that the perceived errors in the statistical evidence 'were highly significant (and that) in particular, the figures of 1:73 million or once in 100 years — had a "devastating" impact on the jury'[79] – a view echoed in the second appellate judgment.[80] The Law Commission are also persuaded that the presence of the statistical calculation would carry such weight so as to overshadow the trial process[81] and prevent the jury from making a correct determination for the verdict based on the totality of the evidence presented.[82] However, it is important to appreciate that the original appellate judgment records the jury asking at least two questions concerning the death of the second child Harry.[83] This indicates that the jury were actually making a dedicated effort to understand all the evidence, thereby

[79] (2000) 10 WLUK 1 [153].

[80] '[T]hus it was the headline figures of 1 in 73 million that would be uppermost in the jury's minds with the evidence equated to the chances of backing four 80 to 1 winners of the Grand National in successive years.' (2003) EWCA Crim 1020 [102].

[81] 'An expert witness's opinion may therefore be *extremely persuasive* in terms of the assistance it can provide.' (emphasis added) The Law Commission CP190 (n1) [2.4];

'[J]uries will abdicate their duty to ascertain and weigh the facts and simply accept the experts' own opinion evidence, particularly if the evidence is complex and difficult for a non-specialist to understand and evaluate'. The Law Commission No.325 (n32) [1.9];

'The real possibility of jury deference to expert opinion evidence means that the admission of unreliable expert evidence is likely to distort the jury's understanding of the facts, adversely affect its deliberations and result in erroneous conclusions (…)' The Law Commission No.325 (n32) [170].

[82] The potential weight assigned to statistical evidence by the jury is not a new dilemma for the courts having received previous consideration in the Court of Appeal in another common law jurisdiction. For example, 'Pankow contends that probability calculations as "awesome as those reported by Dr. Hauser are likely to overshadow any critical independent determination of causation".'. However, the Court disagreed and held that '(the appellant had) not adequately suggested how the mathematical computation of these medically accepted rates of occurrences was so potentially overshadowing or confusing so as to require exclusion of the evidence as a matter of law'. *State v Pankow*, 144 Wis. 2d 23 (1988), Court of Appeals of Winsconsin [41].

[83] 'Are there any blood tests for Harry?' *R v Clark 2000* (n79) at [156] and 'Why did Professor David analyse Christopher's blood for disease but did not analyse Harry's for comparison?' *R v Clark 2000* (n79) [158].

considering other options for the deaths, rather than merely deferring to the statistical evidence or the expert alone. Within their judgment the court recognised that there was a 'commendable awareness'[84] shown on the part of the jury when dealing with the evidence which points away from an overly deferential attitude.

Indeed, by the time of the final report, the Law Commission are forced to acknowledge that claims about jury deference and the inability of the trial process to reveal flaws in expert evidence are indeed both 'assumptions'.[85] It is thus difficult to appreciate why one assumption has been favoured over the other as being the more credible option when the evidence tendered to support this approach is weak. Equally this thesis argues that deference by the jury may occur with regard to any witness or individual involved within the criminal trial process[86] or by the showmanship or presentational skill of a barrister. This hazard has neither been adequately considered nor will it be addressed by the enhanced reliability test alone.

It is understandable that when convictions are declared unsafe following high profile and emotive appeals involving complex expert testimony claims of jury deference will gather momentum. These claims in turn may help feed public outrage and mistrust of the criminal justice system[87] whilst focusing on these worst-case scenarios may introduce a disproportionate bias into any legal reform. As this effect is central to the argument put forward within this thesis it will be returned to in chapter 10.

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[84] *R v Clark* (n79) [155].

[85] The Law Commission No.325 (n32) [1.20].

[86] This point had previously been made by the CPS to the HCSTC. HCSTC (n13) [142].

[87]For example, shortly after the acquittal of Angela Cannings the editor for the UK register of Expert witnesses stated that

'Roy Meadow did come to have that element of desirability in the eyes of the CPS (and that) undoubtedly, there are some expert witnesses which when they stand up in court bring with them a very strong persuasive element to their evidence (…) their evidence takes on a greater weight because of the way they deliver it'.

'Expert evidence under spotlight' *BBC News*(London, 20 January 2004)

<http://news.bbc.co.uk/1/hi/uk/3412713.stm> accessed 09 May 2016.

7.5.3: The Need for Jury Research

Crucial to the Law Commission proposal is their recognition that there is no information available as to how juries utilise or understand expert evidence in the course of reaching their verdicts.[88] Although this chapter has already referred to some of the published research into jury understanding and behaviour, this has emanated from mock jury trials or from foreign jurisdictions where research into this topic is not restricted by section 8 CCA. Although this research is informative in implying that the perceived problem associated with jury understanding has been over-estimated by the Law Commission, this thesis appreciates that it cannot necessarily be extrapolated to represent jury conduct in England and Wales.

The statutory presence of section 8 has thus shaped jury research within this jurisdiction. For example, the well-respected Crown Court Study conducted in 1993 by the Royal Commission on Criminal Justice[89] recognised the limitations imposed by section 8 CCA which necessarily dictated the depth of question that could be put forward[90] and the conclusions that could be drawn about juror understanding of expert evidence.[91] Importantly, these juror questionnaires had to stand alone, preventing their answers being linked to any specific facts of the cases dealt with within this study, subsequently there were no conclusions able to be drawn about the individual types of expert evidence adduced.[92] Since this study, certain academics have also called for a relaxation of the statutory limitations to allow effective research to be undertaken to 'observe, analyse and ultimately improve'[93] the jury decision

[88] The Law Commission CP190 (n1) [C.11].

[89] Professor M Zander & P Henderson, 'The Royal Commission on Criminal Justice, Crown Court Study, Research Study No: 19' (1993) HMSO.

[90] '[B]ecause of the provisions of the Contempt of Court Act 1981, great care had to be taken in drafting the questionnaire and in consulting the Appropriate authorities on it." *ibid* xii.

[91] 'Obviously, the fact that jurors think they could understand the evidence does not prove that they actually did understand it. Whether they understood could only be properly assessed by independent observation – if such research were ever permitted.' Zander & Henderson (n89) 205.

[92] 'It was agreed that there should be no way of linking the juror questionnaires with other questionnaires (…) therefore it was not possible to identify from the other questionnaires any of the features of the case being dealt with by any particular jury (…)' Zander & Henderson (n89) xii

[93] The Law Commission, *'Contempt of Court (1): Juror Misconduct and Internet Publications'* (Law Com No 340, 2013) 97.

making process and 'to explore jurors' responses to particular types of evidence'.[94] This however is not a universal opinion with others believing that enough useful research can be undertaken within the confines of the statutory framework.[95] As a result, doubt remains as to how much useful information can currently be obtained regarding juror understanding and their application of expert evidence to the facts of the case.

Nevertheless, the Law Commission resisted the call from the HCSTC to repeal section 8 CCA, preferring instead to assume that there were problems with jury understanding of complex expert evidence. Therefore, it is argued here, that the consultation was another missed opportunity for asking the 'specific and detailed questions' as required by the Government before they would consider amending this statute.[96] A consideration of the questions that would be needed to provide information specifically about jury understanding and the role of expert evidence in their deliberations would have narrowed down the general academic disagreement surrounding the statutory limitations currently imposed. This in turn would assist in establishing whether any amendment to the law was required to achieve this purpose. Answers to these questions, whether by repeal of section 8 or not, could have provided valuable information for the development of a targeted, evidence-based risk response strategy rather than attempting to encroach into scientific assessments of evidential validity. Without robust and comprehensive research, the potential hazards associated with jury handling of expert evidence may be subject to both over and under determination. Targeted jury research is of great importance in assisting correct hazard identification, thereby encouraging the development of an appropriate risk response strategy, and the Law Commission should have responded to the requests to investigate this matter. The absence of this research leaves the Law Commission open to the criticism that it was outrage driving their reform rather than an objective analysis of any potential issues.

Even within the confines of section 8 CCA the Law Commission did not appear to instruct empirical research to be undertaken solely for the purposes of their consultation. Addressing some specific questions, even within a methodology subject to limitations such as mock jury

[94] *ibid*.

[95] The Law Commission No 340 (n93) 98.

[96] See chapter 5.

trials, may have encouraged a more focused reform agenda supported by deeper academic debate and critique. This omission stands in contrast to a Law Commission consultation conducted a few years previously with a view to reforming the law concerning the admission of bad character evidence. Here the data produced allowed for a more discerning understanding of the subject as a whole including the potential effect of different types of bad character evidence on different individuals involved in the trial process.[97] Arguably concerns regarding jury understanding of expert evidence would have benefited from this type of input also. Moreover, the void in information coupled with a resistance to investigate the dynamic of the jury room has allowed the Law Commission to plunge straight into a proposal that effectively attempts to address two main objectives that are both different and unique with little, if any, convincing data to support either hypothesis.

7.6: Causation or Correlation?

It is apparent that demonstrating evidence of causation proved difficult for the Law Commission. The analyses of the reference cases in Act 1 of this thesis illustrated that their proposal demonstrated nothing more than a weak correlation,[98] rather than a causal link,[99]

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[97] The Law Commission, '*Evidence of Bad Character in Criminal Proceedings'* (Law Com No 273, 2001) [6.20]. Two empirical research studies were undertaken for the Law Commission: one on mock jurors and the other on actual magistrates. With mock jurors '[it was] found that a conviction was more likely to result if the jury were told that the defendant had either a recent conviction for an offence similar to that charged or one for indecent assault on a child [irrespective of the offence charged]' [6.37];
Magistrates however, '[tended] to regard a defendant with a previous conviction for indecent assault on a child as more likely to commit not only an indecent assault on a woman [which is understandable] but also an offence of violence. A previous conviction for a section 18 assault, on the other hand, was perceived as increasing the likelihood that the defendant would commit not only another offence of violence but also an offence of dishonesty' [6.40].

[98] 'Correlation is a statistical measure (expressed as a number) that describes the size and direction of a relationship between two or more variables. A correlation between variables, however, does not automatically mean that the change in one variable is the cause of the change in the values of the other variable.' Australian Bureau of Statistics, 'Statistical Language' <www.abs.gov.au/websitedbs/a3121120.nsf/home/statistical+language+-+correlation+and+causation> accessed 18 January 2018.

[99] *ibid.* 'Causation indicates that one event is the result of the occurrence of the other event.'

between claims of unreliable expert evidence, jury understanding and wrongful convictions. Whether this correlation is sufficient to justify the introduction of an enhanced reliability test, which may bring with it new and different problems for the Appellant Courts, needed to be carefully considered. The Law Commission consultation document makes the bold statement that '[t]here can be *no doubt* however, that there have been some recent miscarriages of justice *caused* by a jury's reliance on unreliable expert evidence, as exemplified by cases such as Clark (Sally) and Cannings.'[100] However, they later weaken their position by stating that their reference cases merely 'involved' the use of unreliable expert evidence.[101]

In addition to attributing the verdict as being 'caused by' or 'involving' unreliable expert evidence, the Law Commission then refer to their reference cases as being 'four examples of recent convictions *based on* what we regard as flawed expert evidence'.[102] This introduces a further ambiguity as it could also imply that it was an overly-enthusiastic prosecution policy, so heavily dominated by the expert evidence, that was central to these potential wrongful convictions – a matter that was considered in chapter 5. Despite the terminology finally adopted by the Law Commission, it is argued here that unreliable expert evidence *causing* wrongful convictions must have been the underlying assumption in order to justify the necessity for their legal reform. Using the appellate judgments from a small, unrepresentative selection of cases declared only as 'unsafe convictions' tends to isolate the prosecution expert evidence for blame thereby encouraging the asymmetrical analysis of those cases chosen.[103] This in turn means that claims as to causal or contributing factors may be a product of these

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'Causality is the area of statistics that is commonly misunderstood and misused by people in the mistaken belief that because the data shows a correlation that there is necessarily an underlying causal relationship.'

[100] The Law Commission CP190 (n1) [C.12] (emphasis added).

[101] The Law Commission CP190 (n1) [C.8].

[102] The Law Commission CP190 (n1) [2.25] (emphasis added).

[103] Other researchers working with small case numbers have expressed reluctance to speak of 'causal factors.' For example,

'[t]here is also an inherent hesitation in referring to the factors identified in the sample as "causal ones" that produce wrongful convictions, as they are commonly referred to in the American literature. This reflects the fact that in the Australian context, such claims are based on a small, non-representative sample of cases.'

R Dioso-Villa, 'A repository of wrongful convictions in Australia: First steps toward estimating prevalence and causal contributing factors' (2015) 17 FLJ 163, 192.

judgments themselves[104] thereby creating a certain circularity within the reform agenda. Attention was earlier drawn to the fact that notions of innocence permeated the Law Commission proposal. Without proof of factual innocence this appears to be a response to the outrage generated by the successful appeals in the reference cases. In automatically associating innocence with verdicts held to be merely 'unsafe', the Law Commission has subsequently entered a positive feedback loop for this outrage and failed to distinguish between issues of unreliable expert evidence and the unreliable expert. Therefore, within this heightened state, it is possible that backwards reasoning occurred in order to apportion blame for these perceived legal calamities. Thus, the ontological cart may have been placed before the epistemological horse with the result that causation was assigned too readily to the reference cases and those in the larger, undefined 'iceberg'.

Furthermore, the origin of any wrongful conviction of the innocent must begin with the police either arresting the wrong person or arresting someone when no crime has been committed. In these instances it has been said that the only liability that can attach to the expert evidence was that it failed to derail the prosecution theory;[105] an issue of relevance to the reference cases chosen. Therefore, casting expert evidence in the role of the villain, allows the Law Commission to ignore its value in situations when it has actually prevented wrongful convictions from occurring. This again reinforces the need to ensure that there is a clear distinction between unreliable expert evidence and an unreliable expert when reviewing cases such as those chosen as support for the reform.

This chapter has illustrated that from a risk response perspective, the Law Commission proposal was flawed from the outset. This was due to their failure to clearly characterise and distinguish the undesirable outcome as either wrongful conviction, miscarriage of justice or unsafe verdicts. This allowed notions of innocence to infiltrate the reference cases and the reform agenda itself. This lack of clarity was then compounded by merging the separate issues of unreliable expert evidence, unreliable experts and lack of jury understanding. This

[104] 'In many ways, the cases and associated causes and contributing factors of wrongful conviction are the products of the material available in the analysis' *ibid* (Riosa).

[105] Simon A Cole, 'Forensic Science and Wrongful Convictions: From Exposer to Contributor to Corrector' (2012) 46 New Eng L Rev 710, 735.

confusion resulted in the Law Commission failing to fully appreciate and therefore interrogate the differing nature of these three matters. Consequently, the thrust behind the introduction of a validity-based reliability test was weakened as it struggled to accommodate all of the issues raised. Consequently the reform does not represent a clear evidence-based risk response strategy founded on a detailed analysis of the reference cases. Rather it has arisen from a conceptually confused and undifferentiated foundation that appears to be a hurried reply to fears of wrongful convictions of the innocent being caused by a laissez-faire admissibility regime. In the absence of any clear and persuasive indication that this is happening it is difficult for the Law Commission to rebut the suggestion that this reform is being driven by outrage rather than by an objective analysis of the potential hazard. In order to lend further support to this statement the next chapter will direct its focus towards the probability of the 'hazard' occurring in an attempt to fill the gap that the Law Commission has left in their analysis and in doing so will begin to reveal that there is in fact little convincing evidence to bolster their risk response strategy in its current format.

Chapter 8: Probability neglect

8.1: The Available Data

This chapter now returns to the traditional, technical definition of risk as introduced in the Prologue. Subsequently redefined as the Hazard (H) by Sandman, it is the product of the following equation:

the magnitude of potential consequences (level of impact) x the likelihood of these consequences to occur (level of probability) (M x P)

In first considering the magnitude of a wrongful verdict, it is without doubt that the impact is immense. Wrongful convictions of the innocent destroy the reputation of an individual and may ultimately lose them their liberty; wrongful acquittals of the guilty on the other hand, prevent the delivery of justice for victims of crime and allow perpetrators the freedom to commit further unlawful acts. Therefore, the magnitude of the outcome remains high in both scenarios. However, the documents to be detailed below are indications of the frequency of convictions that were declared unsafe with factual innocence rarely, if ever, known. Therefore, within this discussion the term wrongful conviction is given its very widest interpretation as discussed in the previous chapter, unless otherwise stated. This would in effect ignore the presence of totally fresh evidence raised at appeal and consider even factual guilt as a wrongful conviction if the safeguards inherent in the trial process were breached. Within these parameters and in the absence of clear evidence of factual innocence or procedural failures, the magnitude is assumed to be relatively constant.

Within risk response strategies the estimation of probability is necessary for correct hazard identification and for the development of a proportionate response. As such it is accepted that frequency data can help inform the probability of a future event occurring.[1]

[1] 'In summary, we assume that the relative frequency of an event observed in the past represents the probability of that event occurring in the future'. Vanderbilt Library, 'BSCI 1511L Statistics Manual: 1 Probabilities, frequencies and the Chi-squared Goodness of Fit Test' <https://researchguides.library.vanderbilt.edu/c.php?g=156859&p=1171653> accessed 17 June 2019.

In recognising the potential human and financial costs associated with the delivery of a wrongful verdict, it is thus acknowledged that there is fundamentally no threshold delineating an acceptable and unacceptable probability limit. However, the provision of data indicating that the common law was not operating in a satisfactory manner in its assessments of sufficient reliability would lend support for the development of a risk management strategy. Recent empirical research from the USA has indicated that rates of wrongful conviction of the innocent may be far lower than the qualitative estimates that perpetuate through literature and academic commentary.[2] Unsurprisingly it has also been found within this jurisdiction that these qualitative estimates vary according to the role of the commentator within the criminal justice system.[3] This finding has implications for the range and proportion of consultees to the Law Commission proposal.[4] Indeed, as an organisation specifically tasked with a legal reform agenda, the Law Commission itself may be prone to overestimating wrongful convictions of the innocent. This in turn may explain their choice of reference cases and their appeal to the notion of innocence throughout their proposal. Therefore, in the absence of evidence, care must be taken not to let unsubstantiated opinion fuel thoughts of a criminal justice system in crisis. Thus, rather than adopting the 'tip of a larger iceberg' narrative the Law Commission should at least have attempted to assess the scale of the perceived problem before introducing reform.

The Law Commission duly recognise that there was a lack of easily accessible data available with regard to the admission, influence or result of unreliable expert evidence within the criminal trial setting.[5] Therefore the only quoted data were some representative, generic statistics regarding trial numbers and appeal outcomes.[6] Due to this lack of data the Law

[2] P Cassell, 'Overstating America's wrongful conviction rate? Reassessing the conventional wisdom about the prevalence of wrongful convictions' (2018) 60 ACJ 815.

[3] 'Defense lawyers estimate higher rates of wrongful conviction than judges, who estimate higher rates than police officials and prosecutors'. M Zalman, B Smith & A Kiger, 'Officials' Estimates of the Incidence of "Actual Innocence" Convictions' (2008) 25 (1) JQ 74.

[4] It is difficult to establish the exact number and representation of the respondents across the Law Commission consultation as there is little detail as to the role or number of some of those involved.

[5] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [C.10] - [C.11].

[6] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011)

Commission recognised that they were unable to estimate the number of cases where expert evidence was wrongly admitted.[7] To support their proposal they thus expressly requested any information available from the consultees to assist with these calculations and to gain an insight into any potential impact from the proposed reform.[8] This request elicited just two replies, from the RSPCA and The Law Reform Committee of the Bar[9] with both unable to provide any estimate as to frequency.

Whilst this chapter will concur that centrally collated data is not readily available, it will nevertheless argue that there were sources of information that were easily accessible to the Law Commission. It is recognised that the level of detail contained within these documents does not provide the depth of analysis that would be required for correlation studies or probability calculations. However, the Law Commission state that prior to any reform they 'study the area of law in detail'[10] therefore an overview of this information should have been conducted. An estimation as to the scale of the problem is a prerequisite for the development of a risk response strategy which in turn drives the introduction of effective public policy

[7] This point was also raised by the Medical Defence Union during the course of the consultation. *ibid* [1.531] It was also a key influence in the Government response to the Law Commission reform proposal; '[T]here is no robust estimate of the size of the problem to be tackled – either in terms of the number of cases where unreliable expert evidence is adduced or the impact this has in terms of subsequently quashed convictions'. Ministry of Justice, 'The Government's Response to the Law Commission Report, "Expert Evidence in Criminal Proceedings in England and Wales" (No 325)' (*Ministry of Justice,* 2013) [3] <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/260369/govt-resp-experts-evidence.pdf> accessed 06 January 20.

[8] 'In addition, to enable us to assess more accurately the potential impact of our proposed reforms, we would welcome information which would allow us to estimate how many fewer convictions and acquittals there would be annually if option 4 were to be implemented.' The Law Commission CP190 (n5) 74.

[9] 'Expert Evidence Consultation Responses' [1.512] and [1.513] (Law Commission, 2011) <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 08 January 2020.

[10] The Law Commission, 'Guide for Applicants– Research Assistant Post 2020' 3 *(Law Commission*, 2020) <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2019/12/Guide-for-Applicants-2020-.pdf> accessed 03 March 2020.

decisions.[11] Whilst protection of the innocent is the fundamental premise of the criminal justice system any reform must also be sufficiently proportionate and sophisticated so as not to interfere with the prosecution of the guilty. This very issue can be appreciated when considering the vast disagreement between experts in the field of child abuse as discussed in some of the earlier chapters. Indeed, the successful appeals of *Clark* and *Cannings* caused some to speculate that by 'retreating into a state of denial'[12] the criminal justice system was now putting children's lives at risk. Therefore, rather than concentrating on just four main reference cases, the Law Commission should have interrogated the wider data sources. An attempt at estimating the probability of unreliable expert evidence being admitted too readily into the criminal trial process would have encouraged the Law Commission to consider whether their reform was in fact necessary. Furthermore, it would have aided them in deciding whether a generic change in the law was required or whether a response to specific areas of expert evidence or legal process was more appropriate. Recent research, considered later in this chapter, has started to address this data void left by the Law Commission. However, the purpose here is to consider what information was available at the time of the Law Commission consultation and whether it supported the need for statutory intervention.

8.1.1: Data from The Criminal Cases Review Commission (CCRC)

Initially, an important data stream could have been found coming from the CCRC. In a similar vein to the issue under consideration within this thesis, the formation of the CCRC was again as a direct response to a cluster of high profile miscarriage of justice cases involving terrorist offences in the 1970s.[13] At this time however, it was recognised that different factors were responsible for the wrongful convictions occurring thus the response was to enhance the system of redress for these errors. The CCRC was thus formed to help address weaknesses in the appeals process and to prevent the potential bias present in the system at the time.[14] It

[11] Cassel (n2).

[12] Editorial 'Child protection: Denying abuse is wrong' *The Guardian* (London, 15 April 2004) 25.

[13] CCRC, 'Our History' (*CCRC,* August 2015)<https://ccrc.gov.uk/about-us/our-history/> accessed 29 January 2018.

[14] '[A] ground for frequent criticism (was) that the same person who had responsibility for the police [Home Secretary] held the keys to the gateway back to the Court of Appeal and could thus control whether or not a conviction was overturned". *ibid.*

thus enjoys statutory authority to refer potential miscarriage of justice cases to the Court of Appeal for review. In its first annual report in 1999, the CCRC undertook 'to mine its growing database for features of the criminal justice system conducive to miscarriages of justice that might be susceptible to improvement'.[15] By its third annual report in 2000, it describes this in the language of a 'long-term objective'[16] but academics and Parliament remained critical as to the quality of this feedback to date.[17] Described as holding a 'unique position to identify issues across the criminal justice system that lead to such miscarriages (of justice)'[18] it has been recommended that formal procedures are put in place to feedback to the criminal justice system the information in this area.[19] Therefore, whilst their annual reports give an overview of the themes encountered in their referrals, a Freedom of Information request for the purposes of this thesis indicates that no further detailed or specific data is yet available about the role of unreliable expert evidence in cases sent for appeal from the CCRC.[20] The CCRC annual report from 2003/04[21], referenced the successful appeals for both *Sally Clark* and *Angela Cannings*.[22] It went on to conclude that the presentation of 'fresh evidence casting

[15] R Nobles & D Schiff, 'The Criminal Cases Review Commission: Reporting Success?' (2001) 64 Mod. L. R 280.

[16] CCRC Annual Report 1999/2000 (*The National Archives*, 2000) [2.4] <https://webarchive.nationalarchives.gov.uk/20060715141854/http://www.ccrc.gov.uk/CCRC_Uploads/report1999_2000.pdf> accessed 27 March 2021

[17] House of Commons Justice Committee, 'CCRC; 12th Report of Session 2014-15' (2015) 850 [52] <https://publications.parliament.uk/pa/cm201415/cmselect/cmjust/850/850.pdf> accessed 30 January 2018.

[18] *ibid.*

[19] House of Commons Justice Committee (n17).

[20] E-mail to author dated 03 March 2017. For example, in response to the request for information regarding the number of applications to the CCRC challenging the reliability of expert evidence adduced at the original trial for the years 2002–2009, the response was as follows:

'We do not have this information. The reason is that we do not have a data field in our casework IT system that captures this specific information. Indeed, there are so many possible and actual separate and overlapping arguments that are put to us in applications that it would be impractical, if not impossible, to meaningfully record them using a system of categories sufficiently detailed to capture the specific kind of information for which you have asked'.

[21] (*The National Archives*, 2004) <http://webarchive.nationalarchives.gov.uk/20081105145415/http://www.ccrc.gov.uk/CCRC_Uploads/2003%20-%202004_AnnualReport.pdf> accessed 03 August 2018.

[22] This case was a direct appeal to the Court rather than through the CCRC gateway.

doubt on the reliability of prosecution witnesses'[23] was the most common factor in the Court of Appeal quashing convictions. However, these 'prosecution witnesses' represented a variety of categories including, but not limited to, experts. Nonetheless, it was recognised that expert evidence played an important role in successful appeals emanating from CCRC referrals. These appeals centred on that relating to medical or psychiatric evidence with *Cannings* specifically reported.[24] Referrals to the Court of Appeal in this year mirrored the above with 'fresh evidence casting doubt on the reliability of prosecution witnesses' remaining the dominant theme.[25] These referrals included a case of facial mapping and medical evidence associated with shaken baby syndrome.[26] As discussed previously, medical opinion surrounding infant harm was then, and still is, a highly controversial area that divides experts and the judiciary alike. In response to these issues the criminal justice system had already made certain specific changes to procedure prior to the Law Commission consultation. These changes were outlined earlier in chapter 5.

In the following year the CCRC report documented that the issues for referral were diverse. Nevertheless 'misconduct by investigators and the identification of fresh evidence'[27] were the dominating themes with one case, *Anthony*, flowing directly from the previous *Cannings* judgment. The one reference to a successful appeal based on unreliable expert evidence would appear to be the result of the facial mapping referral listed in the previous year above.[28]

In 2005/06 three appeals were listed as having made 'significant contributions to the major debate within the criminal justice system concerning expert evidence, especially in cases

[23] CCRC (n21) 14.

[24] CCRC (n21) 15.

[25] CCRC (n21) 18.

[26] Although not specifically named, this may well have been the case of *Michael Faulder* who was part of the conjoined appeal with *Lorraine Harris*.

[27]'CCRC, 'Annual Report & Accounts 2004/2005' (*The National Archives,* 2005) 18 <http://webarchive.nationalarchives.gov.uk/20081105145435/http://www.ccrc.gov.uk/CCRC_Uploads/420165_CCRC_AR_V9lo.pdf> accessed 03 August 2018.

[28] Facial mapping evidence in Bacchus (2004) EWCA Crim 1756. *ibid* 21.

relating to the deaths of children'.[29] Two concerned the successful appeals of *Anthony* and *Faulder* made from the referrals listed in the report from previous year above. The remaining case of *Waters* however, was dismissed upon appeal with the Court pointing to issues with pre-trial discussion as opposed to questioning the reliability of the expert evidence.[30] Referrals to the Court of Appeal made in this year included 'fresh pathological evidence'[31] amongst other reasons. However, there were no references to the unreliability of expert evidence listed as reasons for appeal.

The following year, with the exception of one appeal involving a pathologist whose techniques had since been called into question, 'the theme of flawed expertise was otherwise not represented in the judgments of 2006-07'.[32] This must be balanced against the reasons for referral to the Court of Appeal from this year whereby '[f]resh expert evidence [continued] to shed light on flaws in expert evidence at trial and to provide significant new information upon which referral can be based'.[33] Beyond this statement no further detail was given as to the nature of the flaw or its link to either evidence or testimony. Subsequently, little weight can be found in this statement to support claims that there is an ongoing problem with unreliable expert evidence being admitted too readily into the criminal trial process. Rather it could point to the fact that science is an evolving process whereby opinions, processes and methodologies may be changed, refined or discarded. Equally, fresh evidence may just be the result of procedural irregularities such as non-disclosure as witnessed in the appeal of *Sally Clark.*

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[29]CCRC, 'Annual Report & Accounts 2005/2006' 31 (*The National Archives*, 2006) <https://webarchive.nationalarchives.gov.uk/20080107211830/http://www.ccrc.gov.uk/CCRC_Uploads/Annual%20Report%202005%20-%202006.pdf> accessed 08 January 2020.

[30] 'This case demonstrates again how useful it would have been for the experts to have met and to have prepared a list of matters about which there was agreement and about which there was disagreement'. *Waters v The Crown* [2006] EWCA Crim 139 [52].

[31] CCRC (n29) 35.

[32]CCRC, 'Annual Report & Accounts 2006/2007' (*The National Archives,* 2006) 26 <http://webarchive.nationalarchives.gov.uk/20081105145126/http://www.ccrc.gov.uk/CCRC_Uploads/CCRC%20Annual%20Report%202006-07.pdf> accessed 03 August 2018.

[33] *ibid* 30.

In their 2007/2008 report the CCRC focused on another high-profile appeal that attracted much media attention at the time. The success of the appeal of Barry George against his conviction for the killing of TV personality Jill Dando was founded on 'refinements in the way that the Forensic Science Service *expressed the significance* of microscopic traces of firearms residue'.[34] This finding reflects the importance of standardised communication and the elimination any potential biases in the presentation of the evidence - a matter that will be returned to in the next chapter. In 2009, the year of the Law Commission consultation, it was documented that 'there were no strong trends'[35] and the two successful appeals relating to expert evidence that were discussed were both in fact due to DNA technology that was not available when the appellants were convicted in the 1980s.[36] This again supports the argument that scientific discovery is on a continuum and as such there will always be an element of uncertainty associated with the reliability of expert evidence adduced at any given time. The reference cases in Act 1 show how additional information or scientific discovery may affect the cogency of the expert evidence adduced at trial. As is to be expected, a successful appeal may trigger a wave of further similar challenges thus themes for appeals may emerge,[37] flourish for a few years, before the issue at hand is resolved and they disappear

[34]CCRC, 'Annual Report & Accounts 2007/2008' (*Assets Publishing,*2008) 18 (emphasis added). <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/248506/0798.pdf> accessed 03 August 2018.

[35] CCRC, 'Annual Report & Accounts 2008/2009' (*Assets Publishing,* 2009) 22 <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/248166/0857.pdf> accessed 24/01/20.

[36] *R v Hodgson* (2009) EWCA Crim 490;
R v Shirley (2003) EWCA Crim 1976.

[37] For example, '[f]our related cases that we referred in 2011/2012 represent an *emerging theme* and highlight a significant and potentially widespread misunderstanding or abuse of the law. All four cases involve people who entered the UK as asylum seekers or refugees but who were prosecuted and punished for offences linked to their entry to the UK.' (emphasis added) CCRC, 'Annual Report and Accounts 2011/2012' *(Assets Publishing,* 2012*)* 15 <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/229065/0390.pdf> accessed 24 January 2020

in the wake of a new issue.[38] It is therefore a key claim in this chapter that the CCRC reports do not convincingly demonstrate that there were inherent problems with the admission of expert evidence as a whole and that the selection of reference cases primarily represent a 'theme' that had already been addressed by more appropriate changes to the system.

8.1.2: Data from The Court of Appeal

Collated information from the Court of Appeal is again elusive. A Freedom of Information request made for the purpose of this thesis reveals that, even today, data from this court is not readily available.[39] The concern here is that this paucity of information allows legal reform to be introduced without support but equally importantly without challenge. There are also key limitations associated with the use of appellate judgments alone and the conclusions that can be drawn from the information contained therein. As this is important to both the Law Commission proposal and thus this thesis, this matter will receive attention within the last section of this chapter.

However, the annual reports from the Court of Appeal give some overview as to the issues being presented and as such there is no overwhelming recognition of unreliable expert evidence being a particular cause for alarm. Of relevance to the case of *Harris* as chosen by the Law Commission, is the specific mention of the further three conjoined appeals involving the death of infants by non-accidental head injury or shaken baby syndrome. The Court of Appeal emphasised the fact-specific nature of these cases and drew attention to the current guidance issued with regard expert evidence in this area as previously discussed in chapter

[38] 'In our last four annual reports, we spoke of our having identified a series of cases where refugees or asylum seekers have been prosecuted for offences relating to their entry to the UK, such as having a false passport or no passport at all. (…) We have referred 36 of these types of cases since 2011. (…) Excepting a very few of our cases which are for very recent convictions our impression is *that the tide may have begun to turn*.' (emphasis added) CCRC, 'Annual Report and Accounts 2015/2016' (*Assets Publishing,* 2016) 20 <https://s3-eu-west-2.amazonaws.com/ccrc-prod-storage-1jdn5d1f6iq1l/uploads/2017/01/CCRC-Annual-Report-and-Accounts-2015-16-HC244-Web-Accessible-v0.2-2.pdf> accessed 22 January 2020.

[39] A FOI request to the Ministry of Justice confirmed that the only means of obtaining information regarding the unreliability of expert evidence for the years 2002-09 was to individually review each court file, some of which have been destroyed.

5.[40] A few years later the Court was again faced with a conjoined appeal from three persons convicted of shaken baby syndrome.[41] In these cases the Court found that fresh evidence not adduced at trial played a crucial role in the appeals process. As such they recognised that the needs of justice depended on 'proper advance preparation, case management and control of evidence from the outset'[42] alongside strong jury guidance in how to deal with such evidence.[43]

In 2009, the Court of Appeal analysed the 'results of the Court compared to its intake of cases over a three-year period'[44] in order to establish the success rate of the criminal justice system. It concluded that Crown Court decisions overturned by the Court of Appeal were minimal and that there was thus good reason to feel confident in the workings of this system. This was especially true as some of the appeals were based on fresh evidence, not available at the original trial.[45] This confidence is in stark contrast to the Law Commission who directed their attention towards a small series of high profile, successful appeals and the effect on public confidence in the criminal justice system from the surrounding media attention.[46] In doing so they ignored the importance of fresh evidence in the ultimate success of these appeals choosing instead to focus on issues of reliability.

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[40] Court of Appeal (Criminal Division), 'Review of the Legal Year 2004/2005' (*Judiciary,* 2005) [3.10] <www.judiciary.uk/wp-content/uploads/JCO/Documents/Reports/crim_div_review_2004_05.pdf> accessed 25 January 2020.

[41] *R v Henderson, Butler & Oyediran* (2010) EWCA Crim 1269.

[42] Court of Appeal (Criminal Division), 'Review of the Legal Year 2009/2010' (*Judiciary,* 2010) [3.21] <www.judiciary.uk/wp-content/uploads/JCO/Documents/Reports/Criminal+Div+Review+of+legal+year+2009-2010.pdf> accessed 24 January 2020.

[43] *ibid* [3.22].

[44] Court of Appeal (Criminal Division), 'Review of the Legal Year 2008/2009' (*Judiciary,* 2009) [1.6] <www.judiciary.uk/wp-content/uploads/JCO/Documents/Reports/Criminal+Div+Review+of+legal+year+2008-2009.pdf> accessed 24 January 2020.

[45] *ibid.*

[46] 'When a conviction is quashed, there may be considerable media attention: the miscarriage of justice becomes widely known. Importantly, reducing the risk of incorrect acquittals and convictions on the basis of unreliable evidence will reduce the risk of a loss of public confidence in the criminal justice system'. The Law Commission CP190 (n5) [C.25].

8.1.3: Appellate Judgments

It is appreciated that the reports discussed above do not provide full and detailed information as to the arguments underlying the appeals listed. As such they can only provide an indication as to the issues and trends encountered in any one year. However, if there was a significant problem with admissibility decisions regarding expert evidence it is likely that it would have attracted the attention of the Court of Appeal and the CCRC in their annual reviews. In the absence of centrally collated data possibly the best, most easily accessible source of information would come from appellate judgments themselves. However, there are still serious limitations associated with using these documents that will be discussed later in this chapter. However, within this informational vacuum they would have contributed towards both a better understanding as to the issues surrounding unreliable expert evidence and assisted with frequency calculations. Whilst the Law Commission recognise that these documents could provide useful information[47], it is an arduous task that they have chosen to avoid, focusing instead on their four reference cases as support for the need for statutory intervention. However, at the time the Law Commission published their final report, a document was released from an international jurisdiction that is worth consideration at this point.

8.1.4: 'Conviction Appeals in New South Wales (NSW)'[48]

Whilst at first glance the data contained within this document may appear to have little relevance to our domestic appeals process, the following points are important to note. Firstly, this comprehensive document[49] illustrates that an analysis of appellate judgments is both possible and useful in identifying systems errors by the grouping of appeals based on their

[47] 'In short, it is not possible to ascertain the exact number of cases where a miscarriage of justice has occurred on the basis of the admission of unreliable expert evidence. (…) beyond considering successful appeals, there is no way of knowing whether a jury relied on unreliable evidence to reach its verdict'.
The Law Commission CP190 (n5) [C.11].

[48] Judicial Commission of NSW, 'Conviction Appeals in New South Wales: Monograph 35, June 2011' (*Judicial Commission of NSW,* 2016) <www.judcom.nsw.gov.au/wp-content/uploads/2016/07/research-monograph-35.pdf> accessed 16 January 2020.

[49] 318 pages.

grounds for success. Of interest here was the specific issue of errors in admissibility decisions thereby allowing data to be produced as to both their type and frequency. In addition, it also provided an indication as to 'whether trial judges find the law of evidence easy or difficult to apply'.[50] It was however, recognised by the authors as a task that proved to be a significant challenge[51] and this would be exacerbated by the significantly increased number of appeals in our larger jurisdiction. Nevertheless, in response to the Law Commission reform, researchers have recently attempted to extract some limited information from our own appellate judgments – a matter that will be returned to in the next section of this chapter. Therefore, even a less comprehensive exercise than that conducted in NSW should have been contemplated by the Law Commission prior to their attempt to introduce statutory reform. This would have at least provided some wider background information and frequency data beyond that of the four chosen reference cases. Secondly, NSW shares a similar admissibility standard to our domestic courts with the judgment from *R v Bonython* guiding judicial assessments of reliability.[52] Thus, theoretically, problems in applying the 'sufficiently reliable' limb of this common law assessment should apply equally across both jurisdictions.

Finally, successful appeals were analysed over a 7 year period from 2001 to the end of 2007 thereby spanning the timeframe of the Law Commission reference cases. Therefore, this provides an analogy for reliability issues within expert evidence for the methodologies and techniques used at this time.

During the stated timeframe, 937 appeals against conviction were allowed under 'the three conceptual bases'[53] defined within the relevant legislation.[54] Of these appeals, 333 were successful although only 315 were suitable for analysis.[55] The presence of one or more errors

[50] Judicial Commission of NSW (n48) 63.

[51] Judicial Commission of NSW (n48) 45.

[52] The Hon. Justice Brian J Preston, 'Specialised Court Procedures for Expert Evidence' (*Law and Environment Court of Australia,* 24 October 2014) 4-5 SC <www.lec.justice.nsw.gov.au/Documents/Speeches%20and%20Papers/PrestonCJ/PrestonCJSpecialised%20Court%20Procedures%20for%20Expert%20Evidence241014.pdf> accessed 16 January 2020.

[53] Judicial Commission of NSW (n48) xiii.

[54] *ibid*.

[55] Judicial Commission of NSW (n48) xii.

within judicial admissibility decisions was revealed in 'only 59 of the 315'[56] cases (18.7 per cent) with 30 of these indicating that these decisions were the only grounds for appeal.[57] Within the 59 identified cases, 78 admissibility errors were found spanning 13 different types of evidence.[58] Within this group, the two most prevalent errors were that of the admission of prejudicial evidence (21.8 per cent) followed by miscellaneous evidence (15 per cent).[59] Of relevance to this thesis is that only 6 errors (7.7 per cent of errors; 10.2 per cent of cases) were associated with expert opinion evidence.[60] Furthermore, 5 errors (6.4 per cent of errors; 8.5 per cent of cases) were associated with tendency or coincidence evidence and 4 (5.1 per cent of errors; 6.8 per cent of cases) with evidence of bad character[61] – results pertinent to the reference cases as analysed in Act 1. Therefore, with regard to admissibility errors, the authors concluded that their results indicated 'that admissibility errors depend more on the circumstances of a particular case than on recurring "problem areas" of evidence law, and that these errors are sometimes idiosyncratic and difficult for trial judges to prevent'.[62]

8.1.5: Recent Developments

In recognition of the lack of data highlighted by both the Law Commission and the Government, a research project was conducted within our domestic jurisdiction to try and begin to fill this gap. In a similar vein to the project described above, the researchers interrogated appellate judgments between 2006 and 2010.[63] In attempting to address specific concerns regarding unreliable expert evidence they focused on the wider issue of 'misleading evidence' within successful appeal outcomes. Although this embraces more than just 'unreliability' it is nevertheless a welcome start in addressing the data void. Consequently, it

[56] Judicial Commission of NSW (n48) xiv.

[57] *ibid*.

[58] Judicial Commission of NSW (n48) 68.

[59] *ibid*. Miscellaneous evidence is a 'catch-all' category that for example included the refusal to admit alibi evidence and the admission of evidence irrelevant to the case.

[60] Judicial Commission of NSW (n48) 68.

[61] *ibid*.

[62] Judicial Commission of NSW (n48) xv.

[63] N Smit, R Morgan & D Lagnado, 'A Systematic Analysis of Misleading Evidence in Unsafe Rulings in England and Wales' (2017) 58 (2) Sci Justice 128.

is hoped that it will inspire further research and influence future reform. Interestingly, this research recognised that small clusters of high-profile cases tend to influence research and the associated outcome, both here and in international jurisdictions.[64] This indicates that the attention of the Law Commission on its reference cases is not an unusual analytical approach although in previous studies, the outcomes were generally more tailored to the issues identified.[65] However after reviewing a series of wider, international studies, including some with information on the role of expert evidence, the conclusion was that 'wrongful convictions are not always just an issue of flawed science or bad lawyering but flawed *communication and interpretation*'.[66] In short, the study found that misleading evidence of all categories, was more likely to be associated with activity level hypotheses as opposed to the validity of the evidence itself.[67] A further breakdown of categories concluded that forensic science was the second most common category of misleading evidence, but with probative value being the most problematic aspect within this forensic science group rather than validity of the underlying science[68] – a conclusion that mirrors the thoughts emanating from the Court of Appeal a few years earlier.[69] Rather it was the expert *testimony* that overstated or embellished the findings possibly due to the unsupported, pivotal role of this evidence in the case. This supports the argument of this thesis that the Law Commission failed to clearly

[64] *ibid* 129.

[65] Smit (n63) 129

[66] Smit (n63) 129 (emphasis added)

[67] '[T]he majority (66%) of misleading evidence types relate to their interpretation at activity level.' Smit (n63) 134.

[68] 'Witness (39%), forensic (32%), and character evidence (19%) were the most commonly observed evidence types, with the validity of witnesses (26%), probative value of forensic evidence (12%), and relevance of character evidence (10%) being the most prevalent combinations of identified issues.' (emphasis added) Smit (n63) 128.

[69] 'There is no doubt that the way in which expert evidence is presented to juries, and the weight that is attached to it, will become an increasingly important feature in appeals' CCRC, 'Annual Report 2010/2011' (*Assets Publishing,* 2011) 19 <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/247333/1225.pdf> accessed 24 January 2020.

identify the object of their reform from the outset by confusing unreliable expert evidence with that of the unreliable expert.

Further findings from this research indicated that trace evidence was a particularly problematic area. Therefore, the researchers concluded that 'understanding trace evidence dynamics (with its) value and limitations'[70] was an important consideration when addressing activity level theories. These issues for trace evidence are directly applicable to LCN profiling as used to exonerate *Dallagher* and as discussed in chapter 6. Again, with relevance to the case of *Dallagher* was the finding that character evidence was the third most problematic area after forensic science.[71] Whilst the research paper appears to agree with the Law Commission that the cases identified represent the 'tip of an iceberg' there are three important points raised by the authors that need addressing here.

Firstly, it was acknowledged that the research parameters were wide[72] and not targeted specifically towards the admission of unreliable or flawed expert evidence into trial. Subsequently, the authors appreciated that their sampling methodology could have potentially over-analysed the data presented.[73]

Secondly, it was apparent that individual evidence types bring forth their own specific issues and concerns thus there was no outright support for the introduction of a generic validity-based enhanced reliability test. Rather it was indicated that there was a need for an increased and targeted understanding as to the specific factors associated with individual types of expert evidence and their related hypotheses.[74]

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[70] Smit (n63) 134.

[71] Smit (n63) 133.

[72] For example, 'misleading evidence' included witness statements, police statements, non-disclosure, judicial instruction and general issues surrounding expert evidence as discussed above.

[73] Smit (n63) 135.

[74] "On the one hand, the findings from this research can be validated by studying and improving the understanding of uncertainties involved in assessing the relevance, probative value, and validity of evidence on a more comprehensive level for individual evidence types." *ibid;*
"Larger scale studies (…) can also be used to determine potential predicting factors of misleading evidence (…) using specific factors related to the type of evidence and the type of hypotheses they address." Smit (n63) 135.

Finally, this research concurred with the view already expressed by others including the House of Commons Science and Technology Committee (HCSTC), that any efforts at reform within forensic science should be led by the scientific community.[75]

Whilst representing a welcome start in attempting to address the causes of unsafe convictions it is nevertheless subject to the limitations imposed by reference to appellate judgments alone – a matter returned to below. Therefore, the researchers called for better access to case documents and trial transcripts so that the issues may be more readily identified.[76] However, as this thesis has discovered original court files are sometimes destroyed[77] therefore meaningful research in this area may be hampered in the future. Nevertheless, the Law Commission should have considered a more in-depth investigation as to the role and reliability of the expert evidence prior to instigating their reform. Indeed, even their limited overview of appellate judgments in just four reference cases was lacking sufficient detail and analytical symmetry as discussed in Act 1. Consequently, they failed to appreciate the nuanced nature of both the issues surrounding expert evidence and its interaction with other facets of the criminal trial process.

Despite the lack of centrally available information as to the frequency or role of unreliable expert evidence adduced in criminal trials there was, however, some useful data available to the Law Commission from both the CCRC and the Court of Appeal. This section has illustrated that this information does not provide convincing support for the Law Commission proposal. Furthermore, research conducted after the reform has again failed to persuade that there is a clearly identifiable, ongoing problem of sufficient magnitude to justify legal reform regarding admissibility assessments for unreliable expert evidence. Rather it is the probative value of expert evidence that presents the biggest issue to the administration of justice with this matter being borne out by the reference cases analysed in Act 1. Therefore, this research lends support to the argument introduced in Act 1 that the Law Commission have confused the reliability of expert evidence with that of expert testimony.

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[75] *ibid.*

[76] Smit (n63) 135.

[77] See FOI (n39)

However, as referred to earlier in this section, there are limitations attached to the use of appellate judgments and the information that can be extracted from these documents and so it is important that these are now considered.

8.2: The Limitations Surrounding the Use of Appellate Judgments

An appeal hearing, by its very nature, will rest upon specific contested grounds and therefore other evidence that was adduced for both the prosecution and defence may not be revealed during this process. Thus, when an appeal focuses on expert evidence, it serves to single out this testimony for scrutiny and blame, removing it from the overall context of the case as discussed in the previous chapter. It may therefore give the illusion of having a more persuasive effect on the jury than reality dictates. Furthermore, external factors that may have influenced the decision of the jury cannot be replicated within the confines of the Court of Appeal.[78] These constraints were appreciated by the House of Lords some years prior to the Law Commission proposal.

Referring again to the judgment from *R v Pendleton*[79] their Lordships recognised that the appellate courts have 'an imperfect and incomplete understanding of the full processes which led the jury to convict'.[80] Importantly, at the trial of first instance, the closing arguments of counsel are traditionally not recorded or reported upon therefore, the appeals process may be hampered by a lack of information as to what was actually said. This in turn, may form grounds for the appeal itself. This was a factor in the first unsuccessful appeal of *Sally Clark* - one of the reference cases discussed in Act 1. Therefore, in order to illustrate this point, this thesis will now briefly return to the statistical evidence adduced in this case.

8.2.1: *R v Sally Clark* Revisited

The grounds for the appeal at the first instance included challenges not only to the accuracy of the calculated 1 in 73 million figure, but also on the way it had been presented to the jury.

[78] For example, the demeanour of the defendant, credibility of witnesses and defence strategy are to name but a few.

[79] [2001] UKHL 66.

[80] *ibid* [19].

The defence argued that the prosecution had reversed the figure[81] thereby implying that 'the odds of the defendant being innocent [were] greater than 73 million to 1 against'.[82] They further referenced a post-conviction newspaper article in support of their claim that the figure had been incorrectly utilised as a measure of innocence.[83]As a result, the defence argued that the judicial summing up was not robust enough in dealing with this evidence.[84]

Despite the Court of Appeal conceding that the judge should have given less emphasis to the figure in general[85] they could find no occasion within the evidence adduced or the conduct of counsel where the reversal of this figure had occurred.[86] However, they were hampered in their inquiry by the fact that closing speeches had not been recorded.[87] It is thus unclear if the jury could have been influenced at this point in the trial proceedings. This brief illustration is just one example of the limitations that surround the information available to the Court of Appeal thereby restricting them in their appreciation of what caused the jury to reach their verdict. Furthermore, is the observation that judicial decisions, specifically regarding the admissibility of base rate or frequency data, are affected by a variety of factors. Research

[81] Known colloquially as 'The Prosecutor's Fallacy' it occurs when 'the probability of innocence given the evidence is wrongly assumed to equal an infinitesimally small probability that the evidence would occur if the defendant was innocent'. K Taylor, 'Getting the Wrong End of the Stick: The Prosecutor's Fallacy' (*Centre for Evidence Based Medicine,* 16 July 2018) <www.cebm.net/2018/07/the-prosecutors-fallacy/> accessed 24 May 3019.

[82] *R v Sally Clark* [2000] 10 WLUK 1 [167].

[83] 'Dr Evett's alternative source for his theory is an item in The Times, published after the conviction, (which we have not seen) stating: "the prosecution said that it was beyond coincidence that both children could have died naturally. The probability was one in 73 million". If the reporter who heard that did, as Dr Evett thinks, understand that to mean that there was only one chance in 73 million that the children died naturally, we agree with Dr Evett that that would be a profoundly incorrect inference'. *ibid* at [173].

[84] *Clark* (n82) [153].

[85] *Clark* (n82) [182].

[86] '[A]t no time in the evidence was the case put that the odds against innocence were 73 million to 1'. *Clark* (n82) [173].

[87] 'As is generally the case in the Crown Court, no record has been made of counsels' closing speeches, and it would seem that the judge was here referring to Crown counsel's speech. Mr Bevan complains that in that passage the Crown suggests that "the odds of the defendant being innocent are greater than 73 million to 1"'. *Clark (*n82) [175].

from the USA has demonstrated that Court of Appeal decisions with regard to the admissibility of this evidence 'may spring from legal policy perspectives and choices rather than an analysis of relevance and evidentiary weight'.[88] These choices may be based on the other specific evidence available or the type of case being heard.[89] However, the reasons for these decisions may not be readily apparent within the appellate judgments. Nevertheless, this research may help explain the different approach taken by the Court of Appeal as to the admissibility and effect of the statistical evidence in the two appeals of *Sally Clark.*

The presentation of new evidence, or a re-evaluation of the cogency of the original expert evidence, can prove difficult for the Court of Appeal but is relevant to the chosen reference cases. Again the Court of Appeal has noted that when presented with fresh evidence the appellate courts may be ill-equipped to situate this within the context of all the other evidence heard by the jury which guided their verdict.[90] Ultimately it will involve a subjective calculation as to the strength of the fresh evidence adduced at appeal compared to the totality of that presented at trial. Therefore, the judiciary, even in their unique position, were aware of the limitations surrounding the conclusions that can be drawn with regard to the reasons for, or the influences on, any given verdict.

If the Court of Appeal itself does not have a complete picture as to the processes and influences involved within the original trial, then their resulting judgments can only serve to restrict access to this information further. Written to reflect the proceedings of the appeal only, they are therefore a summary of the conclusions of the Court of Appeal based on their 'imperfect and incomplete understanding' of the original trial. Furthermore, they are focused on the specific grounds put forward for the appeal itself. By summarising the conclusions drawn at the end of the appeals process, these judgments thus represent a response to the arguments put forward by counsel, but rarely are the associated underlying arguments also

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[88] Jonathan J. Koehler, 'When do courts think base rate statistics are relevant?' (2002) 42 Jurimetrics J 373, 381.

[89] *ibid* 380. 'Courts are likely to view base rates as relevant when base rates arise a) from cases that appear to have statistical structure b) are offered to rebut an it-happened–by-chance theory c) are computed using reference classes that incorporate specific features of the focal case or d) are offered in cases when it is difficult or impossible to obtain evidence of a more individuating sort'.

[90] *Pendleton* (n79) [19].

presented. The result is that the judgment is a condensed version of the whole discussion process or in other words, the 'end of a conversation'.[91] Interventions in the appeal process by the judiciary and the responses by counsel to these events are crucial to the understanding of how matters were dealt with and to highlight the 'conversational style of common law adjudication'.[92] However, these receive minimal reporting in the judgments. It is thus recognised that these appellate judgments are an 'incomplete and imperfect record of events'.[93] Therefore, they should not be seen as 'free standing artefacts'[94] but rather the result of a process that is subject to the influences of time pressure,[95] convention[96] and panel composition. Thus, the internal strains or objections and the ultimate goal of the judicial tribunal will not be fully explored or reported in the final judgment.[97] Issues of time pressure can be specifically appreciated in regard to the reference cases chosen by the Law Commission. The expert evidence adduced was highly complicated, and the time devoted to the presentation and cross- examination of the experts at trial, was thus long and involved. However, at this time it is sufficient to note that the complex nature of the evidence and its duration within the trial is not necessarily reflected by the length of the appellate judgment devoted to this matter. Indeed, the Law Commission summaries of these judgments used to support their proposal are even less detailed being notable for their brevity. In using these Court of Appeal documents alone,[98] the Law Commission are not only unable to view the position of the expert evidence within the trial process itself, but they are then one step

[91] Paul Mitchell, 'Patterns of Legal Change' (2012) 65 Current Legal Problems, 177 183.

[92] *ibid.*

[93] Mitchell (n91) 183.

[94] *ibid*.

[95] 'The pressures under which they were written (…) made it inappropriate to treat them as "the product of precision instruments"'. Mitchell (n92) 183.

[96] '[T]hey serve as a reminder that judges themselves take on a role, and are bound by conventions governing how they write, which can obscure the true nature of their engagement with the subject-matter of their judgments.' Mitchell (n91) 188.

[97] '[T]he now-forgotten House of Lords decision on medical negligence in *County Council of the Parts of Lindsey, Lincolnshire v Marshall* looks very different when we know the efforts that were gone to behind the scenes to outnumber Lord Atkin, and prevent him from repeating *Donoghue v Stevenson*'. Mitchell (n91) 186.

[98] There is no evidence to suggest that the Law Commission accessed the original trial transcript or interviewed any participants directly.

further removed from this contextual structure than the Court of Appeal. Without a presence at the original trial it is also impossible to understand the many influences that the jurors would have experienced first-hand. Consequently, there is a risk that this specific evidence, viewed in isolation, may assume a greater importance or role in the trial process and the delivery of justice.

Therefore, in conclusion, it must be remembered that appellate judgments are produced primarily for the parties involved and not for the 'legal academic reader'.[99] The difficulty in establishing causation was discussed in the previous chapter and it is further contended here that important legal change should not draw too heavily upon these reports to support a contention that a specific piece of evidence caused the jury to convict.

Central to the Law Commission reform was the analyses of the role of expert evidence in the four reference cases based on their appellate judgments. As Act 1 of this thesis analysed these very same judgments, it is thus duly noted that the restrictions associated with this method, as discussed above, will equally apply to the premises underlying the arguments of this thesis. However, the approach adopted herein is justified on the following grounds.

The Law Commission report, along with its associated methodology, was the mechanism by which to launch the reliability test thereby introducing the subsequent change in legal process. Therefore, this thesis sought to use the same technique as employed by the Law Commission in its evaluation of the role of the expert evidence so that the method remained grounded in consistent information. However, this thesis openly appreciates the limitations in using this procedure and therefore aimed to delve deeper into the judgments in order to consider other factors and influences involved within the legal process. It has thus endeavoured to produce a more holistic and detailed overview of the criminal trial process by using these same documents. This sits in contrast to the somewhat brief and narrow focus on the prosecution expert evidence alone as adopted by the Law Commission.

This chapter has so far illustrated that the information available to the Law Commission did not support the premise that there was a deep-rooted ongoing problem surrounding admissibility decisions for expert evidence. Furthermore, the analyses of the reference cases were brief and subject to important limitations in the use of appellate judgments alone.

[99] Mitchell (n91) 185.

Returning now to the HCSTC report as discussed previously in chapter 5, it was clear in the report that the committee felt cases such as *Sally Clark* and *Angela Cannings* resulted primarily from failures within the legal system and the trial process. This focus on a 'systems failure' is important to consider as it impacts directly on attempts to isolate and identify the causal reason for wrongful convictions occurring. It thus goes towards explaining the difficulty encountered with by the Law Commission in clearly and convincingly demonstrating a casual factor in their chosen cases and also helps explain why their response to the risk of wrongful convictions caused by unreliable expert evidence is destined to be nothing more than a reliability theatre.

8.3: **Probability Neglect**

It has been recognised that in the absence of frequency or probability data there is a tendency for attention to be directed towards adverse outcomes rather than the likelihood of them happening.[100] This in turn can lead to 'excessive worry and unjustified behavioural change (or the treatment of) some risks as if they were non-existent'.[101] Subsequently regulators may respond with apathy to real and present hazards or overreact in other circumstances leading to costly and inappropriate reforms being introduced. As a result of this 'probability neglect'[102] it is not possible to assess the correct level and focus for a response to the risk and instead attention is directed toward the worst-case scenario.[103] This is unfortunately the approach of the Law Commission with their focus on just four high profile, factually emotive reference cases. Furthermore, reacting to the worst-case scenarios helps perpetuate the belief that there is indeed a much wider problem lying beneath the surface. The regulation itself therefore increases anxiety by delivering the message that there is indeed some issue in need of strong intervention and reform.[104] This may go some way to explaining why the Law Commission felt that their reference cases represented the 'tip of a larger iceberg' with little evidence to support that this is in fact the case.

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[100] C Sunstein, 'Probability neglect: Emotions, Worst Cases and Law' (2002) 112 Yale L J 61,62

[101] *ibid* 63.

[102] Sunstein (n100) 63.

[103] Sunstein (n100) 86.

[104] 'If government attempts to reduce fear by regulating the activity that produces it, it might well intensify that very fear, simply by suggesting that the activity is worth regulating.' Sunstein (n100) 104.

Despite the lack of availability of, or support from, probability estimates, there nevertheless remains a fear that the problem with unreliable expert evidence being admitted into trial is widespread and frequent. One explanation is that the criminal trial is a 'complex system' and as such does not lend itself to these types of calculation.

8.4: The Criminal Trial as a 'Complex System'

In harmony with the view of the HCSTC it has been postulated that wrongful convictions are 'accidents'[105] within 'an organisational system of interrelated parts'.[106] This means that often they are the result of a series of 'small mistakes (no one of which would suffice to cause the event) combin(ing) with each other and with latent defects in the criminal justice system to create disasters'.[107] Therefore, the 'complexity' originates from the strong interdependencies found between the elements of the criminal justice system across temporal, horizontal and diagonal plains[108], and the ripple effect that is experienced through minor changes within one of these areas.[109] The criminal trial itself combines the quasi-objectivity of law and science with a vast spectrum of personalities, opinions and strategies from those persons involved within the process. In turn the array of combinations available for bringing these elements together across the spatial plains, presents problems when trying to highlight any specific issue as a consistent and repeated hazard to justice. Thus, the complex nature of the criminal trial allows causation to remain an elusive concept - difficult to detect or to define. This in turn makes targeted legal change problematic to design and the consequences hard to predict.[110] Once the criminal justice system is viewed from this systems perspective it can be

[105] J Doyle 'Learning From Error in American Criminal Justice' (2010) 100 J. Crim. L.. & Criminology 109.

[106] *ibid* 192.

[107] Doyle (n105) 109.

[108] 'A variable depends on its past changes (temporal); variables depend on one another (horizontal); variable A depends on the past history of variable B (diagonal)'. N Taleb 'The Black Swan: The Impact of the Highly Improbable' (Penguin Books 2010) 358.

[109] N Taleb, 'Antifragile: Things that gain from disorder' (Penguin Books 2012) 56.

[110] 'Complex adaptive systems are not normatively good or bad-we impute those subjective judgments on them-and there is no way to extract the "bad" parts from a system without affecting what remains unpredictably'. J B Ruhl, 'Law 's Complexity: A Primer' (2008) 24 Ga St U L Rev 4, 885, 907.

appreciated why causation proved to be such a problem for the Law Commission throughout their document.

Although recognising the danger of assuming causation in relation to the extrapolation of expert opinion from scientific data or medical findings,[111] the Law Commission's own proposal lacks the conviction of this underlying premise. In acknowledging the myriad of factors that may influence the jury when reaching its verdict,[112] the Law Commission appear to be making a passing reference to the complex systems nature of the criminal trial. Unlike popular opinion or media portrayal, discussions regarding legal reform must refrain from attributing causation too readily. Therefore, even if it was indisputable that the expert evidence in the reference cases had been unreliable, the complexity lying at the heart of the system and the lack of jury research still makes assigning causation problematic.

8.4.1: The 'Complex Adaptive System' (CAS)

Aside from the complexity of the criminal justice system and the trial process, the legal system has been also recognised for its adaptive quality.[113] This adaptation is achieved through a process of learning and experience where adjustments are made in response to the changes in the surrounding environment. These adjustments serve to increase the effectiveness and suitability of the system for its intended purpose.[114] Chapter 5 earlier illustrated that the changes made following the successful appeals in the Law Commission reference cases represent a functioning system adaptation. For example, the FearID project was a science led programme but with the objective of assisting the legal system by providing standard method protocols and statistical probabilities for ear-print comparison. This project began to embrace the importance of a systems approach, spanning across both law and science, as opposed to standalone scientific assessments such as the Caddy review discussed earlier. The Kennedy

[111] Warning against 'unwarranted assumptions of causation from mere temporal proximity'. The Law Commission CP190 (n5) [6.29].

[112] The Law Commission CP190 (n5) [C.11].

[113] Ruhl (n110).

[114] For a concise meaning of a CAS see Tim Sullivan, 'Embracing Complexity' *Havard Business Review* (Brighton, Massachusetts, September 2011), <https://hbr.org/2011/09/embracing-complexity> accessed 15 July 2019.

Report recognised the need for systemic change by focusing on procedure from the time of an infant death right through to a criminal trial, by involving a multidisciplinary working party. The Court of Appeal also instigated procedural adjustment within prosecution policy and the trial process with its judgments in *Cannings* and *Harris*.

These adaptations flowed directly from the issues identified at appeal and illustrate the dynamic nature of the criminal justice system that can move and change in response to the external environment. This gradual adjustment contrasts with the stark reaction by the Law Commission to a generic problem by means of statutory reform.[115] As complex systems are by nature non-linear in their relationship between cause and effect,[116] this type of reactive reform is inappropriate and likely to be ineffective. There have thus been calls for legal reform to be understood from the viewpoint of a systems model rather than attempting to address individual parts of the system that are perceived to be 'bad'.[117] These are difficult if not impossible to isolate therefore attempts to respond to these may produce unpredictable results.[118] As a CAS therefore, the criminal justice system will constantly respond to external pressures, such as successful appeals, and the complexity at the heart of the system will prevent the trial process from ever being without fault.[119] However, what the Law Commission have failed to do is demonstrate that the admissibility regime for expert evidence is not functioning to the best of its ability or that it is unfit for purpose thereby justifying the necessity for reform.[120]

Whilst the Law Commission recognise that their proposal will not provide a 'panacea'[121] for issues surrounding unreliable expert evidence they nevertheless fail to appreciate that it may

[115] Whilst it is recognised here that the statutory route for an enhanced reliability test was rejected it was nevertheless introduced via a Practice Direction as guidance for the judiciary. This thesis argues that within the pressure of precedent, guidelines can crystallise into rules over time thus adopting the same rigidity as a statutory requirement.

[116] Taleb (n109) 7.

[117] Ruhl (n110) 907.

[118] *ibid*.

[119] Ruhl (n110) 911.

[120] *ibid*.

[121] The Law Commission CP190 (n5) [1.13].

in fact cause unwanted or unexpected results. In conclusion therefore this thesis argues that because of the complex adaptive nature of the criminal trial process bad parts within the system are not easily isolated. Although careful monitoring is required, issues encountered within the criminal trial should be addressed by gradual adjustment of legal policy which in turn moves and responds in accordance to feedback from the effect on the criminal justice system. This gentle dynamic response contrasts with the Law Commission's attempt to inject a generic, statutory reform into the laws of evidence.

In the absence of proven causation, a statistically strong correlation would at least have provided some justification for an intervention by the judiciary on this matter.[122] However, the Law Commission made no attempt to estimate the frequency with which the unreliability of expert evidence contributed to a successful appeal. Subsequently the final report from the Law Commission is forced to adopt assumptions as to the frequency of wrongful verdicts *caused* by unreliable expert evidence.[123] This meant that they were unable to perform a detailed cost-benefit analysis for the introduction of a statutory enhanced reliability test and this was fundamental to its rejection by the Government.[124]

Furthermore, research from an international jurisdiction and then from our domestic appellate judgments do not lend convincing support for strengthening the ordinary common law test for admissibility. Rather calls are made for consideration of issues linked to specific evidence types. Therefore, working within an evidential vacuum has allowed the Law Commission to shape an unsubstantiated policy based on four unconvincing examples of unreliable expert evidence being wrongly admitted to trial.[125]

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[122] '[C]orrelational studies would use case data to establish whether any statistically significant correlations exist between specific case factors and outcomes' Law Commission, 'Contempt of Court (1): Juror Misconduct and Internet Publications' (2013) 340, 100 f/n 48 <www.gov.uk/government/uploads/system/uploads/attachment_data/file/274266/0860.pdf> accessed 29 January 2018.

[123] The Law Commission No.325 (n6) 181 – 183.

[124] Ministry of Justice (n7) 5.

[125] As opposed to ineffectively challenged or given too much weight by the CPS or expert.

The Finale

In the absence of a clearly defined and adequately measured hazard to the administration of justice, any proposed reform will lack a strong evidence base for the introduction of a particular risk response. As discussed earlier, sociologists have cautioned that increasingly risk response strategies are developed without adequate evidence that they are necessary or will be effective. They are more a reflection of an inherent institutional belief that 'something needs to be done' to address a perceived hazard. As this thesis draws to a close it is now necessary to return to the second element contained within the Sandman equation - that of 'outrage'. Sandman's theory of risk response postulates that it is possible for the public reaction to an adverse event to out measure the technical risk of future similar events occurring thereby inflating the perceived risk. This in turn may cause overregulation as institutions adopt a precautionary approach in response to this outrage factor rather than more moderate response as dictated by objective estimates of the technical hazard. The use of the Sandman equation as a heuristic vehicle thus allows this thesis to argue that, in the absence of clear and strong evidence to the contrary, it was the outrage generated from these high profile appeals that drove this reform – a force not openly considered by the Law Commission in their proposal. The first chapter of the finale will therefore introduce examples of both the variety and ferocity of the reaction to the successful high profile appeals that, in the absence of convincing evidence and in line with the Sandman equation, potentially exerted a powerful influence on the development of the Law Commission enhanced reliability test.

It has been argued throughout this thesis that the Law Commission reform was a purely legal response that has failed to initiate a dialogue between the fields of science and law as desired by the HCSTC. Within this evidential and conversational vacuum, the Law Commission is thus directing the blame towards the judiciary and attempting to solve the uncertainty of science through the medium of a legal standard thereby putting the legal cart before the scientific horse. This again serves to illustrate that the reform is fundamentally 'theatre' that will have little effect on judicial assessments of reliability as it is actually the uncertainty inherent within both science and law that is the cause of concern for the Law Commission. Equally it fails to address some of the other important documented sources of unwarranted certainty that run

through the legal process, some of which were illustrated in the analysis of the reference cases in Act 1. Although it was never the intention of this thesis to interrogate the practical application of the reliability test itself or concern itself with specific wording of the indicia of reliability it is however necessary within the last chapter of this finale to direct some attention towards this very issue. Therefore, this chapter will end with a recognition that, by attempting to resolve these issues in legal isolation, there now lurks a potential complication hidden within the generic nature and the format of the test that may produce issues for the criminal justice system in the future. This is due to a conceptual confusion that is in danger of conflating the validity and accuracy of expert evidence with the legal standard of sufficient reliability thereby encouraging the judiciary to usurp both the role of the scientists and the jury.

Chapter 9: 'The Engine of Risk Response is Outrage'[1]

9.1: Outrage

This thesis now returns to the Sandman equation and his contention that risk response strategies may be driven by outrage rather than an objective assessment of the probability and magnitude of a perceived risk. Hence his equation R = H + O takes into account the other forces driving risk management aside from the data associated with the technical hazard.

This thesis has so far illustrated that due to the complex nature of the criminal justice system coupled with the secrecy of the jury room, isolating and identifying factors that caused a jury to reach their verdict is necessarily based on assumption. These assumptions pervade the reference cases where there is no clear evidence that the expert opinion was either patently unreliable or the cause of the resulting verdict. Furthermore, equally cogent or prejudicial evidence has had its role ignored or minimised by the Law Commission. Due to these inherent difficulties in establishing causation, there can be no clear data to support their conclusion. Neither is there any evidence of a strong correlation between unreliable expert evidence and wrongful convictions in general.

Therefore, this thesis now turns to the outrage surrounding the cluster of reference cases at the heart of the reform. The purpose of this chapter in providing the following examples is not to comprehensively cover the complete dialogue of the various commentators. Rather it serves as an indicator of the fear and anger directed at the people and institutions at the heart of these trials by different interested parties. It thus aims to remove the Law Commission reform from its current medico-legal boundaries by situating it within a wider social context. This will allow the reader to not only appreciate the cogency of the Sandman equation but also to argue that outrage was a fundamental driving force behind the Law Commission risk response strategy.

[1] Peter Sandman, 'Biography' (*Peter Sandman Risk Communication,* 18 June 2014) <http://www.psandman.com/bio.htm> accessed 16 May 2019.

9.1.1: The Diagnoses: Munchausens Syndrome by Proxy (MSBP) & Shaken Baby Syndrome (SBS)

It is generally accepted that there was a vast amount of media interest surrounding the reference cases chosen by the Law Commission particularly those involving the emotional, controversial and highly complex convictions of mothers for causing the death of their children.[2] As discussed previously, the successful appeals of *Sally Clark* and *Angela Cannings* were fundamental to the generation of the HCSTC report and for the Law Commission proposal with the subsequent introduction of the reliability test. They are frequently quoted in wider debates about expert evidence and miscarriages of justice in both the domestic and international jurisdictions,[3] exerting an influence on reform both here and abroad.[4]

Furthermore, the successful appeal of *Clark* was responsible for triggering the appeal of *Cannings* which in turn encouraged a further swathe of appeals including that of *Harris*. Therefore, the reaction to, and outrage that flowed from the *Clark* appeal is a pivotal starting point for the cascade of cases that followed. Following her successful appeal, and then further fuelled by that of *Cannings*, the media turned their attention to the medical syndrome MSBP as described and documented by Meadows in 1977[5] and discussed earlier in this thesis. Despite this syndrome having been recognised, researched and supported by medical

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[2] These cases are described as having 'provoke[d] a backlash in the press' and a media 'feeding frenzy' to quote two academic sources. See J Doak and C McGourlay, *Criminal Evidence in Context* (2nd edn, Routledge-Cavendish 2009) 312 and Laurie Elks, *Righting Miscarriages of Justice? 10 years of the Criminal Cases Review Commission* (Justice 2008) 74.

[3] For example: Emma Cunliffe, *Murder, Medicine and Motherhood* (Hart 2011); S Ring, 'Due process and the admission of expert evidence on recovered memory in historic child sexual abuse cases: lessons from America' (2012) 16 E & P 66; C Skellern, 'Medical experts and the law: Safeguarding children, the public and the profession' (2008) 44 J Paediatr Child Health 44 736; Hon Stephen Goudge, 'The Inquiry into Pediatric Forensic Pathology in Ontario' (*Ministry of the Attorney General*, 1 October 2008) <www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html> last accessed 12 March 2020.

[4] *ibid.*

[5] H Schreier & J Libow, *Hurting for Love– Munchausens by Proxy Syndrome* (Guildford Press 1993) 7.

professionals involved in child protection for many years various news outlets began fuelling outrage against its existence. It was portrayed therefore, as a totally fictitious diagnosis aimed at loving parents who were either then criminalised or had their children removed into care. On the basis of these two successful appeals it is understandable that the ire of the media may have been focussed on the accuracy of the diagnosis in these specific convictions. However, their anger was directed at attacking the diagnosis in its entirety, denying its existence completely, instead of appreciating its rarity. Their reaction against this diagnosis was contrary to the previous role of the media in widening the scope and increasing the usage of the term itself in the years prior to these appeals.[6] Thus their enthusiasm to label cases in the press as MSBP was now reversed as they peddled the notion that MSBP was a mere invention of Meadows[7] with all the 'scientific validity of a flat earth'[8] which had now been thoroughly discredited[9] by a small number of successful appeals. Unfortunately, Parliament was not immune to expressions of hyperbole with both houses entering a debate that permeated family law also. The Minister for Children, Margaret Hodge announced in the media that 'thousands or even tens of thousands'[10] of children may have wrongly been removed from their families as a result of a diagnosis of MSBP being made by medical professionals and that they may never be able to be reunited with their families. This interview with The Sunday Telegraph was later criticised in Parliament as being 'ill-advised'[11] and responsible for causing 'unnecessary alarm and distress' to families. The underlying message nevertheless seemed to persist, being raised in one of the responses to the Law

[6] See R Meadow, 'What is, and what is not, "Munchausen syndrome by proxy"?' (1995) 72 Arch Dis Child 534, 535.

[7] Sarah Boseley, 'Cot death expert faces disciplinary hearing' *The Guardian* (London, 20 June 2005) <www.theguardian.com/news/2005/jun/20/childprotection> accessed 29 July 2019.

[8] J Sweeney, 'Meadow: The Unseen Victims' *The Guardian* (London,14 December 2003) <www.theguardian.com/society/2003/dec/14/health.medicineandhealth> accessed 27 July 2019.

[9] Melissa Kite, 'We can't reunite thousands of mothers with children wrongly taken from them' *The Sunday Telegraph* (London, 18 January 2004) 1.

[10] *ibid.*

[11] HC Deb vol 418 column 31WH (24 February 2004)

Commission proposal.[12] The validity of MSBP as a diagnosis was also attacked in the House of Lords as having no scientific basis.[13] It was further referred to as 'one of the most pernicious and ill-founded theories to have gained currency in childcare and social services over the past 10 to 15 years'[14] and equated to having 'the stigma of witchcraft in the Middle Ages'.[15]

The triad of pathological findings associated with SBS did not avoid attack either following the successful appeal of *Harris*, and as such continues to this day. Recently it has been reported as being a 'war' played out in the arena of the courtroom with notions of the experts as fame seeking or money grabbing partisans.[16] Some of the experts involved in the reference cases have joined in the media outcry both here and abroad making claims as to the number of innocent parents convicted for SBS.[17] Whilst some media outlets have presented the

[12] '[M]aybe thousands of children's lives [have been] damaged by being taken into care from loving families who never harmed them'.
John Batt, Batt Broadbent Solicitors in The Law Commission, 'Expert Evidence Consultation Responses' 9 f/n 1 (Law Commission, 2011) <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 24 January 2020.

[13] HL Deb (2003) vol 644 column 316 (05 February 2003).

[14] *Ibid.*

[15] HL Deb vol 655 column 1285 (18 December 2003).

[16] W Storr, 'We believe you harmed your child: The war over shaken baby convictions' *The Guardian* (London, 8 December 2017).

[17] 'I now believe that half or even more of those who have been brought to trial in the past for SBS have been wrongly convicted. It is a frightening thought.' Dr Waney Squier speaking to A Levine, 'At least half of all parents tried over shaken baby syndrome have been wrongly convicted, expert warns' *Daily Mail* (London, 01 May 2011) <www.dailymail.co.uk/femail/article-1382290/At-half-parents-tried-shaken-baby-syndrome-wrongly-convicted-expert-warns.html> accessed 05 August 2018;
See also 'Dr. David Ayoub, a radiologist who has testified in court on numerous occasions during Shaken Baby Syndrome cases (…) has stated that by his calculations there are about 50,000 parents currently in prison suffering from wrongful child abuse convictions' (in the USA);
B Shilhavy, 'After 4 Years in Prison Father Wrongly Convicted of Murdering His 15-Month-Old Daughter Due to SBS Has Charges Overturned in Alaska' (*Health Impact News*, 30 July 2019) <http://healthimpactnews.com/2019/after-4-years-in-prison-father-wrongly-convicted-of-murdering-his-15-month-old-daughter-due-to-sbs-has-charges-overturned-in-alaska/> accessed 05 August 2019.

pathological findings as a crumbling, false science that destroys families.[18] Unfortunately the expert witnesses have themselves turned on each other with those on both sides of the courtroom standing accused of making spurious accusations against those of the opposite view.[19]

9.1.2: Personal Attacks

Alongside the outrage surrounding the use of the diagnosis of MSBP were the personal attacks endured by Meadow and other medical professionals involved in child protection. Insults and inuendo were levied, particularly at Meadow, who was not only the victim of media vitriol but was subject to analysis and commentary from personal acquaintances also. Described in the media as 'the child-snatcher-in-chief'[20] and an intensely stupid menace,[21] his family background and upbringing did not escape scrutiny from 'family sources'. One journalist and writer, who also happened to be his ex-wife, contributed to the outrage by describing him as a driven, friendless, woman-hating misogynist with questionable sexuality.[22] Even his alleged participation in an amateur dramatics production did not escape sinister comparison in the media.[23] Despite a more tempered response from a divided academic community,[24] this claim was nevertheless given further traction by its reproduction in a professional journal alongside a further analogy to the notorious serial killer Dr Harold Shipman.[25]

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[18] Cat Rodie, 'Is Shaken Baby Syndrome a myth or murder?' (2017) Marie Claire <www.marieclaire.com.au/shaken-baby-syndrome-new-study> accessed 06 August 2019.

[19] C Cavendish, 'Without people like me, there is no defence for families' *The Times* (London 13 April 2011).

[20] 'Why an expert witness is in the dock' *The Scotsman* (Edinburgh 21 January 2004) <www.scotsman.com/health/why-expert-witness-dock-2467722> accessed 30 July 2019.

[21] 'Experts who have pet theories like this are a menace. I don't much care what happens to Prof Sir Roy Meadow, when the GMC decides his fate. He is retired now and has done his worst. I will only observe that the kindest thing to be said about him is that he is intensely stupid.' T Uttley, 'How could an expert like Roy Meadow get it so terribly wrong? *The Telegraph*' (London, 15 July 2005)

[22]The Scotsman (n20).

[23] The Scotsman (n20).

[24] 'Certainly, Sir Roy Meadow was vilified in the popular press and, to a lesser extent, in professional journals'. E Sutherland, 'Undue Deference to Experts Syndrome?' (2006) 16 Ind Int'l & Comp L Rev 2, 375, 388.

[25] R Kaplan, 'Savonarola at the stake: the rise and fall of Roy Meadow' (2008) 16(3) Australas Psychiatry 213.

Action groups were formed that that were vociferous in their attack against many expert witnesses which included accusations of criminal conduct,[26] the issuing of death threats[27] and the publication of personal data.[28] Even the death of a paediatrician was reframed as an attempt to escape legal sanction.[29] Certain Judges, MPs and Social Workers did not escape the harassment and intimidation from orchestrated campaigns of defamation either.[30] As a result, the reputation of a number of expert witnesses involved on both sides of the child abuse cases chosen by the Law Commission were effectively destroyed whilst the General Medical Council (GMC) investigated their conduct.[31,32] However, the GMC legal proceedings themselves did not escape censure, attracting international attention for being conducted unfairly and with the defendants poorly represented by their counsel.[33] This thesis argues that in their panic to calm the outpouring of public anger the GMC were themselves responsible for perpetrating further 'miscarriages of justice' that were then later overturned on appeal.[34] Unsurprisingly this groundswell of outrage, supported by the actions of the GMC, raised concern within the medical community that there may be implications for

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[26] Harvey Marcovitch, 'Diagnose and be damned' (1999) 319 BMJ 1376.

[27] C Dwyer, 'D. Southall: I will not apologise for what I did' *The Guardian* (London 05 May 2010) <www.theguardian.com/society/2010/may/05/david-southall-health> accessed 01 August 2019.

[28] '[O]ne doctor found that the birth of their own child had been reported widely on the internet by groups campaigning against the syndrome,' Dr Raj Persaud, 'Keeping Mum over Child Abuse' (2005) 330 BMJ 152.

[29] *ibid.*

[30] Marcovitch (n26).

[31] *General Medical Council v Meadow* (Attorney General intervening) (2006)] EWCA Civ 1390;
'Dr Waney Squier struck off for shaken baby evidence' *BBC News* (Oxford, 21 March 2016) <www.bbc.co.uk/news/uk-england-oxfordshire-35862609> accessed 04 January 2018;
S Boseley, 'The Campaign Against David Southall' *The Guardian* (London, 06 May 2010) <www.theguardian.com/society/2010/may/06/david-southall-profile> accessed 04 January 2018.

[32] cf: Some academics have argued that the reaction from the professional bodies was in fact inadequate. 'While some of the expert witnesses involved have been subject to sanction by their own professional body, the GMC, it was neither swift to act nor were the sanctions particularly severe.' Sutherland (n24) 393.

[33] David Chadwick, Henry Krous and Desmond Runyan 'Meadow, Southall, and the General Medical Council of the United Kingdom' (2006) 117 Pediatrics 2247, 2249.

[34] Staff and Agencies, 'Meadow wins appeal over GMC ruling' *The Guardian* (London, 17 February 2006) <www.theguardian.com/society/2006/feb/17/health.uknews> accessed 04 August 2019;
Press Association, 'Doctor wins appeal over shaken baby syndrome trials evidence' *The Guardian*

child safety as a result.[35] Even the BBC with their founding principle of impartiality received censure on adjudication for the production of a series of programmes targeting one expert witness that were found to be unfair in their representation of his prosecutorial role and professional competence.[36] By 2008, the CCRC recognised that despite the huge amount of media interest in these cases, little helpful debate had surfaced with most conversation directed at personal attacks on the expert witnesses.[37]

9.1.3: The Criminal Justice System

Although the evidence and the experts themselves were the main focus of the outrage, the criminal justice system was naturally brought into the dispute as the overseer of these perceived wrongful convictions of innocent mothers. This again caused reaction from the media, some of which was brutal in its attack,[38] including claims that it had become a mockery at the hands of the experts.[39] The Family Courts did not escape the anger either with demands being made for a full public inquiry into their handling of child abuse cases.[40] Protest marches to both the Criminal and High Courts exemplified the level of distrust felt by the public against

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(London, 4 November 2016) <www.theguardian.com/society/2016/nov/04/doctor-waney-squier-wins-appeal-shaken-baby-syndrome-trials-evidence> accessed 01 August 2018;

Sarah Boseley, 'Controversial paediatrician David Southall wins appeal' *The Guardian* (London, 04 May 2010) https://www.theguardian.com/society/2010/may/04/david-southall-wins-appeal accessed 01 August 2019.

[35] See Raj (n28) and Catherine Williams "The trouble with Paediatricians' (2010)18 (3) Med L R 389, 390

[36] Ofcom broadcast bulletin, 'Complaint by Dr Paul Davis Today, BBC Radio 4 and Breakfast, BBC Radio Five Live, 13 January 2004' 59; 02 May 2006, 21 <www.ofcom.org.uk/__data/assets/pdf_file/0025/47293/issue59.pdf> accessed 05 August 2019.

[37] 'Much of the discussion has been unenlightening, taking the form of ad hominem attacks on individuals, such as Professor Meadows', Laurie Elks *'Righting Miscarriages of Justice? Ten Years of the Criminal Cases Review Commission'* (Justice 2008) 97.

[38] S Jenkins, 'Trupti Patel and the rotten courts of Salem' *The Times* (London, 13 June 2003).

[39]Dr James Le Fanu, 'The Experts have wrecked justice' *The Telegraph* (London, 25 January2004) 23.

[40] S Womack, 'Accused Parents Demand Public Enquiry' *The Telegraph* (London, 01 July 2003) <www.telegraph.co.uk/news/uknews/1434512/Accused-parents-demand-public-inquiry.html> accessed 01 July 2003.

the justice system as a whole at this time[41] It was stated in Parliament that both the legal and scientific communities were 'falling over themselves to unravel what may be the greatest miscarriage(s) of justice in this country in living memory'.[42]

Furthermore on occasion academic commentary credited these cases as responsible for shaking the legal system to the core thereby discrediting the whole legal process.[43] There were also expressions of unease that the legal profession was not following its own guidance when admitting evidence of MBPS[44] and the role of the adversarial style of the criminal trial was also questioned as being responsible for 'corrupting science'.[45] The courtroom and the associated legal process have therefore been reduced to nothing more than a battlefield with little regard for serving justice.[46]

By 2008, the year before the start of the Law Commission consultation, data gathered from the CCRC indicated that the HCSTC report had failed to lift the debate about expert evidence out of the mire of media outrage and personal attacks.[47] It must be remembered that the Law Commission proposal was in direct response to the HCSTC report and it was likely therefore that this was an attempt to move the discussion forward. It has already been suggested that the reference cases were unconvincing examples of unreliable expert evidence causing

[41] *ibid* and J Glor, 'The Cradle in the Grave by Sophie Hannah' *CBS News* (New York, 13 September2011) <www.cbsnews.com/news/the-cradle-in-the-grave-by-sophie-hannah/> accessed 18 March 2021.

[42] HC Deb vol 418 column 30WH.

[43] Sutherland (n24).

[44] B Morgan, 'Response to A Case of Murder and the BMJ' (2002) 324 BMJ 41 <www.bmj.com/content/324/7328/41.1?sort_by=field_highwire_a_epubdate_value&sort_order=DESC&items_per_page=10&page=1&panels_ajax_tab_tab=bmj_related_rapid_responses&panels_ajax_tab_trigger=rapid-responses> accessed 08 February 2003.

[45] D Tuerkheimer, 'The Next Innocence Project: Shaken baby Syndrome and the Criminal Courts' (2009) 87 (1) Wash L Rev 1, 56.

[46] '[The sceptics] insist the prosecutorial forces aren't concerned with justice so much as courtroom victories. They point to high-profile cases in which triad prosecutions have been overturned, and parents who have been wrongfully imprisoned and had children taken away.' Will Storr, '"We believe you harmed your child": the war over shaken baby convictions' *The Guardian* (London, 8 December 2017).

[47] 'Unfortunately, despite its intensive efforts, the proceedings and reports of the House of Commons Select Committee on Science and Technology have not carried the debate very much further.' Elks (n37) 97.

wrongful convictions and that there is also little correlation data to support that this is occurring with alarming regularity. It is now argued that the public outrage as discussed above, fuelled by the media and given traction within Parliament reinforced notions as to the unreliability of the prosecution expert evidence. Subsequently, the undisputed reliability of the expert evidence used to acquit was crystallised in the minds of the Law Commission. It thus drove their reform in the direction of a conventional, asymmetric approach to the expert evidence as illustrated through the chapters of Act 1.

9.1.4: The Notion of Innocence as Developed Within the Popular Press

It is understandable that following a successful appeal, the strict meaning of legal terminology and process can become confused within the public consciousness. Subsequently, there becomes an instinctive belief that a declared miscarriage of justice equates to the factual innocence of the defendant. It becomes apparent from both the examples given above and in-depth academic research that this is the position frequently adopted by the media in their reporting of successful appeals in high profile cases.[48] Specifically, research into the role of the medica throughout the trial and subsequent appeals of the reference case of *Clark* has been previously conducted.[49] Therefore, this thesis draws on these findings to support the argument that outrage was fuelled within the media as notions of innocence began to infiltrate the understanding surrounding her successful appeal and those of the other reference cases. It is understandable that an underlying theme of factual innocence provides the reporting with a public interest angle rather than more technical, less publicly engaging accounts of the complexity of the law and the medical evidence.[50] It must be remembered therefore that both scientific and legal communications may become transformed by the media into statements that may lose their objectivity and factual accuracy as a result of this

[48] 'In treating these legal operations as authoritative statements of innocence the media both reinforce and respond to general expectations: A miscarriage of justice equals, in the public's mind, innocence of the crime.' R Nobles & D Schiff, 'Understanding Miscarriages of Justice: Law, the Media, and the Inevitability of Crisis' (OUP 2000) 98.

[49] R Nobles & D Schiff, 'A Story of Miscarriage: Law in the Media' (2004) 31 J Law & Soc 2, 221.

[50] *ibid* 243.

process.[51] Therefore the media frequently refer to factual innocence in order to inflame the severity of miscarriages of justice despite the concept itself being unknown to the criminal justice system.[52]

Another effect documented within the media is their focus on a few, highly emotive cases to drive outrage against a system or organisation considered to be performing badly. Amplifying the risk in these few examples allows more frequent but less dramatic risks to be ignored.[53] Whilst this position has defined much of the media reporting around these cases it has subsequently been seized upon and reiterated by popular fiction authors as a theme for their novels. Examples can be found within these works that make very thinly veiled references to the cases of *Clark, Cannings* and *Harris*, unreliable statistical evidence and experts being sanctioned by their professional body.[54] Whilst it is highly unlikely that the Law Commission would ever be influenced by writings such as these, they nevertheless fed into the outrage at the time of the consultation or continue to reinforce the underlying narrative. Therefore, it is apparent that the media and the popular press effectively drove the outrage as public momentum gathered against a system perceived to be directed against innocent, loving mothers. Furthermore, this standpoint has also inadvertently crept into academic writing by adoption of the term 'exoneration'.[55] Whilst this term may share the ambiguity associated with other similar phrases as discussed in chapter 7 thereby allowing it some definitional flexibility, the Supreme Court has recently advised caution when using this phrase for

[51] 'When the media utilize scientific or legal communications, selecting and linking them by reference to their own conditioning programmes, they are no longer legal or scientific communications, but media communications'. Nobles (n48).

[52] 'Innocence as such is not a concept known to our criminal justice system. We distinguish between the guilty and the not guilty. A person is only guilty if the state can prove his guilt beyond reasonable doubt.' *R (on the application of Hallam) (Appellant) v Secretary of State for Justice (Respondent)* [2019] UKSC 2 [26].

[53] Vincent Covello and Peter Sandman, 'Risk Communication: Evolution and Revolution' in *Solutions to an Environment in Peril* (A Wolbarst (ed), John Hopkins University Press, 2001).

[54] For example: S Hannah, *The Cradle in the Grave* (Penguin 2011);
I McEwan, *The Children Act* (Jonathan Cape 2014).

[55] 'Sally Clark was subsequently exonerated by the Court of Appeal at the second attempt (…) when it transpired that both the deceased infants may have been suffering from a potentially fatal viral infection' P Roberts & A Zuckerman, *Criminal Evidence* (OUP 2012) 488.

convictions quashed on appeal.[56] Care must be taken therefore to ensure that reference to this concept within academic writing has a clearly delineated boundary as to its meaning. As the analyses in Act 1 illustrated, even the presence of fresh evidence did not exonerate the defendants in terms of factual innocence and that it was extraneous influences that prevented the possibility of a retrial in the cases of *Clark* and *Cannings*. This included the amount of publicity surrounding *Clark's* successful appeal which led the court to reserve their full judgment. Also, in this specific appeal, the cogency of the microbiological evidence was challenged by the prosecution, yet its very presence can help drive notions of innocence especially when wrapped in factual inaccuracies.[57]

Whilst the assumption of innocence is the bedrock of the criminal justice system extreme caution must be exercised before attaching this concept too readily to successful appellants. Despite the reluctance of the Court of Appeal to express a view as to innocence, the outrage surrounding the use of the pathological findings to bring about prosecutions of SBS infiltrated at least one family court decision. As the law struggled to correct its perceived wrongdoing and to restore faith in the criminal justice system, judicial adherence to a notion of innocence resulted in a tragic outcome.[58] Before leaving the highly emotive reference cases of Clark,

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[56] 'If the court considers that the evidence plainly exonerates the appellant, then it is entitled to say so when giving its reasons for allowing the appeal. Sometimes the Crown will have accepted that this is so, and in that event the judgment will normally record that stance. In other cases the significance of the fresh evidence is contested, and in that event the court generally confines itself to the issue of safety (…) It follows that, although there are some cases in which the court may state in its judgment that the appellant has been exonerated, it is not the purpose of the appeal proceedings to determine whether that is the position, and in the great majority of cases the court does not enter into the fact-finding exercise which would be necessary before such a statement might be made.' *Hallam* (n52) [32]-[33]

[57]Staphylococcus aureus, as identified in the microbiology report, is a commonly found bacterium not a virus as incorrectly stated in Roberts 'Criminal Evidence' (n55). The ubiquitous nature of this bacterium thereby greatly increases the potential for sample contamination over that of a virus or certain other pathogens. Indeed, sample contamination was the argument put forward by the prosecution at appeal and which has received some further support from other medical professionals. See Clare Dyer, 'Pathologists shed new light on Sally Clark case' (2005) 330 BMJ 984.

[58] Ben Butler was convicted for GBH by shaking his baby daughter. This conviction was held to be unsafe on Appeal following that of *Lorraine Harris*. Despite his long history of violence and concern from both Social Services and close family members, the judiciary intervened to ensure that his daughter was returned to him

Cannings and *Harris* it is important to appreciate that the concept of innocence also attached itself to the successful appeal of *Dallagher*[59] in the media. This view was then integrated into academic and judicial commentary.[60] In light of the subsequent LCN DNA evidence adduced at his second trial, it is perhaps easier to understand why this occurred in this particular instance. However, as discussed in chapter 1 the exculpatory DNA evidence may not actually have had the scientific cogency as initially believed by the court and the media. Therefore, it is argued here, that the Law Commission should have stepped back from the popular accounts surrounding the reliability of the evidence and the assumption of a judicial admissibility regime in turmoil. Doing so would have allowed them to undertake more detailed and symmetrical analyses of the evidence adduced thereby guiding their reform in a more considered manner.

Therefore, as illustrated here and in previous chapters, the Law Commission associated factual innocence with their reference cases thus allowing this concept to permeate throughout their reform. In the absence of clear evidence to support this concept it is difficult to understand why a legal reform organisation would have adopted and exacerbated a viewpoint created within the popular press. Subsequently, the Law Commission has left itself open to the criticism that their motivation for the introduction of a statutory reliability test was a reaction to the outrage caused by a few high-profile cases. This stands in contrast to adopting a more dispassionate scrutiny of the facts of recent successful appeals and the procedure of the legal system itself. As discussed in Act 3, this has resulted in the amalgamation of legal terminology which has obfuscated both the perceived problem and the desired outcome thereby masking the underlying aim of the consultation. The reform was

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on the basis of his innocence. In October 2013 Ben Butler was subsequently convicted for the murder of his daughter. The Serious Case Review makes uncomfortable reading.

See Marion Davis, 'Child D: A Serious Case Review: Overview Report' (*Sutton Local Safeguarding Children Board*, April 2016) <https://drive.google.com/file/d/0B5ILmebheQx3YmhvbjVYOHlpN2M/view> accessed 12 March 2020.

[59] B Woffinden, 'Earprint landed innocent man in jail for murder' *The Guardian* (London, 23 January 2004) <www.theguardian.com/uk/2004/jan/23/ukcrime1> accessed 05 August 2019.

[60] For example: Jacqueline McMurtrie, 'Symposium: Wrongful Convictions and Systemic Reform: The Role of The Social Sciences in Preventing Wrongful Convictions' (2005) 42 Am Crim L Rev 1271;

Justice Susan Glazebrook, 'Miscarriage by Expert' (2018) 49 VUWLR, 245.

therefore premised on an idealised legal solution to improve the reliability of expert evidence used in court. Considering the arguments raised throughout this and the preceding chapters it is thus an understandable proposition that the enhanced reliability test is nothing more than 'theatre.' In order to support this argument further this chapter will now turn to an overview of the consultation responses received regarding the reference cases and the need for an enhanced reliability test.

One significant point to note here is that, although they are described by the Law Commission as the 'Expert Evidence Consultation Responses',[61] they are not the verbatim replies received to the process but a summary of the points made by each of those who responded.[62] Therefore, the accuracy of the reported responses is not in doubt and it is acknowledged that they provide an important and detailed overview of the opinions received. However, there may well be a limitation as to what information can be drawn from this document, as the arguments put forward and the reasons behind them have been subject to interpretation and summary by the Law Commission.

9.2: Consultation Responses to the Reference Cases

In total 97 individuals, organisations or professional groups responded to the consultation process. Of the responses received, only 12 directly addressed issues within the chosen reference cases and the potential outcome if the reliability test had been in force at the time. The vast majority of consultees therefore were silent on this particular point. This may be partly due to the fact that no specific question was asked as to how the consultees felt with regard to the proposed reliability test and whether its application would have prevented these miscarriages of justice from occurring. This omission is surprising considering that the reference cases were the key actors for playing out this reform. Of the 12 responses addressing this issue, only 1 respondent felt that the reliability test would have prevented the miscarriages of justice occurring in the reference cases although this opinion was tempered

[61] (Law Commission, 2011) <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/03/cp190_Expert_Evidence_Consultation_Responses.pdf> accessed 24 January 2020.

[62] Described as 'a (…) detailed overview of the points made by consultees' *ibid* [1.1].

with caution against being overly optimistic in its actual practical application.[63] 7 opined that the proposed test would have made no difference at all;[64] 1 felt that the application of the reliability test would have prevented 2 of the 4 miscarriages of justice from occurring[65] and the remaining 3 opinions were made as a direct reference to Meadow's role in the reference case of *Clark*. These 3 opinions were critical of either the approach of the Law Commission or of the trial process itself rather than the reliability of the expert evidence.[66] Of note is the fact

[63] Associate Professor William O'Brian Jr:

'Citing US case law, he believes the solution the Law Commission provisionally proposes if in place would have prevented the miscarriages of justice identified in the CP. He does, however, caution against being too optimistic pointing out that in the US the *Daubert* approach has been applied rigorously in civil cases but 'is only rarely invoked to exclude prosecution evidence in criminal case'. The Law Commission (n61) [1.133].

[64] The British Psychological Society: 'They suggest that the proposals, if law, would not have prevented the miscarriages of justice referred to in the CP' The Law Commission (n61) [1.45].

Campbell Malone (Stephensons Solicitors) 'doubts the reforms suggested, if implemented, would have solved the problems we identify in the case law' The Law Commission (n61) [1.75].

Dr D Dwyer (Faculty of Law, Oxford; Barrister, Lincolns Inn Fields): 'She suggests there are no clear English cases where a miscarriage would have been avoided if our proposed approach had been in place (…)' The Law Commission (n61) [1.78];

The Academy of Experts: 'Their concern is that had the proposals been in force, they would not have prevented the miscarriages of justice referred to in the CP' The Law Commission (n61) [1.101].

London Criminal Court Solicitors' Association 'suggest that any test will have practical difficulties and suggests that the Commission's test would probably have made no difference if it had been in force at the time of the recent miscarriages of justice' The Law Commission (n61) [1.142].

Criminal cases Review Commission: 'They query whether our test would have benefited the appellants in the cases cited as examples' The Law Commission (n61) [1.150].

The Law Reform Committee of The Bar referred only to the *Sally Clark* case: 'The Committee suggests that the miscarriage in Clark was not because of the reliability of the subject matter of the expert's opinion but the manner in which it was delivered' The Law Commission (n61) [1.93].

[65] UK Register of Expert Witnesses: 'They believe, however, that while our proposals may have prevented the miscarriages of justice in *Harris*, and would very likely have led to the exclusion of the statistical evidence in *Clark*, they would not have prevented the miscarriages in *Dallagher* or *Cannings*' The Law Commission (n61) [1.66].

[66] Hon. Theodore R Essex (Admin Law Judge, US International Trade Commission): '[I]t should have been obvious that the statistical evidence was outside Roy Meadow's expertise as an expert paediatrician' The Law Commission (n61) [1.24];

that there were three consultees that represented the field of statistics – two as individuals[67] and one representing the Statistics and Law Working Group at the Royal Statistical Society.[68] Despite statistical data being pivotal to the reference case of *Clark* and thus the Law Commission proposal, none of these three statisticians refer specifically to this case nor assert that the reliability test as proposed would have prevented the miscarriage of justice from occurring. Furthermore, William Bache, the solicitor who worked alongside Michael Mansfield QC in representing *Cannings* at her trial and subsequent appeal, is listed as a consultee in the Law Commission proposal document. Having been directly involved in this case and thus, with his unique insight into the presentation of the expert evidence in court, his support for the Law Commission proposal would surely have been welcomed. However, in a review of the responses received by the Law Commission, it is apparent that either no response was received from him or it was not published.[69] Despite being cited as a footnote in the final report[70], the consultation responses document implies that Bache was silent on the questions asked and importantly on the issue of whether the introduction of the proposed reliability test would have affected the trial outcome for his client.

Considering that the reference cases were both the trigger for, and the structure on which the Law Commission attached their proposal, the lack of enthusiasm displayed by the consultees for the potential impact of this reform on these cases is insightful. It is apparent that the consultees are displaying an underlying reluctance to accept that the enhanced

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'[Alec Samuels (Barrister)] believes that in the miscarriage of justice cases, it is "unhelpful and unconstructive simply to blame the experts" because a number of failings can contribute to a miscarriage of justice (…)' The Law Commission (n61) [1.29];

Dr David Murray (Professional Against Child Abuse) 'is critical of our criticism of Professor Meadow and asks the Law Commission instead to focus on the cases of experts providing "imaginative diagnoses" to obtain an acquittal' The Law Commission (n61) [1.33].

[67] Professor David Hand, Imperial College and President of the Royal Statistical Society & Dr David Lucy, Lancaster University.

[68] Professor Colin Aitken.

[69] This would appear to support the view raised earlier in this chapter that the consultation responses do not replicate the replies received but have been subject to summary by the Law Commission.

[70] The Law Commission *'Expert Evidence in Criminal Proceedings in England and Wales'* (Law Com No 325, 2011) 77, f/n68

reliability test is an effective response to reduce the risk of wrongful convictions caused by, or involving, unreliable expert evidence due to a laissez-faire admissibility regime. This again provides support for the important point raised in chapter 7. That is that the Law Commission were confusing unreliable expert *evidence* with that of the unreliable *expert*. This would explain why the responses to the consultation were lacking in their enthusiasm for the efficiency of a new, validity-based reliability test in the chosen examples.

The prologue to this thesis introduced the claim that risk response strategies may be waved through with insufficient scrutiny, based on tenuous causal links, because of an inherent desire to address a perceived problem. This thesis argues that this is exactly what is happening in this instance. Both the development of the Law Commission proposal and the temperate support from the consultees is being driven by the high-profile nature of the reference cases and the outrage that surrounded the convictions following the successful appeals. Thus, it is important for the Law Commission to recognise the persuasive effect of public outrage. At the very least this will allow this driving force to be recognised and considered when approaching legal reform in the future thereby preventing it from exerting a disproportionate influence in the changing legal lands.

Chapter 10: Putting the Legal Cart Before the Scientific Horse

10.1: Uncertainty Within Science and the Law

At the heart of the key policy objectives adopted by the Law Commission is that the introduction of an enhanced reliability test will bring 'clarity, certainty and consistency'[1] to the law. Yet despite this desire to increase the rigor of the evidentiary rules and thus the accuracy of the jury verdict, the criminal trial will nevertheless remain inherently uncertain and inconsistent, allowing subjective factors to decide the scientific facts.[2] This point was introduced earlier in chapter 8 whereby the complex nature of both the criminal justice system and the criminal trial itself make causal links difficult to identify. The jury can thus be influenced by any number of factors or personalities within the trial process thereby introducing an element of uncertainty to the verdict. This inherent uncertainty becomes clear in cases where a retrial, based on the same evidence produces a different verdict with a different jury.[3]

In an attempt to limit doubt, the legal process increasingly turns to science to 'provide unambiguous truth, free of uncertainty'[4] thereby attempting to inject more objectivity into the evidence adduced. However, in common with the legal process, uncertainty also forms part of the fabric of continuing scientific discovery although their philosophical and practical differences are well documented[5] and judicially recognised.[6] Importantly, scientific discovery

[1] The Law Commission, *Expert Evidence in Criminal Proceedings in England and Wales* (Law Com No 325, 2011) 171.

[2] For example, the weight assigned by jurors to the evidence or the threshold for the 'beyond a reasonable doubt standard', the defence strategy, personality of witness/defendant etc.

[3] See talk by David Bentley QC, 'The nature of questions arising in court that can be addressed via probability and statistical methods' (2016) Isaac Newton Institute for Mathematical Sciences <www.newton.ac.uk/seminar/20160830133014001> accessed 27 September 2017.

[4] C Weiss, 'Expressing Scientific Uncertainty' (2003) 2(1) L P & R 25.

[5] For a good explanation of these two different approaches see K Foster & P Huber, *Judging Science: Scientific Knowledge and the Federal Courts* (1st edn, MIT Press 1999) 17.

[6] 'There is no need to apologise Dr Gill because I appreciate that you are coming at this from the standpoint of a scientist and Mr Pownall is coming at it from the viewpoint of a lawyer, therefore there are bound to be

is not limited by time and can thus confirm, redefine or disprove current theories through continuing empirical research. This effect was central to the successful appeals chosen by the Law Commission, which crucially provided the basis for this reform. Consequently, the cases analysed in Act 1 illustrated that the judicial admissibility assessments of the expert evidence, observed within their relevant chronological timeframes, do not convincingly demonstrate that these decisions were necessarily erroneous. Rather they indicate that it was the passage of time that reduced the cogency of the evidence adduced in the face of new scientific advancements or medical discovery. The benefit of time, however, is not afforded to the criminal trial which requires the finality of a verdict, delivered within a certain timeframe, and subject to legally defined rules and standards that moderate the objectives of truth and fairness. Therefore, decisions on the admissibility of expert evidence and prosecution policy may lack both consistency and certainty in the face of scientific advancement. As such, the legal process adjusts to these changes, situating them within the specific facts of future cases. Gradual scientific discovery allows the adaptive nature of the trial process to adjust in line with the current environment, moulding itself around specific issues in defined evidential areas. This effect can be witnessed by the adaptations in prosecution policy following the appeals of *Angela Cannings* and *Lorraine Harris* as discussed earlier in chapter 5. However, when science fails to give the definitive, objective answer to the legal question at hand there is a danger that this uncertainty will be reinterpreted to mean that the evidence is unreliable and cannot be trusted. Because of this translation, expert evidence often becomes the first casualty in the appeals process, receiving the majority of the blame, as science moves on or evidence is subsequently gathered.[7]

intellectual and philosophical conflicts. We just have to do our best to accommodate both points of view'. Comment from Weir J in the trial transcript *R v Hoey [2007] NICC 49.*

[7] Richard Nobles & David Schiff, *Understanding Miscarriages of Justice: Law, the Media and the Inevitability of a Crisis* (OUP 2000) Chapter 2, 'Problematizing Miscarriages of Justice' 175-176.

This tension between scientific uncertainty and legal unreliability caused by the continuum of scientific discovery was recognised by the Law Commission in their consultation[8] with particular reference to the successful appeal of *Angela Cannings*.[9] Nevertheless, their focus remains firmly on enhancing the legal standard of sufficient reliability as a means of addressing this issue. Not only does the drive for certainty encourage the law to turn increasingly to science and expert evidence to support the trial process, it also emboldens experts to deliver expressions of certainty that are sometimes unwarranted. This overstatement of the expert testimony represents a misuse of scientific evidence that is nevertheless sufficiently reliable to enter the trial process. This stands in contrast to a laissez-faire approach by the judiciary in their reliability assessments thereby allowing the admission of pseudo- science into the criminal justice system.

Either way, the law requires input from scientists to reveal instances of pseudo-science and to delineate the conclusions that can be drawn from sufficiently reliable evidence adduced at trial. Hence any reform should involve ongoing discussions and a coherent response from both the legal and scientific communities. This point was raised by the HCSTC as a backdrop to this reform yet the Caddy report, as discussed earlier in chapter 6, illustrated that this lack of a coherence has plagued attempts to affect an understanding as to the limitations, and therefore the evidential reliability, of expert evidence which continues throughout this latest reform. Turning now to the USA, an influential document was published by the National Academy of Sciences (NAS) and The National Institute of Justice (NIJ) just prior to the publication of the Law Commission final report. This collaboration between the scientific and

[8] 'Scientific knowledge is continuously advancing as more empirical research is undertaken, so it is inevitable that some hypotheses will come to be modified or discarded, that expert testimony based on any such hypothesis will subsequently come to be regarded as unreliable and that this will have a bearing on the legitimacy of convictions (and, to a lesser extent, acquittals) founded on such testimony. This problem exists *not because of any failings on the part of scientific experts or their methodology* but because of the very nature of the scientific method.' (emphasis added)
The Law Commission, *The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [1.17].

[9] 'As the Court of Appeal noted in *Cannings*, on occasion it will have to be accepted that "what was confidently presented to the jury as virtually overwhelming expert evidence providing the necessary proof (…) should now be approached with a degree of caution'. *ibid* [1.18].

legal fields stands in stark contrast to the fractured and discrete approaches that have so far been adopted in this jurisdiction and aligns itself more with the recommendations from the HCSTC report. Importantly this document recognised that a focus on admissibility was not an appropriate response for rectifying the potential hazards associated with the use of expert evidence.[10]

10.2: Sources of Unwarranted Certainty

10.2.1: The Adversarial Trial

It is fundamental to appreciate that the adversarial nature of the criminal trial is itself ill-suited to deal with scientific uncertainty. The desire of the legal system for certainty may lure the expert into making statements that are more assertive than those supported by the data thereby unwittingly encouraging an overstatement of the opinion that can reliably be drawn from the information available. The combative nature of the criminal trial manifests itself in ways that are not conducive to revealing or appreciating the uncertainty inherent in expert opinion with these areas of uncertainty being open to exploitation by the other side.[11] As a result evidence may become slanted thereby lacking objectivity or scientific support.[12]

Despite the explicit requirement that expert witnesses are officers of the court thus providing their evidence in a non-partisan objective manner, there is data to suggest that witnesses can indeed become biased towards the particular party for which they appear thus being led into an overstatement of the weight which attaches to their opinion. Known as 'role bias' it can result from being a paid employee of a legal team working together to further their particular

[10]'[T]he common lack of scientific expertise among judges and lawyers who must try to comprehend and evaluate forensic evidence—the legal system is ill-equipped to correct the problems of the forensic science community. In short, judicial review, by itself, is not the answer. Rather, tremendous resources must be devoted to improving the forensic science community'.
National Research Council, 'Strengthening Forensic Science in the United States; A Path Forward' 53 (*NCJRS,*2009) <www.ncjrs.gov/pdffiles1/nij/grants/228091.pdf> accessed 10 July 2017.

[11] 'The Royal Commission on Criminal Justice Report' (CM2263, London, HMSO, 1991) 159.

[12] *ibid.*

argument.[13] Furthermore, bias may be as a direct result of pressure from lawyers keen to best represent their party's interests by reaching the desired verdict.[14,15] A recent survey[16] has worryingly indicated that over a third of experts[17] who responded[18] had been asked or felt pressured to change their report in the last 12 months by the instructing party, thereby damaging their impartiality. Alongside express requests to alter their opinion there were also covert methods employed, such as the threat of non-payment or withdrawal of future work.[19] It needs no further explanation to appreciate how these biases could severely impact the reliability of the conclusions drawn from the expert evidence. Worryingly, this survey was conducted in 2016 – 10 years after the introduction of the impartiality requirement into the Criminal Procedure Rules.[20] These unfortunate findings support those contained within the HCSTC report from 2005 therefore indicating a continuing problem that required urgent

[13] Role bias is when 'scientists identify themselves within adversarial judicial systems as part of either the prosecution or defence teams. This may introduce subconscious bias that can influence decisions, especially where some ambiguity exists.' Forensic Science Regulator 'Cognitive Bias effects Guidance notes' (FSR-G-217, Issue 2, 2020) [4.2.7].

[14] Referred to as 'Motivational Bias' this is where a 'motivational influence on decision making results in information consistent with a favoured conclusion tending to be subject to a lower level of scrutiny than information that may support a less favoured outcome'. *ibid.*

[15] Professor Roy Meadow, the expert witness at the heart of two of the reference cases chosen by the Law Commission and discussed in Act 1 has himself described "the intense pressure he came under as an expert witness to offer certainty in his evidence when there was manifest uncertainty". Richard Horton, 'A dismal and dangerous verdict against Roy Meadow' (2005) 366 The Lancet, 3

[16] Bond Solon, 'Annual Expert Witness Survey Report 19 December 2016' (*Wilmington Legal*, 19 December 2016) 11 <http://spotlight.wilmingtononline.co.uk/docs/papers/Annual%20Expert%20Witness%20Survey%202016%20Report_595.pdf> accessed 28 April 2017.

[17] 33% non-medical experts and 36% medical experts.

[18] N = 744.

[19] Bond Solon (n16).

[20] The Criminal Procedure (Amendment No.2) Rules 2006. Expert's duty to the court: 33.2 — (1) An expert must help the court to achieve the overriding objective by giving objective, unbiased opinion on matters within his expertise;
(2) This duty *overrides any obligation to the person from whom he receives instructions or by whom he is paid*. (emphasis added).

redress.[21] The Law Commission only touched upon impartiality in their proposal quoting precedent to the effect that partiality did not necessarily render the evidence of the expert inadmissible.[22] Consequently, they made only 'relatively minor refinements'[23] to the common law test for impartiality within their original draft bill. However, the current reform will do nothing to address the covert pressure or undue influence exerted without the knowledge of the judiciary which is arguably a greater problem for the administration of justice than a transparent connection between a party and their expert.

There has been recognition both here and in the USA that adversarial bias is an important and significant problem[24] with claims being made that the 'adversarial system of criminal justice maybe corrupting science'.[25] These biasing effects may not only introduce expert opinions of unwarranted certainty but may also culminate in the use of phrases that are either contradictory or nonsensical in meaning.[26]

[21] HCSTC, 'Forensic Science on Trial Seventh Report of Session 2004–05' (HC 96-1, 2005) [147].

[22] The Law Commission No.325 (n1) 15 f/n 19.

[23] The Law Commission No.325 (n1) [1.50].

[24] 'The two most frequent problems with experts cited by judges and attorneys involve (a) experts who become advocates for the side that hired them (…)'. Carol L. Krafka, D. Dean P. Miletich, Joe S. Cecil, Meghan A. Dunn and Molly Johnson, 'Judge and Attorney Experiences, Practices and Concerns Regarding Expert Testimony in Federal Civil Trials' (2002) 8(3) Psychol Public Policy Law 309, 317.
'There is widespread agreement with the criticisms I made in the interim report of the way in which expert evidence is used at present, especially the point that experts sometimes take on the role of partisan advocates instead of neutral fact finders or opinion givers'. Lord Harry Woolf 'Civil Justice in the United Kingdom' (1997) 45 Am J Comp Law, 709, 730;
Although these examples arise in connection with the civil court procedure, they nonetheless raise important questions with regard to the criminal trial context.

[25] D Tuerkheimer, 'The Next innocence Project: Shaken Baby Syndrome and The Criminal Courts' (2009) 87 (1) Wash L Rev 1, 56.

[26] Phrases such as 'reasonable degree of scientific/medical certainty' adopt the mantel of science but are almost certain to be a creation of legal parlance. See NIST, National Commission on Forensic Science 'Testimony using the term "Reasonable Scientific Certainty"' <www.regulations.gov/#!documentDetail;D=DOJ-LA-2015-0004-0008> accessed 20 August 2015.

10.2.2: Interpretation and Cognitive Bias

Alongside the problems associated with the format of the adversarial trial sits another important source of bias. This occurs at the laboratory level especially where scientists are required to perform an interpretative step within the identification sciences. The effect of cognitive bias was first introduced in chapter 1 as a potential source of error for the ear-print identification of *Mark Dallagher*. However, the pernicious effect of cognitive bias has been recognised for many years[27] with the associated decrease in objectivity having been shown to produce inconsistent results even within the well-established identification sciences, such as fingerprinting[28] and DNA profiling.[29,30]

The Law Commission acknowledge that their reform cannot address the issue of cognitive bias subsequently what has been described as 'the very definition of "unreliability"',[31] remains untouched by an enhanced reliability test. Of greater concern, however, is that the Law Commission proposal may in fact encourage biasing effects. To support this supposition, it is thus necessary to turn to one of the indicia of reliability within the enhanced reliability test. This states that judges may consider in their assessment 'the completeness of the information which was available to the expert, and whether the expert took an account of *all the relevant information* in arriving at the opinion (including *information as to the context of any facts* to which the opinion relates)'.[32] Firstly, it would be difficult for a judge to evaluate what information was actually relevant to an analysis firmly situated within a discipline outside of law. Furthermore, the wording clearly lends support to the admission of evidence that is subject to biasing influences and worryingly this issue is recognised by the Law

[27] 'Cognitive bias has been identified as a potential issue within various criminal justice systems since the 1970s (…)' FSR (n13) [4.1.3].

[28] I Dror and D Charlton, 'Why Experts Make Errors' (2006) 56 JFI, 600.

[29] I Dror and G Hampikian, 'Subjectivity and bias in forensic DNA mixture interpretation' (2011) 51 Science and Justice, 204.

[30] Interestingly it has also been shown to affect third parties such as 'handler beliefs affect[ing] outcomes of scent detection dog deployments'. Lisa Lit, Julie B Schweizer and Anita M Oberbauer, 'Handler beliefs affect scent detection dog outcomes' (2011) 14(3) Anim Cogn, 387

[31] 'The *Daubert/Kumho* Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion' D Risinger and others, (2002) 90 Calif L Rev 1, 54.

[32] *Criminal Practice Directions Amendment No.2 2014* [2014] EWCA Crim 1569 [33A.5 (f)] (emphasis added).

Commission.[33] Therefore, in their desire to increase the reliability of the expert evidence adduced, the Law Commission reform is in danger of favouring evidence with reduced objectivity and thus increased unreliability. Subsequently, they agree that the wording may have to be changed following the introduction of protocols by the Forensic Science Regulator to reduce biasing effects within the laboratory. This action again supports the argument of this thesis that the legal cart is being placed before the scientific horse in that the Law Commission have acted before they are in receipt of this relevant information from the scientific community. This immediately raises the question as to the wisdom of leaving this clause in place in the meantime. This uninformed and inappropriate action has the potential to introduce serious issues for the reliability of expert evidence in the meantime by allowing biasing effects to permeate the expert evidence adduced thereby leading to further appeals in the future.

10.2.3: Individualisation

Issues of interpretation and cognitive bias are particularly problematic within the identification sciences. Whilst the analysis of *Dallagher* in chapter 1 introduced the criticisms surrounding claims of uniqueness as the central tenet to individualisation, individualisation itself is also subject to critique and debate. Whilst there is an underlying faith that expert evidence will bring more objectivity and certainty to the evidential framework care must be taken to ensure that the testimony from the expert does not encroach upon the role of the jury. In the absence of statistical data, the expert may be drawn into making a qualitative evaluation thereby informing the jury as to what inferences should be drawn from the underlying examination or data regarding identification of an individual. This testimonial style began to gain traction in both the scientific[34] and legal fields[35] regarding mixed DNA and LCN DNA profiling evidence prior to both the Caddy Report (as discussed in chapter 6) and the publication of the Criminal Practice Direction. The absence of any legal rule requiring that

[33] The Law Commission No.325 (n1) 66 f/n 33.

[34] 'Once the rarity of a multiple locus profile is estimated (…), objective criteria can be used to report that with reasonable scientific certainty a particular individual is the source of an evidentiary sample'. Bruce Budowle, Ranajit Chakraborty, George Carmody and Keith Monson
'Source Attribution of a Forensic DNA Profile' (2000) 2 (3) Forensic Science Communications , 1.

[35] See *R v Dlugosz* (2013) EWCA Crim 2.

expert testimony should perform this function has been recognised [36] and the necessity of any statements of individualisation by experts has also been doubted.[37] Individualisation testimony has thus been criticised as being a response to legal pressure to explain the meaning of the raw evidence adduced. This backwards reasoning from testimonial claims of individualisation to the epistemological foundation in support of these claims[38]effectively places the testimonial cart before the epistemological horse.

However, since the introduction of the Law Commission reform, steps have been taken by the Forensic Science Regulator to prevent these qualitative assessments of mixed DNA profiles from entering the trial process. Recognising that they were inconsistently admitted by the Courts and that their effect was potentially misleading,[39] guidelines have now been issued to prevent these evaluations being admitted into criminal trials in the future.[40] Removing the final step of individualisation allows the jury to weigh the raw data presented and come to their own decision as to the strength of the comparison. These guidelines represent the start of a process to remove claims of unwarranted certainty attaching to expert evidence - an issue that lay at the heart of the reference cases chosen by the Law Commission and assuming a central role in their proposed reform. Allowing the scientific community to begin the process of guiding the judiciary by delineating the boundaries for evidential weight has now started to erode the need for an enhanced reliability test at all. Therefore, in the case of DNA

[36] 'What legal rule requires an expert witness to turn uncertainty into certainty or to tell the jury what inference to make from their expert evidence?' Simon A Cole, 'Forensics without uniqueness, conclusions without individualization: the new epistemology of forensic identification' (2009) 8 L P &R 233, 247.

[37] 'Remarkably little argument has been mustered as to why expert statements of individualization are necessary.' *ibid*;

'If "individualization" represents the moment at which the forensic scientist goes beyond what she knows from the data to making an inference from that data, then individualization is, simply stated, not science.' Cole (n36) 248.

[38] '"Forensic theorists' efforts to justify claims of individualization smacks of working backwards from a testimonial claim desired by a partisan adversary to the epistemological basis to support it.' *ibid.*

[39] Forensic Context, 'The end of *Dlugosz* style DNA evidence in Court?' (*Forensic Context,* 20 eptember2017) <www.forensiccontext.com/end-of-dlugosz-style-dna-evidence-in-court/> accessed 23 March 2020.

[40] Forensic Science Regulator Guidance, 'DNA Mixture Interpretation' (2020) 222 Guidelines 16 & 17.

evidence, the correct placing of the scientific horse before the legal cart, has effectively relegated the enhanced reliability test to the wings.

If statistical or probability data is not available to assist the jury, then the use of standardised language could be introduced to alleviate the problem of overstated testimony evidence. Again, this must be tightly controlled to ensure that the testimony given truly reflects the probative value of the evidence and that testimonial bias is not inadvertently introduced.

10.2.4: Language

At the time of the Law Commission consultation steps were already being taken by the USA Department of Justice to 'establish standard terminology (for) reporting on and testifying about the results of forensic science investigations' [41] in recognition of the fact that the language adopted by an expert witness may have a profound effect on the perception and evaluation of evidence by the jury.[42] As a result, the final recommendations were aimed at preventing the use of language that carried the risk of 'misleading or confusing the factfinder'[43] or overstating the certainty of the expert's conclusions.

Crucially, however, prior to the Law Commission consultation, efforts were being made by the scientific community in the UK to standardise the language being used by the expert as it was considered a shortcoming of fundamental importance that there existed no consistent approach as to how 'results are evaluated and *communicated* to the Court'.[44] Based on the four guiding principles of 'balance, logic, robustness and transparency',[45] explanations would 'be ranked (to reflect) all uncertainties relating to the observations and (…) circumstances'[46] of the case. Implementation of this standardised approach was 'considered one of the highest

[41] National Research Council (n10) 22.

[42] National Research Council (n10) 21.

[43] NIST (n26) 1.

[44] Linked Forensic Consultants Ltd, 'The Reliability of Forensic Science – The Jury's Back' (emphasis added) (*Linked forensic Consultants,* 2011) <www.linkedforensics.com/assets/2011%20May%20Article%20final%20v.pdf> accessed 30 June 2017.

[45] Association of Forensic Science Providers, 'Standards for the formulation of evaluative forensic science expert opinion' (2009) 49 (3) Sci Justice 159, 161.

[46] *ibid.*

priorities by the major forensic science providers in the UK and Europe'[47] with the final paper being published in 2009 around the time of the Law Commission consultation. Importantly the HCSTC also expressed concern as to how statistical and probability evidence in particular, is presented to jurors, calling for a better understanding of the wording and presentation used so as to decrease the risk of misleading members of the general public.[48] Other jurisdictions have recognised the importance of monitoring the language used within the courtroom to ensure that it reflects any controversies or uncertainties in the scientific field in a manner that is readily assimilated by the jury.[49]

In the absence of science-led determinations as to boundaries of the opinion permitted from the evidential findings, the Law Commission reform is likely to be ineffective. As witnessed with DNA profiling evidence, judicial assessments alone as to the acceptable strength of expert opinion may fail to prevent the inconsistent admissibility decisions and potentially misleading cogency of evidence adduced at trial. Therefore, whilst the Law Commission reform shifted towards addressing the unreliability of the expert as opposed to the unreliability of the expert evidence, [50] it nevertheless leaves this assessment untethered from the scientific horse. Furthermore, the indicia of reliability make no specific reference as to the strength of the expert opinion as the clause relating specifically to this matter was removed

[47] Linked (n44).

[48] HCSTC (n21) [162].

[49] 'Purported precision or certainty beyond that permitted by the empirical evidence may be a tell-tale sign of unreliability. This caution is one of the important lessons learned from our review'. Hon Stephen Goudge, 'Inquiry into Pediatric Forensic Pathology in Ontario' vol 3, 493 (*Ministry of the Attorney General*, 1 October 2008) <www.attorneygeneral.jus.gov.on.ca/inquiries/goudge/report/index.html> accessed 28 April 2017;
'Whether the expert can express the opinion in a manner such that the trier of fact will be able to reach an independent opinion as to the reliability of the expert's opinion'. *ibid* 495.

[50] '[T]he strength of the opinion is warranted having regard to the grounds on which it is based'. The Law Commission No.325 [9.11 2b];
'Any inference drawn by the expert must be expressed with no greater degree of precision or certainty than can be justified by the material supporting it'. The Law Commission No.325 [5.66].

from final reliability test as implemented via the practice direction.[51] Theoretically this would allow qualitative assessments of DNA profile evidence to still pass through the judicial reliability assessment as before. Thus, without a science driven, targeted approach towards the language used and inferences permitted to be drawn from individual evidence types, the enhanced reliability test is set to be nothing more than theatre.

10.3: **Confusing Legal and Scientific Roles and Standards**

This thesis has contended that the introduction of the enhanced reliability test is nothing more than unnecessary theatre that will make little difference to the quality of judicial assessments of expert evidence. Chapter 7 illustrated that within the framework of the trial process, a lack of clarity as to the underlying hazard caused the focus of the reform to shift from its original parameters. However, as this thesis draws to a close it will now turn to the reliability test itself to claim that this confusion continues across an interdisciplinary plane also. As introduced earlier in chapter 8, the complex nature of both the criminal justice system and the criminal trial can make policy difficult to design with often unexpected or unpredictable results. It is thus necessary to appreciate that this failure to clearly define the terminologies used from the outset, especially within a reform that significantly deviated from its original course, may have now introduced another potentially more serious problem.

Research from the USA has indicated that judges differ in their approach to whether the *Daubert* factors represent a requirement for assessing admissibility or mere guidance to be used at their discretion.[52] This results in a spectrum of compliance with Judges sitting at the extremes of adherence to the indicia of reliability. Furthermore, chapter 5 introduced research that showed compliance with the Criminal Procedure Rules in general was lower than expected and argued that, if this applied across the associated practice direction, then the Law Commission reform would be unable to effect any real change. However, it is important to consider those judges that will adopt a strict adherence to these guidelines for

[51] The sub-clause entitled 'Reliability: Meaning' stated that 'the strength of the opinion is warranted having regard to the grounds on which it is based' was excluded from the final practice direction. The Law Commission No.325 148, [4.1 b].

[52] C Welch, 'Flexible Standards, Deferential Review: *Daubert's* Legacy of Confusion' (2006) 29 (3) Harv J L & Pub Pol'y 1085.

assessing the reliability of expert evidence by the factors listed. This may in turn introduce a problem for the courts, as guidelines crystallise into rules under the weight of precedent. Consider now the wording of two further indicia of reliability:

> 'the extent and quality of the data on which the expert's opinion is based, and the validity of the methods by which they were obtained' and
>
> 'if the expert's opinion relies on the results of the use of any method (for instance, a test, measurement or survey), whether the opinion takes proper account of matters, such as the degree of precision or margin of uncertainty, affecting the accuracy or reliability of those results'.[53]

As previously stated, both the Law Commission response and the Caddy report represent discrete attempts to address concerns regarding the unreliability of expert evidence. Consequently, this lack of a coherent approach from the scientific and legal fields has led to a conversational vacuum that the Law Commission has now rushed to fill. Seeking to address the void in scientific standards with a legal solution they have thus adopted the language of science in their wording, as emphasised above. This in turn may allow the judiciary to stray into scientific assessments of the evidence that they are not qualified to make. This stands in contrast to the comprehensive Goudge report into paediatric forensic pathology as introduced earlier in chapter 5. Here it was appreciated that 'reciting a laundry list of factors' [54] for assessing the reliability of the expert evidence had little benefit. Consequently, whilst showing some overall similarities, the test recommended within this report avoided utilising scientific concepts within their assessment criteria. Therefore, terms such as 'validity', 'accuracy', 'degree of precision' and 'margin of uncertainty' do not feature in the factors for determining threshold reliability. Indeed, it expressly steers the judiciary away from usurping the role of the jury by avoiding assessments as to the correctness of the expert opinion. In summary the test is ultimately focused on the reliability of three main areas in order to establish the threshold reliability[55] of expert evidence; that is the witness, the relevant scientific field and the opinion to be adduced. These assessments are then divided across

[53] *Criminal Practice Direction* (n32) [33A.5 (a) and (c)].

[54] Goudge (n49) 494.

[55] Goudge (n49) 494.

seven generic sub-headings allowing the judge the flexibility to consider any factors that may be related to these issues without recourse to overtly scientific terminology.[56] Importantly, the Goudge report was borne out of an inquiry into paediatric forensic pathology, and as a result the conclusions reached represent a targeted approach to assessing reliability in this specific area. Even the generic admissibility test adopted within the USA[57] is careful to avoid dictating the procedure required for judicial assessments of reliability despite being amended to reflect the *Daubert* judgment. Therefore, the factors contained within this rule are generic and loosely defined, again avoiding reference to the scientific terminology as adopted by the Law Commission. This allows the judiciary enough discretion within its application whilst leaving the specific *Daubert* factors available for consideration if appropriate.

Although the Law Commission were keen to minimalise criticism associated with the utilisation of a *Daubert* style test, there is nevertheless research to demonstrate that there are problems associated with the judicial understanding as to the meaning and application of the *Daubert* factors.[58] For example, one such study indicated that only 4% of judges demonstrated a true understanding of the meaning of an 'error rate'. Worryingly however, this research also indicated that the majority of judges felt that error rate was a useful measure for assessing reliability thereby demonstrating a lack of recognition as to the limits of their own knowledge and understanding.[59] In view of these findings it is suggested here that terms such as 'degree of precision' and 'margin of uncertainty' are even more bewildering to the non-scientist but that this may not always be recognised by the judiciary. Whilst it is not the intention of this thesis to analyse the problems associated with the application of the indicia of reliability, it is however within its province to recognise the linguistic rift between the fields of science and law. It has already been argued that in the absence of convincing examples or data as to the unreliability of expert evidence and, fuelled by the outrage surrounding the chosen reference cases, the Law Commission reform was a legal response to a scientific issue. This perpetuated the lack of a coherent response to the

[56] Goudge (n49) 495.

[57] Legal Information Institute, 'Federal Rules of Evidence: Rule 702 Testimony by Expert Witnesses' (*Cornell Law School)* <www.law.cornell.edu/rules/fre/rule_702> accessed 24 March 2020.

[58] Welch (n52) 1099.

[59] *ibid.*

challenges raised by the increasing use of expert evidence thereby requiring the judiciary to interpret and apply terminology that lacks a commonality across the two disciplines. Indeed, it has been argued that the lack of linguistic commonality 'makes it easier for barristers wilfully to misrepresent the evidence'[60] and if this is true, then it should be a matter of great concern to the criminal justice system. Unless the terminology employed is clearly delineated and understood reforms pertaining to the sufficient reliability test alone will do little if anything to address this issue.

In the criminal trial process judicial decisions as to the admissibility of expert evidence is where the tectonic plates of law and science collide, with the legal standard of 'sufficient reliability' butting against the scientific standard of 'validity'. These concepts are inextricably linked within the trial process but are necessarily distinct to their respective fields. Therefore, any process of reform must ensure that the correct questions are being asked within the appropriate arena and that the boundary between science and law is not being blurred. In order to emphasise this point, the meanings of some key terms will be considered here.

10.3.1: Reliability and Accuracy

In legal parlance the use of the word 'reliable' is generally accepted to reflect its ordinary, everyday meaning as to something that is 'able to be trusted'[61] or '[t]rustworthy'[62] and it is this definition that is endorsed by the Law Commission within their proposal and final report.[63] However, the everyday definition of 'trustworthy' is not consistently adopted across all disciplines with those of the sciences, and especially statistics, utilising a definition that is more specific. The use of the word 'reliable' within these fields was originally held to mean 'accurate or free from error' but of importance is the shift in definition within the latter half

[60] Editorial, 'Identity crisis' *The Economist* (London, 16 June 2015) <www.economist.com/news/britain/21657837-forensic-sciences-flaws-are-catching-up-it-identity-crisis> accessed 20 July 2015.

[61] Oxford English Dictionary, 'Reliable'<www.oed.com/view/Entry/161905?redirectedFrom=reliable#eid> accessed 18 March 2021.

[62] *'"Trustworthy"* does all the work required.' Henry Fowler, '*New Fowler's Modern English Usage,* (R. Burchfield (Ed) 3rd edn, OUP 1998) 665.

[63] The Law Commission CP190 (n8) 34 f/n 51 and The Law Commission No.325 (n1) [1.27].

of the 20th century whereby it came to mean '(a method or technique of measurement) that yields consistent results when repeated under identical conditions'.[64] Therefore 'reliability' is often used interchangeably with the term 'precision'.[65] However, in certain scientific contexts, precision is not synonymous with the term 'accuracy'[66]- as utilised by the Law Commission in the reliability factor reproduced above - meaning the 'closeness of agreement between a measured quantity value and a true quantity value of a measurand'.[67] Thus, a test may be very reliable but highly inaccurate. To further confuse matters, a test that is dependent on 'both the accuracy of the test itself and the rate at which the measured event occurs in the world (base rate)'[68] may find the reverse situation occurring in that 'the test is both very accurate and very unreliable'[69] when comparing the *scientific* definition of 'accuracy' with the *legal* standard for 'reliability' (ie: trustworthy). This 'base rate problem' is important to understand because in instances of relatively rare conditions, such as child abuse, even a highly accurate test may overly support a finding that this has occurred. This issue is an important consideration for three of the four reference cases where the rarity of the occurrence of deliberate harm to an infant was potentially ignored because of the medical findings and the weight attached to them.[70]

Whilst statisticians are acutely aware of the issue, it is equally important for judges to understand it also.[71] Importantly there also appears to be no consistent use of the term 'reliable' even across scientific commentary despite the generally accepted view that the

[64] Oxford (n62).

[65] 'JCGM 200:2012; International vocabulary of metrology — Basic and general concepts and associated terms (VIM)' [2.15] 'Measurement precision: closeness of agreement between indications or measured quantity values obtained by replicate measurements on the same or similar objects under specified conditions'.

[66] *ibid* note 4: "Sometimes "measurement precision" is erroneously used to mean measurement accuracy."

[67] JCGM (n66) [2.13].

[68] Foster (n5) 116.

[69] *ibid.*

[70] This is linked to issues of the sensitivity and specificity of a test. Where sensitivity is high but specificity is low, many false positives will be detected in a population where the expected frequency of the event occurring is low.

[71] 'Statisticians understand this base rate problem very well. After *Daubert*, Judges must grasp it too. This is absolutely fundamental to the evaluation of the reliability of a claim based on an observation or a test of any kind'. Foster (n5) 121.

established definition adopted by scientists across all levels and subjects generally excludes accuracy as a component.[72] This definitional disparity may be due to the inherent differences between the laboratory based forensic sciences grounded in empirical research and those reflecting experience and opinion. To exacerbate the problem, laboratory based sciences may use differing terminology to those that are not laboratory based and these terms may not necessarily be interchangeable.[73] Therefore scientific literature frequently recognises the need to clarify the definitions chosen for their particular use.[74] The legal field can then add to this confusion when, for example, it lacks clarity as to the procedural position of the word 'reliable' within the criminal trial process,[75] when it is used interchangeably with other legal

[72] B Layne DesPortes, 'Validation of forensic Science Techniques: Principles and Procedures'. 'It should be noted, however, that 'reliability' in scientific contexts often refers only to the extent to which a method produces the same results on repeated tests; accuracy (or correctness) is a separate concept'.
(2011) Wiley Encyclopedia for Forensic Science 1, 6 end note (a) c.f PCAST (n74) below.

[73] 'We conclude, then, that precision and accuracy, except in circumstances where we know what truth is, are incomplete (in the former case) and inaccurate (in the latter) synonyms for reliability and validity'.
David L Streiner and Geoffrey R Norman '"Precision" and "Accuracy": Two Terms That Are Neither'
(2006) 59 J Clinical Epidemiol 327, 329.

[74] 'By reliability we mean repeatability, reproducibility and accuracy'. Executive Office of the President President's Council of Advisors on Science and Technology (PCAST), 'Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods'
(*Obama Whitehouse Archives*, September 2016) 47
<https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf> accessed 25 September 2017;
'Research is needed to address issues of accuracy, reliability, and validity in the forensic science disciplines.' National Research Council (n10) 12.

[75] 'In satisfying itself that there is a sufficiently reliable basis for expert evidence to be *admitted* (…)' (emphasis added) CPS Guidance on Expert Evidence (*CPS,* 2014) [9]
<www.cps.gov.uk/legal/assets/uploads/files/expert_evidence_first_edition_2014.pdf> accessed 04 November 2015;
'[A]s a general rule, factors bearing on the reliability of evidence go to weight rather than admissibility.' The Law Commission No.325 (n1) 3 f/n 15.
'Whether evidence is "reliable" is a legal matter that is decided by the trial judge *before* the evidence is presented to the jury.' (emphasis added) J.D. Robert Rosenthal, 'Suggestibility, Reliability and the Legal Process' (2002) 22 (3) Dev Rev 334.

concepts[76] or when academic commentary considers 'reliable' and 'accurate' as interchangeable synonyms.[77] Furthermore, the Law Commission have introduced the concept of 'actual reliability'[78] which would appear to equate to 'accuracy' although it is unclear as to its exact meaning. Despite the Law Commission clearly stating that 'the trial judge would not (…) address the question of whether the expert's opinion is in fact correct'[79] they also seem to adopt a contradictory stance in places regarding this judicial enquiry.[80] This brief overview is enough to illustrate that scientific and legal communities can be conceptually adrift when it comes to the meaning of 'reliability'. Consequently it is important that the judiciary remain focused on the legal standard of reliability and not be tempted to step into scientific assessments of validity otherwise the courts may find themselves in the unenviable position of trying to understand what 'reliable' is intended to portray whilst dealing with varying types of expert evidence.

10.3.2: Validity

Unfortunately, the term 'validation' also shares similar semantic issues with the legal and scientific fields not necessarily attaching the same meaning to its use. A useful general

[76] *ibid.* 'A primary source of this difficult is the frequent confusion between "reliability" and two other legal terms: "credibility" and "competence".'

[77] 'We also need to address conceptual limitations that have focused attention on impartiality rather than evidence of validity and reliability (i.e. ability and accuracy)'. Gary Edmond, 'Is reliability sufficient? The Law Commission and Expert Evidence in International and Interdisciplinary Perspective (Part 1)' (2012) 16 E & P, 30,41.

[78] 'We mean reliable in the sense of being sufficiently reliable or trustworthy to be placed before the jury. (Actual reliability is a question of fact for the jury to determine.)' The Law Commission CP190 (n8) 25 f/n 7.

[79] The Law Commission CP190 (n8) [6.21].

[80] 'The improved training of solicitors, counsel and judges could by itself do much to reduce the risk of miscarriages as a result of *inaccurate* or misleading expert evidence.' (emphasis added) The Law Commission CP190 (n8) [5.115];

'[T]he ultimate question (for the judge is) whether sufficient assurances are present to warrant jury acceptance that the theory, as actually applied to the facts at hand, produces a *correct result*' (emphasis added). The Law Commission CP190 (n8) [6.19];

'[I]t is sufficiently reliable to be considered, and *ultimately acted upon*, by the jury' The Law Commission CP19-(n8) [6.1] (emphasis added).

definition as to the purpose of 'validation' is that 'it is a documented program that provides a high degree of assurance that a specific technique will consistently produce a result within the defined specifications and quality parameters'.[81]Regarding science based expert evidence, a robust validation process will therefore help assure the courts 'that the technique is appropriate for its intended use and provides a basis for the development of interpretation guidelines'.[82] However, confusion arises because scientific validation is not a single concept but rather a number of different processes and this may not be readily apparent to legal practitioners or the judiciary. For example, forensic scientists may refer to 'method validation' to confirm the capabilities and limitations of a technique and then to 'internal validation' to confirm that the method is performing as expected within a *specific laboratory*. Understandably the scientific community are concerned with the scientific integrity of their laboratory and the test methods therein. The legal field, however, are also concerned with the methodology being validated for evidential purposes situating it within the facts of the case in hand.

Moreover, scientists employ different validation processes and different types of validation methodology which can cause confusion for the legal profession as it can appear that there is an inconsistency in the use of the term.[83] Therefore attempts to define the general purpose of validation are prone to lead to variations in the description and thus its underlying goals.[84] Moreover, linguistic confusion is exacerbated by the legal community employing the language of science in a manner that is different from its use within the scientific field itself. For example, non-scientists including legal commentators often employ the term 'invalid' as a means of indicating that a hypothesis does not have any data to support the underlying theory. Scientists however, use 'invalid' to describe a theory that is subject to the presence

[81] *ibid.*

[82] DesPortes (n72) 1.

[83] 'Unfortunately, the term "validation" is commonly used within the forensic science community to describe several separate processes inherent in good scientific analysis, and legal practitioners have struggled to reconcile seemingly inconsistent references in their efforts to determine whether specific forensic science techniques qualify as "validated methods"'.
DesPortes (n72) 1.

[84] *ibid.*

of empirical data that disproves the original hypothesis. The term 'non-valid' is used to describe the lack of supporting data.[85] Importantly validation alone does not guarantee the accuracy of the results but forms part of a wider process aimed at this purpose such as strict adherence to protocols, calibrated instrumentation, qualified staff and proficiency testing.[86] It is apparent that validation procedures and processes must be customised for the specific requirements of the forensic methodology under test and that even when validated the use of the methodology must be 'standardised and acceptable protocols developed'.[87]

Furthermore, any validation protocol should ideally be 'conducted or endorsed by a scientific body recognised as authoritative and impartial'[88] for it to gain acceptance within the forensic arena, and calls for this to occur are gaining support, particularly in the USA.[89] It must also be remembered at this point that validation procedures are primarily concerned with laboratory based, empirical testing rather than experience based expert evidence which may find it difficult to provide hard data in support of the hypothesis. This is particularly relevant to three of the reference cases discussed in Act 1 as they involve experience-based testimony regarding child abuse which understandably cannot involve empirical experimentation to support any hypothesis.

In the absence of a scientific lead, the differing terms associated with varying types of expert evidence will potentially create confusion for the courts as they struggle to determine the

[85] Desportes (n72) 1.

[86] Desportes (n72) 6.

[87] Desportes (n72) 2.

[88] Desportes (n72) 6.

[89] See letter to The Attorney General of the United States from The American Association for the Advancement of Science, American Chemical Society, Federation of Associations in Behavioural and Brain Sciences & Human Factors and Ergonomics Society calling for the evaluation of forensic science techniques to be conducted by scientists independent to the department of justice laboratories. American Association for the Advancement of Science and others, 'Letter to Attorney General' (2017) <https://mcmprodaaas.s3.amazonaws.com/s3fs-public/Scientific%20Society%20Comment%20on%20DOJ-LA-2017-0006-0001%20-%209%20June%202017.pdf> accessed 20 September 2017.

scientific integrity of the evidence adduced. It is therefore little wonder that the scientific and legal communities may be conceptually adrift when it comes to the meaning of 'reliability'.

10.4: The Scientific Method

The original thrust of the Law Commission proposal was the development of a 'validity-based admissibility test'[90] designed to ensure that only evidence grounded in 'sound scientific methodology'[91] was admitted into trial. However, there is no consensus amongst scientists and philosophers of science alike as to what constitutes 'scientific methodology' in the first place.[92] Furthermore it has been argued that there is 'no single scientific method, but many different scientific methods in different areas of science'[93] – a point recognised by the Law Commission in their consultation. Therefore, any attempt to meaningfully assess the relevant methodology and thus the validity of expert evidence in lieu of robust scientific input would be an overwhelming task with suggestions of increased training for students and the judiciary being a naïve solution. Moreover, it has also been posited that a scientific method is not a constant but rather 'shifts and changes as science proceeds'.[94] Again this is directly relevant to the reference cases discussed in Act 1 as the presentation of fresh evidence may thus represent the shifting of the assessment of scientific methodology rather than the admission of unreliable expert evidence in the original trial.

[90] The Law Commission CP190 (n8) 49.

[91] 'Our first set of guidelines listed the indicia of reliability traditionally associated with sound scientific methodology, that is, the type of methodology demonstrating the classic hallmarks of valid science, including properly conducted experiments and observations, the revision of hypotheses in the light of new data, publication and peer-review.'
The Law Commission No.325 (n1) [3.41].

[92] '[T]he idea that real scientific inquiry, the genuine article, differs from inquiry of other kinds in virtue of its uniquely effective method or procedure – the supposed "scientific method." However, we have yet to see anything like agreement about what, exactly, this supposed method is.' S Haack, 'Six signs of scientism' (2012) 3 (1) Logos & Episteme 75, 87.

[93] *Ibid.*

[94] Haack (n92) 87.

However, at any given point in time a scientific methodology may remain fundamentally 'sound' whereas legal assessments as to sufficient reliability may fluctuate within the evidential content of the case in hand. This point was demonstrated by the Law Commission who conceded that both the ear-print evidence and medical findings supporting a diagnosis of SBS would be admissible in the presence of other cogent evidence of guilt. This again indicates that their concern is neither the validity nor the reliability of the evidence itself but rather the reliance placed on the scientific evidence alone by the prosecution and the uncertainty that naturally surrounds this type of evidence.

10.5: Legal Reliability or Scientific Validation in the Case of Low Copy Number DNA profiling?

This thesis now returns to the controversial technique of LCN to emphasise the need for the scientific horse to be placed before the legal cart when assessing the scientific validation or evidential value of expert evidence.

Within his judgment in *R v Hoey,*[95] Weir J. echoed the sentiment from the HCSTC report reproducing the wording verbatim that '[t]he absence of an agreed protocol for the validation of scientific techniques prior to their being admitted in court (was) entirely unsatisfactory'. The Law Commission has then interpreted this reproduction as indicating judicial recognition that the current test for 'sufficient reliability' is ineffective thereby requiring a 'new basis for *screening* expert evidence to ensure that only sufficiently reliable evidence will be *considered by the jury*'.[96]

However, it becomes clear from the judgment that Weir J was concerned 'about the present state of the *validation* of the science and methodology associated with Low Copy Number DNA (LCN) and, *in consequence*, its reliability as an evidential tool'.[97] He is therefore indicating that the burden of validating scientific enquiry is falling to the judges who are not well placed to make this determination as opposed to the scientific community who are. His annoyance

[95] (2007) NICC 49.

[96] The Law Commission CP190 (n8) [2.32] (emphasis added).

[97] *Hoey* (n96) [64] (emphasis added).

is clearly directed at the lack of an internationally recognised protocol for performing or interpreting this type of evidence thus differing results, and the subsequent suspect identification, would occur depending on the guidelines adopted. [98] What Weir J is calling for is the introduction of standard protocols and validation procedures that would introduce an earlier safe-guarding step or gatekeeping function to protect the *judge* (as opposed to the jury) from making these uncomfortable and inappropriate determinations. This should not be equated with a desire for the introduction of a more complex, scientifically based and onerous legal duty to determine sufficient reliability. As this was a Diplock trial, Weir J was required to adopt the roles of both judge and jury. As such, the issue of admissibility becomes somewhat blurred with that of evidential weight. Nevertheless, the evidence was rejected as either being 'insufficiently reliable' on judicial assessment or because on closer inspection, it would have been revealed to the Law Commission that this was a clear example of the application of the common law effectively exposing unreliable expert evidence. [99] Either way this thesis argues that this example actually weakens support for the Law Commission reform and the need for an enhanced reliability test.

Before leaving the topic of LCN profiling it is necessary to return to a point initially made in chapter 6. In *R v Reed & Reed*[100] the Court of Appeal concluded that 'a challenge to the validity of the method of analysing Low Template DNA by the LCN process should no longer be permitted at trials where the quantity of DNA analysed is above the stochastic threshold of 100-200 picograms in the absence of new scientific evidence'.[101]

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[98] '[T]he continuing absence of international agreement on validation of LCN (…) or the variations in the way in which it was being implemented in different countries should be an(y) impediment to the ready acceptance by any court of the Birmingham approach.' *Hoey* (n96) [63];

See also the trial transcript pg 88-91 as kindly supplied to this researcher. There is a lengthy cross-examination on the protocol adopted in New York as opposed to the FSS in Birmingham culminating in the conclusion that if the NY protocol was applied then the LCN results would be far less significant for the prosecution.

[99] The trial transcript records that robust cross-examination exposed the fact that some negative controls had tested positive thus revealing crucial flaws in the evidence adduced. It also revealed the jurisdictional differences in interpretation guidelines which could in turn lead to a different identity of a suspect.

[100] (2009) EWCA Crim 2698.

[101] *ibid* [74].

This pronouncement was a direct result of the findings of the Caddy Report which was referenced throughout this judgment. However, in the absence of standardised protocols for profile interpretation, the concept of validity is far more nuanced than may be appreciated by those in the legal field who are not qualified to make these scientific proclamations. As discussed earlier, the Caddy report recognised the complexity of profile interpretation but deferred this issue to others whilst nevertheless declaring that the Low Template DNA profiling (LTDNA) methodologies were 'fit for purpose'. This thesis argues that it was the failure to initiate a dialogue between science and law that drew the Court into setting a generic threshold for 'safe', or reliable, LTDNA analyses which is an oversimplification of the issues involved.[102] This point finds support from scientists on both sides of the LTDNA argument who have stated that '[a] definition (of LTDNA) based on a quantification value is not feasible'[103] and that admissibility should not be decided using a quantitative cut-off but rather based on the reproducibility and quality of the analysis.[104]

In conclusion therefore, it must be appreciated that unwarranted certainty within expert opinion evidence is often a result of the format of the criminal trial itself with many important sources remaining untouched by the Law Commission reform. Furthermore, by failing to place the scientific horse before the legal cart the judiciary has been left to interpret and apply varying concepts that may not have agreed or consistent meanings both within and across the legal and scientific fields. Subsequently, the attempt by the Law Commission to bring 'clarity, certainty and consistency to the law' may in fact introduce a new set of unseen issues for the criminal justice process. Indeed, it has been illustrated that, on closer inspection, the reference cases chosen support the argument of this thesis that it was the expert expounding

[102] 'Confusingly, the same weight of DNA in different samples does not necessarily entail the same degree of stochastic effect; it depends on the "quality" of the DNA (…) and the performance of the analysis at the time of testing.' Forensic Institute, 'Confusion in Court on LTDNA and LCN' (*Forensic Institute,* October 2008) <www.theforensicinstitute.com/news-articles/views-and-opinions/dna-profile-interpretation/confusion-in-court-with-ltdna> accessed 07 June 2019.

[103] Peter Gill and John Buckleton 'Low Copy Number Typing- where next?' (2009) 2(1) For Sci Int Genet Supp Ser 553, 555.

[104] Gill (n104).

unwarranted certainty in their opinion that was of concern to the Law Commission. This stands in contrast to issues regarding the unreliability of the underlying science and explains the shift to a reliability test more heavily weighted in assessing the strength of the expert's opinion. Without input from the relevant scientific and medical disciplines, assessments as to the reliability of expert evidence remains virtually untouched by the reform. Consequently, appealing to the law to solve issues of scientific validity is likely to be both an ineffective and inappropriate response.

Epilogue

Conclusion

As stated from the outset, in this thesis I have maintained a narrow focus. Anchored firmly to the Law Commission reform for the admissibility of expert evidence into criminal trials, it is from this strictly delineated boundary that the project finds its power. Choosing this specific reference point for the analysis and scrutiny I deliver not only reflects the importance of the reform itself but also the influential status of the Law Commission in driving legal change.

But there is a second reason for the delivery of this PhD thesis in the form offered. The premise for the study is that no-one before now has offered such a close interrogation of the evidence, reasons and impact of this relevant episode in our recent legal history. Consequently, this has left analyses incomplete, asymmetrical and under-evidenced and ultimately unable to deliver the work required of them in directing reform that is deemed necessary. Therefore, the merit of my thesis is to be found precisely in the deep, forensic investigation that I have aimed to provide in order to establish a surer foundation for reflection and deliberation in the future. Without my work then somebody, somewhere would need to present the same project, at the same level of analysis, because the deficiencies of the present position leave the administration of justice confused and unsafe.

In raising these questions regarding the assumptions underpinning the Law Commission's work on expert evidence it would now be reasonable to deploy similar interrogation of their work on other legal matters, at least in recent times. Whilst that wider project plays no part in my work conducted here it is hoped that by interrogating the process behind this specific legal reform further research and scrutiny of both current and future Law Commission proposals will be encouraged. In the face of increasing pressure over funding, the Law Commission are now heavily reliant on others to provide relevant information for guiding their proposals.[1] Therefore, the potential absence of secondary research information coupled with these financial constraints may result in a lack of data to guide specific reform proposals

[1] The Law Commission, 'The Law Commission for England and Wales and it's use of empirical research' [1.5] – [1.6] <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jsxou24uy7q/uploads/2015/06/empirical_research_090610.pdf> accessed 12 August 2021

in the future. Consequently, my research occupies an important position within any informational vacuum, serving to expose both the assumptions made and the hidden forces that may drive any particular reform agenda. Furthermore, the importance and timely intervention of my thesis can already be appreciated when situated beside a recent judicial rebuke of the Law Commission. In connection with its recent proposal for reforming the law governing hate crimes the Law Commission was admonished for moving away from its non-political position by being drawn into 'controversial and contentious sociological theories'[2] that were outside its brief. In doing so it was accused of responding disproportionately to minority opinion rather than performing a robust and critical evaluation of the situation. Subsequently their consultation process was criticised for lacking a balanced approach.[3] Therefore, my research serves to complement this opinion with its findings acting by way of both explanation for this concern and as guidance for future law reform. This has been achieved by the unique approach of my thesis which raised awareness of the outrage factor and the effect that it can have on driving legal reform in a particular direction. Responding to emotive influences such as this can subsequently lead to a reduction in the objective consideration of a legal issue thereby resulting in changes that are unnecessary or that overreach their intended purpose. This in turn can result in reforms that are ineffective, inappropriately targeted or overbearing and of this the Law Commission need to be made aware. Never will my research findings be more timely than when the Law Commission are tasked with considering other difficult and emotive areas as can be seen currently in the potential expansion of the rape shield laws.[4] This highly difficult and sensitive area of law is

[2] Charles Hymas, 'Transgender campaigners have too much say over expanding hate crime laws, says top judge' *The Telegraph* (London, 03 May 2021) <https://www.telegraph.co.uk/news/2021/05/03/transgender-campaigners-have-much-say-expanding-hate-crime-laws/> accessed 16 August 2021.

[3] *ibid.*

[4] Charles Hymas, 'Patel 'deeply ashamed at low rape prosecution rates; Review recommends radical changes to rape inquiries' *The Telegraph* (London, 18 June 2021) 1

already attracting impassioned media headlines[5] and political apology.[6] It is thus crucial that the Law Commission understand the need for an objective and balanced assessment of the legal landscape so as to prevent outrage from unduly driving this reform. So, whilst the narrow focus of this thesis ensures that the conclusions reached apply only to this specific reform and no further, the intensity of this focus should not be seen as diminishing the significance and weight of the matters considered throughout.

Furthermore, my findings can also be applied to Law Commissioning bodies in other common law jurisdictions. In doing so it can be used to explain decisions around expert evidence reform or to provide valuable information for any future excursions into this area. For example, in 2008 the Law Reform Commission of Ireland also considered an enhanced reliability test for expert evidence.[7] However, by 2016 the approach developed within England and Wales had been expressly rejected by this organisation.[8] Therefore, the findings within my thesis are firmly situated within this temporal space serving to aid understanding as to why there was such unease about adopting a test similar to that developed by the Law Commission in our domestic jurisdiction. In addition, my findings can help to inform the Scottish Law Commission if they proceed with the introduction of a threshold reliability test. Currently they have resisted calls for such an intervention on the basis that expert evidence is not generally considered a problematic area.[9] Their appreciation of conducting a specific

[5] For example:

Caelainn Barr and Alexandra Topping 'Fewer than one in 60 rape cases lead to charge in England and Wales' *The Guardian (*London, 23 May 2021) <https://www.theguardian.com/society/2021/may/23/fewer-than-one-in-60-cases-lead-to-charge-in-england-and-wales> accessed 12 August 2021;

Sophia Sleigh, 'Underwhelming rape apologies won't cut any ice with the victims' *The Evening Standard* (London, 18 June 2021) 10;

Charlotte Paxton, 'Demand for PM apology over rape questions' *Birmingham Evening Mail* (Birmingham, 25 June 2021) 16.

[6] Hymas (n4).

[7] The Law Reform Commission (Ireland), *Expert Evidence* (LRC CP52, 2008) [2.383].

[8] The Law Reform Commission (Ireland), *Consolidation and Reform of Aspects of the Law of Evidence* (LRC No 117 – 2016) 256.

[9] Lady Clark of Calton, 'Expert evidence: viewed from the bench'

inquiry when individual areas of evidence prove difficult[10] accords with the argument developed throughout the course of my thesis that a generic enhanced reliability test is neither appropriate nor necessary. Moving further afield my research may again prove useful to law commissioning bodies in other common law jurisdictions who may now find funding available[11] or who may wish to revisit their admissibility criteria again in the future.[12]

The Law Commission report at the centre of my thesis, the evidence on which it based its reform and the reasoning it entered into, together with the impact it has had since publication, sit at the forefront of the relationship to be negotiated between law and science which has been shown to be in imperfect shape. The admissibility of expert evidence in criminal trials is firmly positioned at the interface between these two disciplines because of the fast pace of scientific progress in offering new and relevant interventions within these trials. Furthermore, issues regarding evidential reliability are routinely raised as a part of this process which can lead to increased public attention particularly where errors are supposed to have occurred. In short, the matters raised by the Law Commission reform occupy the single most important pressure point at the leading edge of this new settlement between science and law within the administration of justice. This alone warrants the focus and scrutiny that I have aimed to deliver in the course of this study.

(Forensic Science Society Conference, London, 23 March 2013) <https://www.scotlawcom.gov.uk/files/4413/6611/3178/Lady_Clarks_address_to_Forensic_Science_Society_on_20_March_2013.pdf> accessed 12 August 2021.

[10] *ibid.*

[11] '*The BCLI is delighted with the announcement in yesterday's budget that the federal government will be reviving the Law Commission of Canada*'
Karen Campbell, 'Justice Canada to bring back the Law Commission of Canada' (BCLI, 20 April 2021) <https://www.bcli.org/folrac_law-commission-of-canada-announced> accessed 12 August 2021.

[12] 'In Australia however, there has been no equivalent governmental response nor legal developments. As the law stands in Australia, it seems that reliability of the evidence is not a factor to be considered when trial judges determine whether expert evidence should be admitted and considered by a jury' Stephen Cordner, Eva Bruenisholz, Dean Catoggio, Peter Chadwick, John Champion, Anna Davey, Rebecca Kogios, Michele Williams and Noel Woodford 'The Uniform Evidence Act and Australian judges ability to assess properly the validity and reliability of expert evidence' (2020) 52 (3) Aust J Forensic Sci 243,244

So, what is the future for expert evidence and the enhanced reliability test?

Research undertaken recently would seem to suggest that the effect of the new test is indeed illusionary thereby lending support to my central contention that it is nothing more than 'theatre'. Academic commentary has stated that the Court of Appeal have shown little meaningful engagement with the new test[13] and empirical research makes it apparent that challenges to the admissibility of expert evidence by counsel remain largely unaffected by the reform.[14] Importantly, Streamlined Forensic Reporting (SFR), as introduced in 2013 to reduce cost and time constraints on the criminal justice system,[15] can remain outside the reach of the new reliability test.[16] This then adds a further illusionary dimension to its application especially as early studies have shown that reliability challenges to the initial SFR reports are rare.[17] With regard to these findings the need arises to look deeper into the actual workings of the enhanced reliability test at a judicial level. By assessing how trial judges are interacting with and interpreting the criminal practice direction will allow us to understand how, and if, the test has substantially affected their admissibility decisions when challenged. In addition, further research should be directed at different types of expert evidence in order to establish whether some areas are proving more problematic than others when being assessed for the reliability of the underlying methodology or technique. Conversely, there needs to be further understanding as to whether some evidence types are being waved through on judicial notice

[13] Natalie Wortley and Tony Ward, 'Comment on Guidance on the Preparation, Admission and Examination of Expert Evidence' (2019) CLW 11.

[14] Gemma Davies and Emma Piasecki, 'No More Laissez Faire? Expert Evidence, Rule Changes and Reliability: Can More Effective Training for the Bar and Judiciary Prevent Miscarriages of Justice?'
(2016) 80 (5) JCL 327, 332.

[15] Lord Justice Goldring, '(SFR) is intended to deliver forensic evidence proportionate to the needs of each case. (it) can deliver significant benefits to the courts, prosecution and defence. Court time is saved. Unnecessary forensic work is avoided. Unnecessary prosecution work is avoided. The defence are better able to focus on the real issues and appropriately advise their clients' 'Letter' (Judiciary of England and Wales, August 2012) <https://www.cps.gov.uk/sites/default/files/documents/legal_guidance/Senior%2520Presiding%2520Judge%2520regarding%2520SFR%2520-%2520August%25202012.pdf> accessed 16 August 2021.

[16] Carole McCartney 'Streamlined forensic reporting: Rhetoric and reality'
(2019) Forensic Sci Int: Synergy 83,84.

[17] *Ibid.*

or via the SFR procedure when they actually require greater scrutiny. In the absence of any information regarding its utility at trial level, it is difficult to establish the overall effect of the reform. Therefore, not only is the extent of its application of relevance to the future admissibility of expert evidence but also there needs to be an appreciation of how the courts are dealing with the overtly scientific or biasing language within the test itself. Without investigation into this area any unintended consequences of the reform may remain hidden thereby leading to incorrect or inconsistent judicial decisions.

It must also be remembered that at the heart of the Law Commission proposal was the additional concern that members of the jury may not understand complex expert evidence or may be overawed by its presence,[18] and the reference cases chosen by the Law Commission indicate how complex and controversial some areas of expert evidence can be. Thus, even if there were complete judicial engagement with the enhanced reliability test it would still remain an ineffective solution for this particular problem. Consequently, there needs to be an investigation into jury handling of different categories of expert evidence so as to raise awareness of this issue. Therefore, my research both reflects and reinforces previous appeals to better understand how juries handle expert evidence.[19] However, despite calls to adapt or repeal section 8 of The Contempt of Court Act 1981 this does not appear to be forthcoming at the present time thereby hampering jury research into this area. Nevertheless, there needs to be a serious research effort to elicit information about this subject whilst working within the confines of the current legislation. Without this corresponding information, data regarding judicial engagement and application of the Criminal Practice Direction will always remain nothing more than a partial insight into the role of this evidence within the criminal trial process. Whilst this area of jury understanding remains under-investigated in our jurisdiction, and subsequently riddled with assumption, the effectiveness of other trial mechanisms or procedural changes, such as concurrent expert evidence, cannot be objectively considered.

[18] The Law Commission, *The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales: A New Approach to the Determination of Evidentiary Reliability* (Law Com No CP190, 2009) [2.8] & [2.10].

[19] Professor M Zander & P Henderson, 'The Royal Commission on Criminal Justice, Crown Court Study, Research Study No: 19' (1993) HMSO.

Therefore, the further implication of what I have aimed to achieve is that interventions on this subject since the Law Commission report have only worked with incomplete understandings and analyses and would deserve now to be revisited in the light of the present study and its findings. However, a detailed critique has not been part of my aim here, and the scope of my conclusions reaches only as far as has been delineated by the matters specific to this thesis.

What, then, are those conclusions? This thesis has argued that there was no strong foundation for the assumption that admissibility decisions guided by the common law were insufficient in their examination of the expert evidence in the following ways.

Act 1 involved the analyses of the reference cases chosen by the Law Commission to support their proposal. However, as discussed within the relevant chapters, these cases were primarily concerned with the complex and controversial area of child abuse and particularly that of the weight to be attached to the forensic paediatric pathology findings. Furthermore, these three cases (out of four in total) were closely linked by either the witness testifying or by the legal principle introduced within the previous appellate judgment. In addition, all four of the reference cases chosen involved the presentation of fresh evidence. This in turn undermined the cogency of the prosecution expert evidence thus reflecting the continuing nature of scientific discovery that places assessments of 'sufficient reliability' within a temporal constraint. It was also argued that the Law Commission analyses of these appeals were brief and asymmetrical in approach ignoring other equally prejudicial prosecution evidence. They also omitted any consideration as to the reliability of the expert evidence adduced by the defence or on appeal. Therefore, the analyses conducted for this thesis attempted to view the expert evidence more symmetrically and within a wider evidential framework than that put forward in the Law Commission consultation document. Finally, it is important to appreciate the recognition by the Law Commission that all of the specific prosecution expert evidence, central to these appeals and fundamental to their call for reform, was sufficiently reliable to be admitted in trials if there was other evidence to support the prosecution. They are thus not indicative of a general problem with judicial assessments of sufficient reliability requiring generic reform to the application of the common law admissibility test for all types of expert evidence. Rather they are the result of an overreliance on scientific evidence to initiate a prosecution. This is then compounded by the central role

of the expert testimony within the criminal trial itself. The more thorough symmetrical analyses conducted within this Act were crucial to expose the weaknesses within the Law Commission argument. Subsequently, these fundamental cases for supporting their proposal were revealed to be much less cogent examples of unreliable expert evidence causing wrongful convictions. This immediately called into question the basis of the reform and provided the foundation for the argument developed through the remainder of this thesis. Moving onto Act 2, this opened by considering whether the prosecutions discussed in Act 1 were in part motivated by the policies at the time. It then reflected on changes made to these prosecution policies and the legal process after these successful appeals in order to help prevent these situations from reoccurring. These changes reflected the complex adaptive nature of the criminal justice system rather than attempting to inject a bright-line change to admissibility criteria for all expert evidence. The HCSTC report that flowed from the successful appeals of two of the reference cases and that was directly responsible for triggering the Law Commission proposal, recognised miscarriages of justice from this systems perspective. Amongst a number of recommendations suggested for improving the handling of expert evidence in court, it called for greater communication between the scientific and legal fields. This would engage the scientists in guiding the law in its assessments of validity for which judges were not well placed to determine. However, the Law Commission reacted to this report by producing a legal response to marshal the boundaries of, and cure the uncertainties in, this type of evidence. Therefore, instead of allowing science to inform law, they have placed the legal cart before the scientific horse. As a result, other important, recognised sources of unwarranted certainty that impact directly on the reliability of expert evidence, remain unchecked by their reform.

Act 2 then proceeded to argue that there had already been a missed opportunity for this crucial dialogue to begin between science and law. This occurred when the reliability of the LCN methodology was called into question. This chapter illustrated that the review commissioned to assess the scientific validity of the three available commercial techniques was flawed. Rather than representing a comprehensive interrogation this review was conducted over a short timeframe and failed to conclude with any clear support for the techniques involved. This was despite an expanding remit following the suspension of the technique within the criminal justice system. Importantly however, it presented an isolated,

scientific viewpoint with no detailed guidance for the judiciary as to the evidential value of the profiles obtained. This then left the legal sphere adrift with regard to interpretation. The inclusion and analysis of this review within this thesis highlighted that approaches to concerns regarding the assessment of expert evidence had previously failed to enjoy the coherent conversation envisaged by the HCSTC report. Consequently, this was a missed opportunity to affect a targeted solution to the issues surrounding this important area of expert evidence.

Act 3 then introduced the Sandman risk response theory thereby utilising his explanatory equation R = H + O as a heuristic technique with which to interrogate the process behind the Law Commission risk reform.

Firstly, Act 3 argued that the Law Commission failed to clearly isolate and identify the technical hazard (H) which they intended to address, partly due to the restrictions placed on jury research by the current legislation. Furthermore, the complex systems nature of the criminal trial made it impossible to show a causal link between an adverse outcome and unreliable expert evidence being adduced at trial. This thesis then attempted to identify any convincing correlation between wrongful verdicts and unreliable expert evidence to discover if this could be used to support the Law Commission reform. It was found that there was little evidence to support the argument that the current common law judicial assessment for sufficient reliability was not functioning to an acceptable level. As a direct result of this informational vacuum, the probability of further miscarriages of justice occurring due to insufficient scrutiny of expert evidence could not be calculated, a point that contributed to the rejection by the Government of a statutory footing for the reliability test. As the need for reform was unconvincing when subjected to a traditional risk response analysis, the Finale of this thesis then went on to examine the outrage (O) surrounding the chosen reference cases. This important influence on risk response strategies is appreciated and accepted internationally across many diverse fields but was not openly recognised by the Law Commission when considering the need for legal reform. The high levels of outrage against both individuals and the justice system provoked by these successful appeals indicated that the reform may indeed have been driven by this influence rather than by a more objective examination of supporting facts and data. Without a firm foundation or a persuasive argument, the Law Commission reform represented a precautionary approach to the perceived issues of unreliability associated with expert evidence. Consequently, it was argued

that at best, the Law Commission reform is a 'reliability theatre' that will have an illusionary practical impact on judicial admissibility assessments of expert evidence. However, at worst, it needed to be considered whether it may surreptitiously encourage the opposite of its intended effect. This in turn could introduce future problems for the criminal justice system. Although the practical application and functioning of the enhanced reliability test was outside the main boundaries for this thesis, the Finale necessarily reflected on this issue. It therefore concluded this performance by drawing attention to some of the overtly scientific terminology employed by the Law Commission. In doing so it aimed to consider whether this may encourage some members of the judiciary to stray from the application of legal standards for assessing sufficient reliability into scientific standards for assessing validity. If the judiciary are tempted to alter their current practice, there is a danger that they will begin to usurp the role of both science and the jury thereby introducing future issues for admissibility assessments in the future. To illustrate this point attention was drawn to the rift between science and law as to the interpretation of certain key terminologies used within the enhanced reliability test.

So as the curtain finally falls on this performance it is hoped that the audience has started to question why the Law Commission sought to introduce this reform - reflecting both on the evidence base provided by them and on the hidden force of outrage that may have driven their agenda. Flowing on from this contemplation it has therefore been the intention of this thesis to encourage deeper analyses of other Law Commission proposals in order to test their robustness under scrutiny. Only by adopting a truly critical and analytical stance can any real progress be made for ensuring the introduction of necessary and effective future reform.

Appendix A

Criminal Practice Directions Amendment No. 2 [2014] EWCA Crim 1569

33A.5 Therefore factors which the court may take into account in determining the reliability of expert opinion, and especially of expert scientific opinion, include:

(a) the extent and quality of the data on which the expert's opinion is based, and the validity of the methods by which they were obtained;

(b) if the expert's opinion relies on an inference from any findings, whether the opinion properly explains how safe or unsafe the inference is (whether by reference to statistical significance or in other appropriate terms);

(c) if the expert's opinion relies on the results of the use of any method (for instance, a test, measurement or survey), whether the opinion takes proper account of matters, such as the degree of precision or margin of uncertainty, affecting the accuracy or reliability of those results;

(d) the extent to which any material upon which the expert's opinion is based has been reviewed by others with relevant expertise (for instance, in peer-reviewed publications), and the views of those others on that material;

(e) the extent to which the expert's opinion is based on material falling outside the expert's own field of expertise;

(f) the completeness of the information which was available to the expert, and whether the expert took account of all relevant information in arriving at the opinion (including information as to the context of any facts to which the opinion relates);

(g) if there is a range of expert opinion on the matter in question, where in the range the ex pert's own opinion lies and whether the expert's preference has been properly explained; and

(h) whether the expert's methods followed established practice in the field and, if they did not, whether the reason for the divergence has been properly explained.

33A.6 In addition, in considering reliability, and especially the reliability of expert scientific opinion, the court should be astute to identify potential flaws in such opinion which detract from its reliability, such as:

(a) being based on a hypothesis which has not been subjected to sufficient scrutiny (including, where appropriate, experimental or other testing), or which has failed to stand up to scrutiny;

(b) being based on an unjustifiable assumption;

(c) being based on flawed data;

(d) relying on an examination, technique, method or process which was not properly carried out or applied, or was not appropriate for use in the particular case; or

(e) relying on an inference or conclusion which has not been properly reached.

Appendix B

FSR 'Codes of Practice and Conduct for Forensic Science Providers and Practitioners in the Criminal Justice System' (2011)

Reports and statements to the CJS (ISO 17025:2005 ref. 5.10.2/5.10.3)

25.2.1. Providers shall ensure that all staff who provide expert evidence have a sufficient level of experience, knowledge, standing in the peer group and, where appropriate, qualifications, relevant to the type of evidence being adduced, to give credibility to the reliability of the work undertaken and the conclusions drawn. They shall also ensure that they are able to explain their methodology and reasoning, both in writing and orally, concisely in a way that is comprehensible to a lay person and not misleading.

25.2.2 Providers shall ensure that all staff who provide evidence based on scientific methodology are additionally able to demonstrate, if required:

a. whether there is a body of specialised literature relating to the field;

b. that the principles, techniques and assumptions they have relied on are valid and, in England and Wales, that they have complied with part 33 of the Criminal Procedure Rules;

c. that any database they have relied on is sufficient in size and quality to justify the nature and breadth of inferences drawn from it, that the inferences are logically sound and that alternative hypotheses in the investigative mode and alternative propositions in the evaluative mode have been properly considered;

d. their methodology, assumptions and reasoning have been considered by other scientists and are regarded as sound, or where challenged, the concerns have been satisfactorily addressed; and

e. the impact that the uncertainty of measurement associated with the application of a given method could have on any conclusion.

Providers shall ensure that all staff who provide expert evidence based on their practical experience and/or their professional (non-scientific) knowledge are additionally able to provide:

a. an explanation of their methodology and reasoning;

b. reference to a body of specialised literature relating to the field of expertise and the extent to which this supports or undermines their methodology and reasoning;

c. an assessment of the extent to which their methodology and reasoning are now accepted by their peers, together with details of any outstanding concerns; and

d. specific instances that support or undermine their claim to expertise or accepted professional practice and methodology resulting in demonstrably valid or misleading opinion, and an explanation of how these have a bearing on the matter(s) in issue.

Appendix C

The Criminal procedure Rules 2010

Content of expert's report

33.3.—(1) An expert's report must—

(a) give details of the expert's qualifications, relevant experience and accreditation;

(b)give details of any literature or other information which the expert has relied on in making the report;

(c) contain a statement setting out the substance of all facts given to the expert which are material to the opinions expressed in the report, or upon which those opinions are based;

(d) make clear which of the facts stated in the report are within the expert's own knowledge;

(e) say who carried out any examination, measurement, test or experiment which the expert has used for the report and—

(i) give the qualifications, relevant experience and accreditation of that person,

(ii) say whether or not the examination, measurement, test or experiment was carried out under the expert's supervision, and

(iii) summarise the findings on which the expert relies;

(f) where there is a range of opinion on the matters dealt with in the report—

(i) summarise the range of opinion, and

(ii) give reasons for his own opinion;

(g) if the expert is not able to give his opinion without qualification, state the qualification;

(h) contain a summary of the conclusions reached;

(i) contain a statement that the expert understands his duty to the court, and has complied and will continue to comply with that duty; and

(j) contain the same declaration of truth as a witness statement.

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