The Role of the Judge in Wrongful Convictions:

*R v Mullins-Johnson*

by

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Abstract

This thesis examines the role of the judge in preventing wrongful convictions. It focuses on the case of _R v Mullins-Johnson_. William Mullins-Johnson was accused of killing his niece by mechanical asphyxiation during an episode of sexual assault. He was convicted of first degree murder. After twelve years in jail, he was acquitted by the Ontario Court of Appeal. Fresh expert evidence revealed that the trial Crown expert opinions were unreliable, and that the pathology evidence was inconclusive of murder. This thesis explores what went wrong at trial, by comparing trial expert testimony to appeal expert testimony. It examines the role of a judge in a trial involving expert evidence, and in particular, whether judicial intervention could have avoided the wrongful conviction in this case. It also reviews some of the issues that arise in the common law adversarial system when judges specially trained to handle scientific expert evidence are prohibited from applying their knowledge at trial.
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Introduction

On September 21, 1994, William Mullins-Johnson stood in the dock in a court room. He observed the following exchange between the court clerk and the jury foreman.

Court Clerk: Will the foreperson please stand. Members of the jury, have you agreed upon your verdict?

The Foreperson: Yes. We have.

Court Clerk: How do you find the accused at the bar?

The Foreperson: We find him guilty of first degree murder.

Court Clerk: Members of the jury, listen to your verdict as the court has recorded it. You say the accused at bar is guilty of first degree murder. So say you all?

He heard his defence lawyer ask that the jury be polled. He witnessed how each jury member confirming that he was “guilty of murder in the first degree.” He was then asked to stand up and receive his sentence: “Mr. Johnson, the Criminal Code provides that in respect of a person who has been convicted of first degree murder that he be sentenced to a prison for life without eligibility for parole until he has served 25 years of his sentence, and I so sentence you.”

What followed for Mr. Mullins-Johnson was twelve years in prison. His appeals were exhausted by 1998, with dismissals at both Court of Appeal for Ontario and the Supreme Court of Canada. Throughout his incarceration, he steadfastly refused to admit any guilt.

Vindication came at last in his second appeal in October 2007, when The Association in

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1 Where generic pronouns are required, the pronoun “he” is used to facilitate reading, but is intended to include all gender.
2 R v Mullins-Johnson 31 OR (3d) 660, (Verdict, September 21, 1994, Trial transcript of R v Mullins-Johnson, heard September 6-21, 1994, titled “Case on Appeal (Supreme Court)” at 1040-1041 [Trial Transcript of R v Mullins-Johnson].
Defence of the Wrongly Convicted, (AIDWYC, now Innocence Canada) persuaded the Court of Appeal that the Crown expert testimony adduced at trial was flawed, testimony which played a large part in leading the jury to a guilty finding. Despite this positive outcome, Mr. Mullins-Johnson and his family continued to suffer the devastating effects of a wrongful conviction. In the CBC documentary, titled “Death in a Family,” Mr. Mullins-Johnson’s niece admitted that she still could not forgive her uncle, even though he has been acquitted. She said: “He must have done something wrong.” Despite the court’s official declaration that her uncle had been wrongfully convicted, she kept her faith in the justice system. She believed the court must have had a reason for convicting her uncle in the first place. The stigma suffered by the wrongfully convicted person lingers on, even when the state admits to its own mistake.

The events began when Mr. Mullins-Johnson was asked to babysit his brother’s children one summer evening. The next morning, one of the children, Valin Johnson, was found dead in her bed by her mother. An autopsy was performed at the nearby Sault St. Marie hospital by a pathologist. Less than twelve hours later, Mr. Mullins-Johnson was arrested for first degree murder, based on the pathologist’s opinion that Valin had been manually asphyxiated during an episode of anal rape. The pathologist also concluded that the attack took place roughly around 8 to 10 p.m. the evening before. Mr. Mullins-Johnson was the only adult who was with the child at the time, therefore he had the exclusive opportunity to murder the child. Mr. Mullins-Johnson was convicted in 1994. Twelve years later, it was discovered that the Crown’s expert opinions were flawed. According to the defence experts at the Court of Appeal in 2007, there was never

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6 Ibid. at the 31 minute mark in the documentary, noted above.
7 R v Mullins-Johnson, 2007 ONCA 720 (CanLII), 87 O.R. (3d) 425, (Factum of the Appellant at para. 43.)
9 While the precise definition of the term “asphyxia” has been debated, in this case, I will use it to denote what was meant by Dr. Bhubendra Rasaiah, the pathologist who performed the autopsy. His definition was a mechanical obstruction of airways, such as suffocation, strangulation or chest compression.
any murder. The pathological findings were inconclusive to any definitive cause of death, since they were largely due to natural post-mortem changes or artefacts created during the post-mortem examination. The Crown experts were also found to be in error with respect to the time of death, as the three methods used were each considered to be unreliable.

Cases like *Mullins-Johnson*, where flawed expert testimony contributed to errors in fact finding and thus wrongful conviction, are unfortunately not rare. There are many such cases, in Canada and abroad. In the United Kingdom, Sally Clark was wrongly convicted of murdering her infants, based on the expert opinion that the chances of two incidents of Sudden Infant Death Syndrome (“cot death”) happening to a single family was one in 73 million.\(^{10}\) In another case, a Dutch nurse, Lucia de Berk was convicted of murdering the infants under her care by poisoning them with digoxin. What led to her arrest was the perception that there was an unusually high frequency of deaths that occur during her shifts. Prosecution expert testified the chances of all the deaths occurring naturally was one in 34 million. This opinion was later debunked, after Ms. De Berk spent five years in jail.\(^{11}\) In Canada, it was discovered that there were many wrongful convictions as a result of the flawed opinions of one pathologist by the name of Dr. Charles Smith, who was also a consultant in the *Mullins-Johnson* case. Indeed, the Inquiry into the Pediatric Forensic Pathology in Ontario (“Goudge Inquiry”)\(^{12}\) was created to review the pediatric forensic pathology system. Finally, more recently, there is the Motherisk Scandal, where the Hospital for Sick Children’s hair test that screens for parental drug and

\(^{10}\) “Sally Clark, mother wrongly convicted of killing her sons, found dead at home” Article in The Guardian [https://www.theguardian.com/society/2007/mar/17/childrensservices.uknews;](https://www.theguardian.com/society/2007/mar/17/childrensservices.uknews) Erica Beecher-Monas also referenced this tragic case in her book *Evaluating Scientific Evidence*, (New York: Cambridge University Press, 2007), p. 12. It is interesting to note that defence called two expert statisticians on appeal to reveal the flaw of the prosecutor’s flawed expert pediatrician’s evidence, only to be dismissed by the appeal court. It was not until it was discovered that the pathologist had failed to disclose evidence of the infant’s infection that Ms. Clark was acquitted in a second appeal.


alcohol abuse was found to be unreliable. Positive test results were used by child protection agencies as evidence to justify the removal of children from their parents.\textsuperscript{13}

The search for the truth is one of the most fundamental goals of the trial process. To this end, the court should ideally have available all relevant and probative information.\textsuperscript{14} Relevant information is introduced into court through witnesses in the form of oral testimony. Courts rely on witnesses to recount past events in order to ascertain the facts of a case. A witness is only permitted to testify according to their “knowledge, observation and experience” and not give their own opinion,\textsuperscript{15} with the exception of the “lay opinion” rule, which allows a witness to testify to opinions that are based on ordinary experience.\textsuperscript{16} It is a factfinder’s\textsuperscript{17} job to draw inferences from the testimony, make conclusions about what happened in a case.\textsuperscript{18} However, when the facts cannot be interpreted by a trier of fact because special technical knowledge is required, an exception is made for specialists in the field, or experts, to give opinions about what the facts mean. The exception of admitting expert opinions\textsuperscript{19} is not new. Expert opinions have been sought throughout the ages in court proceedings in the assistance of fact finding.\textsuperscript{20} In the past, courts had selected jurors with specialized knowledge to hear the case, or appoint friend of the court experts.\textsuperscript{21} Problems with expert evidence have been discussed as far back as 150 years

\textsuperscript{13} Canadian Broadcasting Corporation, “Motherisk hair testing scandal time line.” Online: http://www.cbc.ca/fifth/blog/motherisk-hair-testing-scandal-timeline.
\textsuperscript{17} In this thesis, the “factfinder” or “trier of fact” is used interchangeably, and can include either a judge or a juror, whose role is to determine the facts that led to the litigation.
\textsuperscript{19} There is a difference between what is expert opinion versus expert evidence. An example is given by Paciocco and Stuesser in their textbook (note 16 above) page 205. If a medical doctor merely discusses a physiological function in general terms, or describes the wound of a victim of crime, this information is considered “factual”. However, a doctor’s saying the wound was “life threatening” would be an opinion.
\textsuperscript{20} Expert opinions have been sought as far back as Roman times. See Henry Wade Rogers, The Law of Expert Testimony. (St. Louis. Mo: William H. Stevenson Law Publisher and Publisher of the Central Law Journal, 1883).
ago. With increasing use of expert evidence, discussions related to the issues that arise in expert opinions will likely continue for quite some time.

It is easy to appreciate the value of scientific evidence in the trial process. Where there are no witnesses available, physical evidence left at the crime scene has the potential of providing clues as to what happened. Interpretation of such evidence usually requires specialized training. In criminal cases, forensic science evidence is often relied on by the Crown. However, forensic evidence can also be used by the accused to mount a full defence. As noted by McLachlin J. in *R v Seaboyer*, courts are “extremely cautious in restricting the power of the accused to call evidence in his or her defence, a reluctance founded in the fundamental tenet of our judicial system that an innocent person must not be convicted.”

Even though scientific evidence could be helpful in fact finding, there are numerous issues associated with it. One obvious drawback is the added time and expense. Furthermore, there is a real danger of bias, where the expert becomes an advocate for the party who retained them. In addition, there is the danger that the trier of fact will be confused or misled by the expert. Spectacular credentials may have the effect of impressing the trier of fact into accepting whatever opinion they proffer, without proper scrutiny. Where there are experts from opposing parties, the risk of the trial process becoming a “battle of the experts” is very real. Furthermore, a party may try to introduce evidence that is beyond the scope of the expert’s area

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24 *R v D.D.*, *supra* note 21, at 299, at para. 56.


of expertise. Finally, not all expert evidence is reliable. Indeed, there has been many wrongful convictions that were based on flawed and unreliable expert evidence.

There is a common assumption that scientists are objective, neutral and intelligent. Hence, their testimony would always be superior and more accurate to lay testimony. It may then be a bit surprising that in fact, many scientific expert opinions turn out to be unreliable. This may be a natural result of the adversarial process. Litigants have the incentive to frame the facts in such a way to maximize the persuasiveness of their position. What better way to convince the trier of fact than to have a so-called expert endorse that your version of the facts is true? Many creative ways have been devised to use an expert’s opinion to bolster a party’s position. Methods such as “barefoot morphology” evidence and hypnotically induced memories and many others have been highly controversial in their reliability. One can immediately recognize the danger of admitting opinions based on unreliable or junk science, which was addressed by Justice Sopinka in R v Mohan: “Dressed up in scientific language which the jury does not easily understand and submitted through a witness of impressive antecedents, this evidence is apt to be accepted by the jury as being virtually infallible and as having more weight than it deserves.” In other words, whenever the trier of fact accepts the opinion of the expert out of respect and deference, instead of truly comprehending the opinion itself, the expert has in effect “usurped” the role of the trier of fact in making inferences from the facts. Indeed, it is part of the litigation strategy to take advantage of the fact that judges and jurors, are susceptible to accepting the testimony from an expert more readily than from ordinary witnesses.

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29 Ibid. at 137.
31 R v D.D., supra note 21 at para. 53.
In this thesis, I will be examining the *R v Mullins-Johnson* case to discover what went wrong in the fact-finding process. In particular, I will look at how forensic expert evidence misled the court into believing there was a conclusive cause of death when such was not the case. This thesis is not about whether Dr. Charles Smith misled the court. In fact, there were parts of Dr. Smith’s opinion which agreed with those of the appeal experts, especially in relation to the time of death.\(^{32}\) This thesis is about learning from our mistakes in this case of wrongful conviction. I examine whether there was anything the judge could have done in averting the wrongful outcome. I ask whether the trial judge who had been more knowledgeable about forensic pathology and in handling expert opinions could have intervened in a such a way that the wrongful outcome could have been avoided. This case is particularly interesting because the defence position was essentially the same both at trial and on the two appeals that followed. At each stage of the proceedings, defence argued that the forensic pathology evidence was inconclusive with respect to the time and cause of death. At trial, a guilty verdict was reached within a few hours of deliberation. Yet, at Mr. Mullins-Johnson’s second appeal in 2007, the defence case was so strong that even the Crown conceded to the acquittal of the accused.\(^{33}\) Such a drastic reversal of outcome leads one to ask why the defence theory was rejected, both by the jury and at the first appeal, but accepted at the second appeal.

We begin in Part I with the story behind this case. Here, I present an overview of the alleged crime that took place on Saturday, June 26, 1993 and the litigation history. For convenience, the events are also summarized in chronological form in Appendix 1.

Part II will be a literature review on judicial education in relation to the competent judicial handling of expert evidence. As we will see, the trial Crown’s forensic pathology

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evidence in this case was highly persuasive to a layman who has not been trained to critically evaluate expert evidence. Work has been done in recent years by several scholars to assist the legal profession to critically evaluate expert evidence. This will be summarized in this section.

Part III will be a detailed analysis of the expert evidence presented in the Mullins-Johnson trial and the “fresh evidence” presented at the appeal where Mr. Mullins-Johnson was acquitted.

Part IV brings us back to the role of the judge and judicial education in ensuring accurate fact finding. Judges have a responsibility to ensure that expert evidence is properly and competently handled by the jury. Judges act not only as gatekeepers of evidence in voir-dires but also as referees in making sure the testimony is clear and comprehensible. I argue that if the trial judge had been educated on the general issues surrounding expert opinions, he would have been more critical and less deferential to the experts. Moreover, if the trial judge had been educated on the forensic pathological issues pertinent in this case, either by having attended a basic course in forensic pathology or conducting independent research at time of trial, he would have discovered forensic pathological information that would have exposed the weaknesses in the opinions of the Crown experts, information which was necessary for a proper and fair assessment of these opinions. In this section, I argue that judicial education should include two components: (1) raising awareness of how wrongful convictions occur in the first place; (2) equipping them with a more generalized framework of criteria that can be used to evaluate unfamiliar scientific testimony, which could be supplemented by more specific questions to be asked to an expert. I argue that an evidence based approach requires more than a simple demand for empirical or physical evidence for an opinion. It should also include asking whether the expert has independent corroboration (from academic literature) for his conclusions, as well as seeking an understanding of the scientific reasoning behind an expert’s opinion. In addition, I
discuss the controversy that arises when the judge applies the special knowledge he learned independently, that is, not from evidence adduced by the parties at trial. I explore the tension created by our desire to have a scientifically competent judge in an adversarial process which frowns upon judicial intervention. I argue that the judge can intervene while remaining neutral, with the qualifications that any intervention must be on the record, and subject to arguments from all parties.
PART I. Wrongful conviction of William Mullins-Johnson

Chapter 1.1 Events leading up to the arrest

Our story begins on Saturday, June 26, 1993. Four-year-old Valin Johnson spent a day at the park with her family, where her father, Paul, played in a baseball tournament. Later that evening, the family returned home around 6 p.m. Valin’s mother, Kim Lariviere, bathed Valin and her younger brother, John, while William Mullins-Johnson, the children’s uncle and Paul’s brother, prepared the evening meal. Afterwards, the children were left in the care of her uncle, while her parents went to a baseball game in a nearby park. They left the house at around 7 p.m. At around 7:30 p.m., Mr. Mullins-Johnson sent Valin to bed. After the game was over, the parents went to a bar at Caswell Hotel. Kim came home at around 9:30 p.m., but did not check on Valin. Later into the night, some of Mr. Mullin-Johnson’s friends came over to the house at around midnight and left around 1:30 a.m. Paul remained at the bar till after closing. He did not return home till 2 a.m. He did not check on the children before going to bed. The next morning, at around 7 a.m., Paul was awakened by a loud noise in the kitchen. It was John who had fallen in the kitchen while trying to get some cough syrup. Kim got up around that time, and went to Valin’s room. She saw that Valin had vomited. Not thinking there was anything serious, Kim went back to bed to have a cigarette with Paul. Shortly after, Kim went to Valin’s room. She was horrified to find that Valin was in a stiff, crouched position, with her knees

34 Valin has a younger brother John (3 years) and older sister, Jean (6 years of age). R v Mullins-Johnson, 2007 ONCA 720, 87 OR (3d) 425, (Appellant Factum, 2007, David Bayliss and James Lockyer) at para. 20.
36 Trial Transcript of R v Mullins-Johnson, Vol IV, at 674 to 681.
38 Ibid. at para. 33.
39 Ibid. at para. 33.
40 Ibid. at para. 44.
tucked under and her buttocks in the air.\textsuperscript{41} Her face was purple. She screamed for Paul. Paul turned Valin over. He tried to apply CPR to revive Valin.\textsuperscript{42} He brought Valin down to the living room. The paramedics arrived at around 7:25 a.m. but did not make any attempts at resuscitation.\textsuperscript{43} The coroner, Dr. Crookston came shortly after. He took the rectal temperature of Valin once that morning at 8:15 a.m. He did not take any reading of the ambient temperature.\textsuperscript{44}

Valin’s body was taken to the General hospital at Sault St. Marie, where Dr. Bhubendra Rasaiah performed an autopsy beginning at around 12:55 pm that afternoon.\textsuperscript{45} Quite early on, Dr. Rasaiah suspected that Valin was sexually assaulted. According to the notes of constable Sgt. Welton who was present at the autopsy, Dr. Rasaiah pointed out “large opening of rectum” and “bruises in area of vagina...small bruise on left thigh, lips of vagina and right inner area of vagina and right thigh” at 13:08 p.m.\textsuperscript{46} As noted in the Appellant Factum, P.C. Martynuck interviewed Paul Johnson in the morning and had learned that Mr. Mullins-Johnson was alone with Valin and her brother the evening of June 26. In her hand-written interview report, she noted the following: “Kim and I left about 7 o’clock because I had to go play ball. We left Valin and John with Bill Mullins. Bill is my brother and he lives at 66 Robin Street. Bill would babysit on a regular basis. When Kim and I left the kids were still eating. Bill had finished. We went to the Caswell about 9 pm [sic] that night. Kim had one and left to come home around 10 pm [sic]. I got home about 2 am [sic].”\textsuperscript{47} (“Bill Mullins” is the name Paul used to refer to William Mullins-Johnson.) By 3 p.m., Dr. Rasaiah had consulted with several doctors, including Dr. Patricia Zehr, a OB/GYN specialist, Dr. Laloutette, a member of Dr. Zehr’s sexual abuse

\textsuperscript{41} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Kim Lariviere, at 94, lines 1-20.
\textsuperscript{42} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Paul Johnson, at 132, lines 30-35.
\textsuperscript{44} \textit{Ibid.} at 7.
\textsuperscript{45} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Bhubendra Rasaiah, at 266, lines 20-25.
\textsuperscript{47} \textit{Ibid.} at para 45, footnote 13.
team and Dr. Charles Smith. The body was opened at 4:50 p.m. and autopsy was completed by 5:30 p.m. Dr. Rasaiah’s opinion was that Valin did not die of natural causes. He believed that the time of death was approximately between 8 to 10 p.m. and that Valin was killed by asphyxia resulting from some form of mechanical means. A few hours later, at around 6:30 p.m., Mr. Mullins-Johnson was arrested by the police for first degree murder.

Chapter 1.2 Litigation History

Trial began on September 6, 1994. The Crown’s case appeared compelling. The Crown’s experts testified that she had been mechanically asphyxiated by while being sodomized. The basis for this was the observation of “bruises” on Valin’s face and body, and what appeared to be a recent laceration inside the rectum that was observed only by Dr. Smith. In addition to the expert evidence, Valin’s parents testified that Valin died in an unusual position, where “her head was face down and her bum was kind of like in the air... she was just right on her knees...” The compelling forensic pathology evidence, combined with the position of the body made it seem certain that Valin was murdered during an episode of sodomy. The defence argued that the Crown’s forensic pathology evidence could not provide a definitive time and cause of death, and that there was no direct evidence linking the accused to the murder, if in fact there was one. On September 21, 1994, the jury began deliberation around

50 We know Dr. Rasaiah came to this conclusion from the notes of one of the police constables, Sgt. Welton. See R v Mullins-Johnson, 2007 ONCA 720, 87 OR (3d) 425, (Appellant Factum, 2007, David Bayliss and James Lockyer) at para. 45.
52 Trial Transcript of R v Mullins-Johnson, at 11.
54 Ibid. at paras 36-38.
4 p.m.⁵⁶ A few hours later, at 10:02 pm, the jury convicted Mr. Mullins-Johnson of first degree murder of Valin in the course of committing sexual assault.⁵⁷

Mr. Mullins-Johnson appealed to the Court of Appeal in 1996. The grounds of appeal included unreasonable verdict and error by the judge in providing instructions to the jury that failed to present the defence theory. Mr. Mullins-Johnson’s appeal was dismissed in a split decision. While the majority found the verdict reasonable and that the trial judge made no substantial error in his jury charge, the dissenting judge noted that the trial judge did not explain the position of the defence to the jury.⁵⁸ After summarizing defence trial counsel’s closing argument, Borins J.A. noted that the defence’s case had enough substance to raise reasonable doubt to Mr. Mullins-Johnson’s guilt. There was conflicting expert evidence as to whether sexual assault took place that evening, and the absence of semen anywhere on Valin’s body, despite the fact that semen was found in Mr. Mullins-Johnson’s underwear and track pants.⁵⁹ Borins J.A. noted that while the trial judge did point out the conflicting evidence, he did not expressly point out to the jury how the evidence led to reasonable doubt with respect to the time and cause of death. Almost presciently, in the same paragraph, Borins J.A. noted “the evidence of whether the appellant, or anybody, had sexually assaulted the deceased, or had attempted to do so, was weak.”⁶⁰ This was exactly what the Court of Appeal found in 2007. Leave to appeal to the Supreme court was denied on May 26, 1998.

Around the year 2001,⁶¹ the professional competence of one of the Crown’s experts, Dr. Charles Smith was beginning to surface. The Chief Coroner for Ontario did not conduct a

⁵⁶ Trial Transcript of R v Mullins-Johnson at 1029.
⁵⁷ Trial Transcript of R v Mullins-Johnson at 1040.
⁵⁹ Ibid. at 670.
⁶⁰ Ibid. at 682.
formal review of Dr. Smith’s work until 2005. A total of 45 cases were examined. The reviewers, all forensic pathologists who were external to the Office of the Chief Coroner (OCCO) took issue with many of Dr. Smith’s opinions. In 12 cases of these cases, there was a guilty finding. In 2004, Dr. Pollanen, the Chief Forensic Pathologist for Ontario was asked by the Chief Coroner to review the Mullins-Johnson case. Dr. Pollanen issued a report on Jan. 19, 2005. The main conclusion was that there was no pathological evidence to support the murder conviction.

Independently from this activity, Michael Lomer, appeal counsel for Mr. Mullins-Johnson recommended that the Association in Defence of the Wrongly Convicted (“AIDWYC”) be retained to investigate the matter. AIDWYC consulted with two renowned pathologists, Dr. Bernard Knight to review the pathology evidence from the case.

On September 7, 2005, Mr. Mullins-Johnson applied for ministerial review pursuant to Criminal Code Part XXI.1. The Minister granted the application and sent the case for a reference at the Court of Appeal. By that time, further DNA testing performed by the Centre of Forensic Sciences revealed that there was no biological evidence whatsoever to link body
contact between Mr. Mullins-Johnson and Valin.\textsuperscript{70} Indeed, Crown conceded in its submissions to the Minister that “there is simply no forensic evidence to suggest that Mr. Mullins-Johnson had contact with Valin or Valin had contact with him. This is telling in the context of a case where the pathology evidence today suggests there was no homicide and no sexual assault.”\textsuperscript{71} Furthermore, one of the defence experts, Dr. Ferris came forward and recanted his trial opinion.

On October 19, 2007, upon reviewing the “fresh evidence” consisting of opinions of six experts, including Dr. Pollanen, Mr. Mullins-Johnson was acquitted by the Ontario of Appeal.\textsuperscript{72} (As there were two appeals in this matter, the term “appeal” in the remainder of this thesis will refer to the second appeal, unless otherwise specified.) The Court wrote: “There is no doubt that the new expert opinions in this case are credible and highly cogent. Now that the trial expert evidence has been completely discredited, there is no case against the appellant and he is clearly entitled to an acquittal...The fresh evidence shows that the appellant’s conviction was the result of a rush to judgement based on flawed scientific opinion.”\textsuperscript{73} Even though the court declined to declare Mr. Mullins-Johnson was “factually innocent”, it went on to say that the fresh evidence “shows beyond question that the appellant’s conviction was wrong and that he was the subject of a terrible miscarriage of justice.”\textsuperscript{74}

The entire judgement was only 29 paragraphs long. It did not go into detail on how the trial expert evidence was flawed or in what way was the fresh evidence “credible and highly

\textsuperscript{70} R v Mullins-Johnson, 2007 ONCA 720, 87 OR (3d) 425, (Appellant Factum, 2007, David Bayliss and James Lockyer). The Respondent Crown submissions in the Ministerial review conceded this lack of biological link was significant. The Crown wrote: “Given the nature of the crime alleged, one would think that there would be a reasonable, if not significant, chance that some forensic evidence, be it blood, semen, hair or saliva might be found on Valin and/or accused, their clothing or environment...The absence of forensic evidence in 2007, while not dispositive of whether a sexual assault and murder took place, invites extreme caution, especially where the vacuum left by the absence of forensic evidence is no longer filled by forensic pathology.” Appellant factum, at para. 18 and para. 165.


\textsuperscript{72} R v Mullins-Johnson, 2007 ONCA 720 at para 7.

\textsuperscript{73} R v Mullins-Johnson, 2007 ONCA 720 at para. 22.

\textsuperscript{74} Ibid. at para. 26.
What is curious is that at trial, defence counsel argued at closing that the cause of death could not be ascertained with the available forensic pathology evidence. If the same position was advanced at trial by defence, why did the jury nevertheless still accept the Crown’s theory? Why was the appeal successful in 2007 but not in 1996? What follows is a detailed look at what transpired at trial. I will examine in some detail the expert evidence that was adduced at trial. I will compare the trial expert testimony with that presented at the appeal where Mr. Mullins-Johnson was finally acquitted. By analyzing this case in detail, it is hoped that we will learn from our mistakes in this case, in particular, whether judicial education could have a role to play in avoiding such a tragic outcome. Before we proceed to the case study, I first present a review of the current literature on how education can assist lay factfinders such as lawyers and judges, in competently handling expert opinions. Armed with the educational tools suggested by these scholars, we will proceed to analyze the Mullins-Johnson case.

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76 Trial transcript of *R v Mullins-Johnson*, Defence Closing argument, at 775.
Part II. Judicial Education

Chapter 2.1 The Need for Judicial Education

Judges have several important roles to play in the trial process. They are not only gatekeepers of expert opinions, they are also the referees during the trial process, where they are constantly on alert to balancing the probative value against the prejudicial effects of evidence. Judges also provide guidance to the jury in the jury charge, where the jury is the sole factfinder. Even though in the common law system, judges are expected to be neutral by being passive in general, they are not expected to allow the trial process to unfold, entirely without intervention. Regardless of their role, competency in handling expert evidence is necessary in maintaining confidence in the justice system. An immediate solution that springs to mind is to provide judicial education on mathematical or scientific literacy. However, in this thesis, I argue that it should also include awareness of the unique issues surrounding expert evidence in general. These will be discussed below.

2.1.1. Unique nature of Expert Opinion Evidence

As previously mentioned, one of the major distinctions between expert evidence and general lay witness’s evidence is the opinion nature of the former. In lay testimony, only first-hand knowledge from lay witnesses is allowed. As stated in *R v D.(D.),* “A basic tenet of our law is [therefore] that the usual witness may not give opinion evidence, but testify only to facts within his knowledge, observation and experience.” In *R v D.(D.),* S.C.R. 275, at para. 49. No opinion evidence is generally admissible. In

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77 As mandated by *R v Mohan,* where a four-part test applies to the admissibility of expert evidence.

78 The common law adversarial process is distinctly different from the European inquisitional model (“civil law”) in the degree of judicial intervention. Common law judges are mindful of keeping interference of the trial process to a minimum so as to preserve their neutrality, while civil law judges are expected to ask questions and call witnesses. See John Fairlie and Philip Sworden. *Introduction to Law In Canada* (Toronto: Edmond Montgomery Publications, 2014) at 45-46.


80 There is a “lay opinion evidence rule” however, that allows lay witnesses to testify to opinions that lay people are capable of forming reasonably reliable opinions, such as age, height, weight, speed of vehicles etc. See Paciocco and Steusser, *The Law of Evidence,* 7th ed (Toronto: Irwin Law, 2015) at 197.
contrast, expert evidence has a substantial opinion component. Experts not only testify on the observed facts, they are also expected to provide knowledge necessary to assist the court in comprehending these facts. Often, they will also be called upon to give their opinion based on their interpretation of the technical facts. The word “opinion” should be interpreted with an added nuance in the context of litigation. In ordinary usage, one understands that each person should be entitled to his own opinion. People can form different opinions based on the same set of facts or observations. However, in the context of expert opinions, we are concerned about the reliability or trustworthiness of an expert’s opinion. Implicit in this is the concern for the quality of the expert opinion, in relation to its correctness, accuracy or validity. Thus, the term “opinion” does not have the same sense as in the usage “It’s just a matter of opinion” which suggests that each expert’s opinion should be entitled to respect, or that the opinion is merely a matter of subjective interpretation. Rather, the importance of being able to critique expert opinions is that ones that have no sound scientific (logical, empirical) basis should not be introduced into evidence at all, because they will mislead the factfinder, or given zero weight by the factfinder.

If the factfinder cannot comprehend the substance of the expert’s opinion, several undesirable consequences can occur. One is that the factfinder may dismiss an entirely legitimate interpretation and decide wrongly on the facts. Another is that the factfinder will ignore the opinion and decide on the facts based on secondary factors, such as the expert’s credentials or demeanor. Finally, the factfinder may also accept an invalid opinion without question. The latter leads to the risk that an expert can usurp the factfinder’s role. In order to avoid any of these consequences, it falls upon a judge, who is the referee in the adversarial process to ensure that expert evidence receives competent and critical review. In the case of a jury trial then, the judge should ensure that the level of technicality of the expert opinion does
not hinder its accessibility to a lay jury. Judges should be wary of experts giving opinions or conclusions without support from independent studies. A lay factfinder may be easily intimidated by an eminent scientist, and succumb to accepting whatever conclusion was offered by the scientist. Where this deferential “trust me” approach was so common in the past, it has now been recognized to be a weakness in our justice system.\textsuperscript{81}

There are special problems that are associated with forensic pathology opinions. Even though on the surface, sometimes, it may seem as though a lay person could understand the significance of bruises or cuts on the body, as will be demonstrated in this thesis, the observations of a deceased body may not always be easily and intuitively interpreted.\textsuperscript{82} Prof. Gary Edmond was one of the legal scholars invited to speak at the Goudge Inquiry. In the research paper written for the inquiry, he noted that forensic pathology opinions “are difficult to assess”, as these are often expressed in terms of the expert’s experience.\textsuperscript{83} Such \textit{ipse dixit}\textsuperscript{84} opinions, which are based on the expert’s intuition, experience and their own educated guess, as Prof. Edmond points out, should be treated with skepticism.\textsuperscript{85} Educating judges on some of the specific issues related to forensic pathology thus enables them to be vigilant when adjudicating a case involving this type of evidence.

\textsuperscript{82} This is demonstrated later in this case study, with respect to the observation of the size of the deceased’s anal gap, an observation that was used by the Crown to suggest sodomy, when an enlarged anal gap is actually due to a natural process of post mortem dilation. See also Michael Pollanen’s article, “On the Strength of evidence in Forensic Pathology” (2016) 12 Forensic Sci. Med. Pathol. 95-97.
\textsuperscript{84} \textit{Ipse dixit}: “bare assertion resting on the authority of the individual” –Black’s Law Dictionary online https://thelawdictionary.org/ipse-dixit/.
\textsuperscript{85} Prof. Edmond defined “\textit{ipse dixit}” as “expert evidence based on intuition, speculation, and experience”. See Edmond, “Pathological Science”, \textit{supra} note 83, at 15.
2.1.2 Failure of Trial safeguard mechanisms

There is an assumption that the adversarial process has safeguards that would lead to the ultimate truth. The metaphor of a “crucible” is often applied to the trial process, as it is regarded as a highly rigorous testing process of testing the evidence. The crucible of the trial process often refers to the use of rebuttal expert testimony and cross-examination by opposing counsel. In the context of a trial that involves expert opinions, none of these elements work as they should. Clearly, the fact that wrongful convictions do occur is evidence that the adversarial process is not fail safe. Several groups, such as the Law Commission of England and Wales and the National Research Council of the America National Academy of Sciences revealed that cross-examination and rebuttal expert evidence were ineffective safeguards against unreliable expert evidence.

Fact finding in a trial is also distorted when one party lacks the resources to retain a rebuttal expert. In the context of criminal law, this will often be the defendant, who will likely not have the resources to hire their own rebuttal experts.

Cross-examination is perceived to be one of the most powerful aspects in the trial process in exposing the truth. However, this mechanism has been found to be ineffective against unreliable expert evidence. Edmond et al. observe that counsel often relied on ways other than attacking the scientific substance of the opinion itself to discredit the expert, such as examining on his experience, qualifications, previous performances in court, chain of custody, conflicts of

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89 Edmond, “Cool Crucible”, supra note 86, at 56.
interest, witness credibility, in short, anything other than attacking the substance of the opinion itself.\(^91\) Another reason why cross exam may be ineffective is that “other aspects of a prosecution case that may function – deliberately or otherwise - to overcome, buttress or disguise fragility or even error in incriminating expert opinions.”\(^92\) In this case study, this appears to be true, as one of the defence’s strategies was to raise suspicion of the child’s father who could have committed sexual assault, thus leading defence to accept the evidence of chronic sexual assault, even when, as revealed in the 2007 appeal, there was no conclusive evidence of any sexual assault on Valin. Thus, there was no effort by defence to determine objectively whether the pathological evidence truly supported a finding of sexual assault. This will be discussed in more detail later in the Analysis section.

2.1.3 Over-reliance of judges on secondary indicia

Justice Binnie cites an excerpt from a judge’s decision that exposed the discomfort faced by a judge in a patent infringement case:\(^93\)

> A judge unschooled in the arcane subject is at difficulty to know which of the disparate, solemnly-mouthed and hotly contended scientific verities is, or are, plausible. Is the eminent scientist expert with the shifty eyes and poor demeanor the one whose “scientific verities” are not credible?

Justice Binnie sums up the problem perfectly. He noted that lay judges and jurors apply the traditional criteria of credibility analysis, such as assessing the expert’s demeanor and credentials, rather than focusing on the validity of the expert’s opinion.\(^94\) He cites an example of a product liability case in the United Kingdom, in which there was a battle of the experts over

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\(^91\) Edmond, “Cool Crucible” supra note 86 at 56. Although Canadian jurisprudence has condemned this tactic of citing previous performances to undermine an expert’s credibility, as noted in Prof. Paciocco’s Take a Goudge out of the Bluster and Blarney, p. 143. There is a line of cases, including the one in \textit{R v Trotta}, 2004 CarswellOnt 4043, the Ontario Court of Appeal held that the reliability of Dr. Charles Smith should not be judged on his past conduct.

\(^92\) Edmond, “Cool Crucible”, supra note 86, at 56.


\(^94\) \textit{Ibid.} at para. 6.
whether the use of oral contraceptives increased the risk of strokes. The scientific community subsequently condemned the judge for his inability to comprehend the science behind the dispute. Ultimately, it seems that it is easier to attack the witness than the opinion. The inability of the court to understand the heart of the dispute, the science, inevitably means that the litigation was not tried on its merits.

A study by S.I. Gatowski in 2001 revealed that many judges in the United States suffer from a lack of comprehension in the Daubert criteria on reliability. The study found that while the majority, 91% of judges felt that the gatekeeping role is important, and 88% believed that falsifiability was a useful factor in assessing expert evidence, only 6% of the judges clearly understood the concept of falsifiability and 4% truly understood the concept of error rate. Edmond and Roach observed that empirical studies show that the competence of judges in relation to scientific literacy are no better than juries.

Oren Perez conducted an empirical study on the use of “second order” heuristics by judges to evaluate expert opinions. “Second order heuristics” is defined as strategies which resolve the litigation without analyzing the substance of the opinion. He notes that one of the reasons why judges do this is due to the high workload and time pressure. In his study, he took advantage of the fact that in Israel, there are two legal regimes related to resolving disputes involving accidents. In one regime, (“Tort Ordinance”) the process adopts the common law approach, where the parties submit medical reports to the judge. In another regime, dedicated to car accidents, (CRAVA), experts are always appointed by the court. Expert reports are used in

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98 Ibid. at 79.
both regimes to help determine the level of physical impairment. Perez found that judges in over 90% of the cases where the expert was court appointed, the judge adopted the court appointed expert’s opinion.99 Perez interpreted this to be a “blind reliance on the court expert.”100 In cases where the judge only had the parties’ expert opinions, the judge simply took the average of the impairment determinations.101 In other words, instead of engaging with the merits of the substance on each case, judges rely on the court appointed expert’s opinion, or take an average between opposing expert opinions. What was also interesting in this study was that the court appointed expert’s impairment determinations rarely match those proffered by the litigants’ experts.102

A secondary indicium often relied on by lay judges is asking whether there has been peer review on the forensic method used. Prof. Edmond observes in his article “Demonstrable reliability” that peer review is not a good indicator of reliability. There is no uniform standard governing the peer review process. Peer review does not always include scrutiny of authenticity, accountability and may not be able to detect fraud in the data.103 There is no guarantee that papers are thoroughly reviewed objectively. There is no standard governing the refereeing process. Prof. Edmond cites a study in which it was revealed that the competition for funding is a factor which influences the degree of critique exercised by reviewers. In other words, the work of a fellow scientist will not be subjected to rigorous critique, if it does not threaten the reviewer’s own work.104 Indeed, the fact that a piece of research has been published, even in a well reputed journal is no guarantee that it has been reviewed thoroughly, as some journals do not review invited papers, and others may have some sections devoted to non-reviewed articles.

99 Ibid. at 102.
100 Ibid. at 106.
101 Ibid. at 102.
102 Ibid. at 102.
104 Ibid. at 11.
As such, Prof. Edmond warns that peer review is not necessarily an indicator of high quality research.

2.1.4 Sub-conscious biases affecting experts

The rules of court procedure often include a rule that mandates experts to be objective, and states that the expert’s role is to assist the court, not to act as an advocate for their client. For example, in Rule 4.1.01 (Rules of Civil Procedure, Ontario)

4.1.01 (1) It is the duty of every expert engaged by or on behalf of a party to provide evidence in relation to a proceeding under these rules,

(a) to provide opinion evidence that is fair, objective and non-partisan;
(b) to provide opinion evidence that is related only to matters that are within the expert’s area of expertise; and
(c) to provide such additional assistance as the court may reasonably require to determine a matter in issue. O. Reg. 438/08, s. 8.

Duty Prevails

(2) The duty in subrule (1) prevails over any obligation owed by the expert to the party by whom or on whose behalf he or she is engaged. O. Reg. 438/08, s. 8.

In White Burgess Langille, the Supreme Court of Canada noted at paragraph 32:

The expert’s opinion must be impartial in the sense that it reflects an objective assessment of the questions at hand. It must be independent in the sense that it is the product of the expert’s independent judgment, uninfluenced by who has retained him or her or the outcome of the litigation. It must be unbiased in the sense that it does not unfairly favour one party’s position over another.

Regardless of the call for experts to be impartial, bias may persist at a subconscious level.

There are several kinds of biases that affect professionals. One form of bias that is most

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obvious has been referred to as adversarial or association bias. Here, bias exists when the expert’s judgement may be influenced by his desire to serve his client. A second form of adversarial bias arises from the fact that clients naturally will only select experts whose testimony favours their position. Adversarial bias can be explicit, as in cases where the expert agrees to change their reports after being asked by lawyers to do so. It could also be sub-consciously motivating the expert to please their client.

In addition to adversarial bias, there are two more types of biases that may not be so apparent. One is professional bias, where an expert may be eager to defend their research, and is thus unable to objectively assess any data that may contradict their own research results. An example of this type of bias is exemplified in a case where an inventor expert’s opinion was rejected because the expert was eager to have their patent interpreted as broadly as possible.

Another form of bias is the “noble cause” distortion. In the case of Dr. Charles Smith, he was very concerned about protecting vulnerable children. His mission to reverse the trend of child abuse being under-reported may have caused his tendency to “think dirty”, which led him to be particularly vulnerable to confirmation bias.

Confirmation bias is another common bias that affects many people, where one looks for or interprets evidence so as to confirm their pre-existing theories, beliefs, expectations. Studies have shown that even honest people are vulnerable to this type of bias. As Prof.

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108 Ibid. at 5.
109 Ibid. at 7.
110 Ibid. at 6.
111 Ibid. at 6.
112 Ibid. at 6.
113 Ibid. at 6.
Paciocco noted, “in a world of interpretation, we tend to find what we are looking for.”\textsuperscript{114} Related to this is that one tends to overlook evidence that run counter to their beliefs.\textsuperscript{115} Confirmation bias may occur when government funded forensic technicians perceive their roles to be supportive of the police. This means that there is a real risk of bias in the technicians’ interpretation of data in favour of the prosecution.\textsuperscript{116}

2.1.5 Cognitive Issues affecting Experts in the process of forming an opinion

In addition to biases, Prof. Gary Edmond’s research\textsuperscript{117} sheds insight on other cognitive factors which affect the reliability of the expert performance.

Firstly, expert opinions may be subject to contextual influence.\textsuperscript{118} Experts such as forensic technicians are vulnerable to contextual influence. In one study, experienced fingerprint examiners were asked to analyze fingerprints which they had previously judged to be matching. However, when shown the same fingerprints, but under a suggestive context, four out of five of the examiners changed their opinion. In another study, if a forensic handwriting technician had knowledge of the accused’s confession, they are more likely to opine on a match in the samples.\textsuperscript{119}

Secondly, more experience in an expert does not necessarily equate to more reliability in their opinion (e.g. “I have done a thousand autopsies, and in my experience, bruises that look like are usually the result of child abuse.”) One reason for this is that extensive years of experience is no guarantee for quality of performance, if the expert does not receive continuous

\textsuperscript{114} Ibid. at 6.
\textsuperscript{116} Paciocco, “Jukebox”, supra note 107, at 6.
\textsuperscript{118} Ibid. at 146.
\textsuperscript{119} Ibid. at 147.
testing on their qualifications or abilities. Studies have shown that no matter how experienced an expert is, human memory is fallible. Such claims should be treated with skepticism if it is not supported by a systematic study and recording of this observation. Experience is also a poor indicator of performance because it is possible that technicians can work at their posts for years and make the same mistakes repeatedly, without realizing it. Hence, years of experience do not serve as a proxy for superior performance.

Chapter 2.2 Judicial Education: Literature Review

Being aware of the unique issues of expert evidence above is a first step in enhancing a judge’s ability in handling expert evidence. However, there still remains the challenge of how a judge can contend with technical material that is not in their area of expertise. One obvious solution is for judges to take science courses. In commonly used forensic techniques, such as DNA analysis, courses or scientific manuals, such as those created by authoritative bodies like the National Academy of Science (U.S.) or the National Judicial Institute (Canada) are very helpful in providing a judge with knowledge in the specific forensic disciplines they need to assess the evidence. For example, a judge might learn about the basic theory and method limitations in DNA analysis. However, new scientific techniques are referred to in the court room. A judge needs to be able to vet the reliability of a new technique, which may not have been subjected to independent review. In such instances, the manuals that were created by the National Academy of Science or the National Judicial Institute would be of no assistance. Here, certain general

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120 Ibid. at 149.
121 Ibid. at 146.
122 Ibid. at 150.
strategies on handling scientific expert opinions have been suggested by some researchers that could be used by judges in approaching unfamiliar evidence.

In the following section, some research in this area will be highlighted. Prof. Erica Beecher-Monas’s book titled “Evaluating Scientific Evidence: An Interdisciplinary Framework on Intellectual Due Process” may provide some answers to this problem. Prof. Beecher-Monas proposed a five-part generalized conceptual framework that could be applied to assess the validity in scientific evidence. Prof. Gary Edmond and his team, as well as the Report from the Goudge inquiry, suggested an “evidence based” approach that would help guide judges in assessing the threshold reliability of expert evidence. ¹²⁴

2.2.1 Beecher-Monas Conceptual Framework

We begin by summarizing Prof. Beecher-Monas’s suggestions which would help lay judges evaluate expert opinions. She is optimistic that judges can be trained to critique highly technical evidence in an unfamiliar field of study. She reassures us that the task of having to critique content that is outside their field is not as exceptional as one would expect, as this is routinely required of scientists.¹²⁵ It is thus no different when a judge rises to the task in critiquing scientific evidence. She argues that one must analyze the substance of the opinion, and not assume that consensus in the scientific community necessarily means that the opinion is reliable, especially when the field is in a specialized area.¹²⁶ Nor is the traditional method of evaluating

¹²⁴ It is noted here that judges cannot actively step into the fray and ask many questions to the witnesses. Despite this, it may be helpful to a judge’s own analysis in so far as to consider what are some of the questions that could be asked to bring out the full factual matrix to the litigation. If the judge observes that either counsel was ineffective in bringing out a crucial point, the judge could raise this issue to both counsel (outside of jury presence).
¹²⁶ In a very minor specialized field, there is the danger of a “cohort of the expert’s cronies willing to vouch for this technique.” Ibid. at 11.
the expert’s credentials adequate.127 In addition, she reminds us of the similarities between legal and scientific reasoning.128

One may question how a lay person could analyze highly technical evidence without having any training or at least, without delving into some basic substantive research and learning in that particular area, such as resorting to scientific texts and papers. Prof. Beecher-Monas provides a “conceptual framework,”129 a general, overarching set of questions that can serve as guidance for a judge in evaluating scientific opinions. The framework is not intended to be a slavish set of questions that can be applied like a legal test. Rather, it acts as a spring board for a judge to develop specific questions that they can apply to the case at hand. The conceptual framework has the following general stages:130

1. Identify and examine the explanatory power by the proffered theory and hypothesis. In other words, ask if the underlying theory make sense;

2. Examine the data used in the study to support the theory;

3. Examine the assumptions underlying the theory for their validity;

4. Examine the methodology (looking at the lab/experimental conditions, checking on whether protocol standards, quality control, control techniques were followed);

5. Assess the expert conclusions.

In order to appreciate the utility of this framework, Prof. Beecher-Monas has provided applications in a wide array of litigation. One example that illustrates how her framework is used is in her example of an American case, State v Council, in which the state expert concluded that the hair sample found at the crime scene belonged to the accused, based on a new type of

127 Ibid. at 15, in footnote 40.
128 Ibid. at 5 and 93.
129 Ibid. at 5.
130 Prof. Beecher-Monas describes her framework in her book at pages 36-56. Here, I summarize her method, as gleaned from her examples.
technique based on mitochondrial DNA analysis. The framework’s first step is to understand the science behind the method. Beecher-Monas characterizes this first step as asking “What’s the theory?” Her analysis goes through a review of the science behind DNA analysis. Briefly, it is commonly understood that the DNA sequence in each person is unique. What is new in the technique used in this case is the use of mitochondrial DNA (“mtDNA”), rather than nuclear DNA. The problem with mtDNA is that the uniqueness in these genomes is not as good as that in regular nuclear DNA, which means that there is a greater chance of two people having the same DNA sequence, thus diminishing the individualization power of this technique. However, this technique is used in place of regular DNA in hair analysis, because only this type of DNA is present in hair shafts. Also, since there are many mitochondria per cell, it can yield much more DNA than in the traditional technique.

Beecher-Monas examined the existing literature and found support for the use of this technique. She also noted that the assumption that each person has unique genome has empirical support. However, the problem with the testimony in this case was the lack of rigor of the methodology used by this expert. This technique uses an amplifying technique that is sensitive to contamination. The expert did not discuss the lab procedures taken, or whether the method had been subjected to reliability (proficiency) testing. There was also no control test done to ensure the absence of contamination. There was no evidence on the error rate or a discussion on what is the likelihood of two complete strangers having the same mtDNA pattern (“false positive”). As a result, the expert’s conclusion is meaningless. When an expert does not provide the court with any information as to a method’s specifications, limitations, error rates, what we have is blind faith in the reliability of the expert’s opinion.

Prof. Beecher-Monas’s method consists of examining the foundational support behind the theory itself, and the validity of the actual methodology that was used to implement the
theory in practice. This framework provides a general mindset of critical analysis, which can be supplemented with more specific inquiries.

2.2.2 Edmond et al: Demonstrable Reliability

Complementing Prof. Beecher-Monas’s generalized, overarching conceptual approach, Prof. Edmond’s approach involves using more detailed and specific questions which serve to draw out the reliability of the expert’s opinion.\textsuperscript{131} Examples of questions include the following:

- What is the error rate?
- Has the technique been endorsed in literature?
- Is the conclusion based only on the expert’s opinion? (ipse dixit)
- Does the method rely on established principles? Is there any controversy to the method?
- Has the expert explained the basis behind the conclusion and is it comprehensible, and logical?
- Could the expert evidence have been tainted by adverse information, e.g. could the expert have received information from other investigators that could influence his opinion?
- How does the expert support his measure of confidence in his opinion? E.g. it is supported by validation or accuracy studies?

Note that not all questions apply to all cases. For example, error rates are inapplicable in forensic pathology, since the cause of death cannot be verified by testing.\textsuperscript{132}

2.2.3 Guidance from the Goudge Report\textsuperscript{133}

The Report from the Commission of Inquiry into Pediatric Forensic Pathology in Ontario ("Goudge Report") is particularly pertinent to this case study, as it focused on the problems in Ontario’s forensic pathology system. Indeed, it was the concerns over the performance of the

\textsuperscript{131} Edmond, “Pathological Science”, supra note 83 at 44.
\textsuperscript{132} Report of Goudge Inquiry, supra note 12, at 493.
\textsuperscript{133} An excellent review is in David Paciocco’s article: “Taking a Gouge out of Bluster and Blarney”, Canadian Criminal Law Review.
Crown expert, Dr. Charles Smith that sparked the inquiry. The Goudge Report suggested 4 factors which focus on the expert, which is summarized by Prof. Paciocco as follows:\textsuperscript{134}

\begin{enumerate}
\item the theory or technique used by the expert must be reliable, and so too must the \textit{use} of that theory or technique by the expert;
\item the expert must not be biased;
\item the expert must be objective and complete in collecting evidence, must reject all information that is not germane to the theory or technique being used, and must be transparent about all information and influences they have been exposed to; and
\item the expert must clearly express not only the opinion, but also the complete reasoning process that led to it, and must be candid about the shortcomings of the theory or technique employed and the opinion reached, offering fair guidance on the level of confidence that can be placed in the opinion expressed.
\end{enumerate}

The Report also suggested that forensic pathology opinions in particular, should “rely on specialized training, accepted standards and protocols within the forensic science community, accurate gathering of empirical evidence, attention to the limits of the discipline and the possibility of alternative explanations on error, knowledge derived from established peer-review medical literature and sound professional judgement.”\textsuperscript{135}

With respect to judicial education, Justice Goudge wrote, “The determination of threshold reliability of expert scientific evidence by a trial judge will be greatly assisted if judges become literate in basic scientific concepts.”\textsuperscript{136} While he did not believe that there should be specialist judges, he endorsed the importance of continuing education for judges. In particular, he noted that Justice Rosenberg’s view of the challenges faced by judges in carrying out their roles as gatekeepers. “They are being asked to look at an entirely different field in

\textsuperscript{134} \textit{Ibid.} at 146.
which their ordinary views of what is common sense and what is logic may not help as much as we would hope.”

Furthermore, Justice Rosenberg noted “that judges need to know what questions should be asked. If the lawyers are not asking them, they might be prodded by the trial judge, albeit cautiously, to ensure that they do.” Justice Goudge cautioned against the wisdom of relying on a “laundry list” of factors. Despite this, he included several factors that a trial judge should consider:

- expertise of the witness (ensuring that the witness only testifies within his area of expertise)
- reliability of the theory or technique behind the opinion, considering whether it has been peer reviewed or generally accepted, and whether methods meet standards
- whether the theory or technique has been tested (or can be tested)
- whether the theory or technique used has controversy or uncertainties, and that this has been communicated
- whether the expert has considered alternative explanations or interpretation of the data
- whether the evidence is available so that the expert’s interpretation could be challenged
- whether the opinion has been expressed so that the fact finder can judge the reliability for himself

2.2.4 Critical Analysis of the Mullins-Johnson case

The list of factors proposed by Justice Goudge and Prof. Edmond, and the approaches suggested by Beecher-Monas embody an “evidence based” approach, or as Prof. Paciocco calls the “show me” approach. It requires the factfinder to ask the expert to justify his conclusions. Following Justice Goudge’s suggestion, instead of slavishly applying any list of questions

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137 Dr. Michael Pollanen, one of the forensic pathologists who testified at the Goudge Inquiry, explained in a separate article that “expertise often provides conclusions that are not within the scope of common sense (e.g. global warming) or runs against common sense (e.g. DNA exonerations after eye-witness testimony.) “On the Strength of Evidence in forensic pathology.” For. Sci. Med. Pathology (2016) 12 at 96.

138 This raises the issue of the extent a judge should intervene in a trial. This will be discussed in Part IV in the thesis.


140 Ibid. at p. 495.

described above, I will be adopting the essence of this approach to the analysis of the Mullins-Johnson case. The evidence based approach that I am applying to this case is based on all three approaches described. It requires the factfinder to seek to understand the underlying theories behind the method used, to search for any hidden assumptions, as suggested by Beecher-Monas, and taking into considerations the various biases expert evidence is vulnerable to, as suggested by Edmond et al. I propose the following approach in evaluating the expert evidence in this case study. The goal is to get the factfinder to focus on the substance of the opinion and the case-specific facts that is relied on. At each stage, other more specific and more detailed questions arise in the factfinder’s quest to fully understand the expert opinion. It takes into account awareness that every method has inherent limitations, and every expert may be subject to subconscious biases which may influence their opinion. It assumes no reassurances from expert credentials, nor blindly relies on cross-examination in bringing out all weaknesses in an opinion. It brings the focus back on the opinion itself, rather than on the expert’s personal credibility, or other criteria that is unrelated to the substance of the opinion.

(1) Understand the theory or method used

One should seek to understand the theory behind the method used. If the opinion is shrouded in technical language, could the expert assist in explaining it in layman’s terms? Is there any controversy surrounding the use of this method? What are the limitations of the method? What assumptions are made when using the method? Is there support in the established medical literature for the method used?

(2) Examining the actual procedure taken

Detailed examination on the actual procedures should be brought before the court to ensure the method used was rigorous and objective. What were the actual steps taken in this
case that was used to implement the theory in order to come to your conclusion? This checks for any contextual bias that could influence the expert’s opinion, as well as whether protocol was followed in the more commonly used forensic methods.

(3) Critically evaluating the result

Conclusions should never be accepted without asking whether there is logical and reasonable foundation. Some questions may include: Can one arrive at alternative conclusions based on these observations (for tests that offer conclusions based on qualitative or subjective interpretations? What is the error/uncertainty range of the conclusion? If the conclusion had been verified, was this a blind review?

Chapter 2.3 Current Programs in Judicial Education

Judges can receive some assistance on dealing with scientific evidence by consulting the manual developed by the National Judicial Institute, titled the Science Manual for Canadian Judges. This is in essence guides for judges (and lawyers) to understand the scientific concepts behind the more common scientific disciplines. A list of judicial educational courses will be publicly available in the summer of 2018. One course that was particularly relevant to expert evidence was offered in spring 2018 by the Canadian Judicial Council was called “Science in the Courtroom, The Web, Nuts and Bolts-Everything you need to know about

142 In the case study, Sgt.Welton was with Dr. Rasaiah while he was examining Valin, Sgt. Welton was also the constable who interviewed Mr. Mullins-Johnson that morning and had knowledge of the fact he was alone in the house 8-10 p.m. According to the Appellant factum (2007), Sgt. Welton informed Dr. Rasaiah of this fact. R v Mullins-Johnson, 2007 ONCA 720, 87 OR (3d) 425, (Appellant Factum, 2007, David Bayliss and James Lockyer) at para. 45.
Emerging Technologies.” This course combines presentations as well as real life examples to educate judges on technological and scientific evidence.\textsuperscript{145}

In the United States, two initiatives resulted from the motivation to deal with this issue. The first was an independent study of the forensic sciences. The inability of the courts to recognize and screen out poor quality forensic science has led the National Academy of Sciences (NAS) to do a critical analysis of a whole array of forensic sciences. The NAS is an advisory body to the US government on scientific issues.\textsuperscript{146} The NAS conducted a study on the forensic sciences in the US. An extensive report was produced in 2009, called “Strengthening Forensic Science in the United States: A Path Forward.” One surprising result from that report was that other than DNA analysis, all other forensic disciplines, even the ones which have been relied on for decades in litigation, have been found to be lacking in scientific rigour.\textsuperscript{147} A second initiative was shouldered by the Federal Judicial Center to create scientific manual for judges. The work is titled \textit{Reference Manual On Scientific Evidence}.\textsuperscript{148} Reference guides for individual disciplines, such as toxicology, medical testimony, and statistics are available on the website. In addition, there are various programs that have sprung up in the US. A study on such programs are summarized in a 2000 study by Merlino \textit{et al.}, in \textquotedblleft Science Education Programs for the State and Federal Judiciary at Year 2000.\textsuperscript{149}

There is little controversy in the suggestion that judiciary competence in handling expert evidence could be enhanced by education. What is more problematic is such education is often not enough for a judge to fully comprehend the case at hand. This will be illustrated in this case study. The question of whether a judge can supplement their knowledge with independent

\begin{thebibliography}{9}
\bibitem{Desjardins} Josée Desjardins, Director, Committees Management, Canadian Judicial Council. Private Communication by email, June 26, 2018.
\bibitem{Ibid} \textit{Ibid.}, at p. 96, citing the Report, p.100.
research will be explored in the final part of this thesis. What follows next is a full analysis of
the expert evidence in the Mullins-Johnson case. I hope to understand how the trial process
failed, by examining the trial expert evidence, both in the trial transcripts and expert reports, and
comparing the fresh evidence presented at the appeal to the trial evidence.
Part III. Case Study: Analysis of Expert Evidence in *R v Mullins-Johnson*

In this section, we will examine the expert testimony proffered, both at trial and the appeal. Although this litigation had two appeals, expert testimony (fresh evidence) was offered only on the second appeal in 2007 where Mr. Mullins-Johnson was acquitted. Therefore, the term “appeal” in the remainder of the thesis will refer to the second appeal. It should also be noted that there are two aspects of expert evidence: a “teaching” component, where the expert educates the court on the background scientific knowledge necessary to the understanding of the evidence, and secondly, an “opinion” component, where the expert applies his expertise to the interpretation of the observed facts and renders a conclusion or opinion. I will be using the word “teaching” to refer to the former type of expert evidence, and “opinion” to the latter in order to distinguish the two types of testimony.

At trial, the Crown’s case rested significantly on the forensic pathology evidence. Indeed, the Crown conceded in the Appeal Factum that “there was no case without the expert evidence.” The evidence could be categorized under three headings: time of death; cause of death, and circumstances of death. A great deal of testimony was devoted to estimation of the time of death, including the use of a simple mathematical formula that purportedly describes the cooling rate of a post-mortem body. A second area of focus was the evidence on the cause of death. The Crown’s theory was that Valin was killed by asphyxiation due to mechanical compression of some means. This was manifested by the observations of pin point bleeds both on the skin and on the surfaces of various organs, such as the heart and lungs, as well as

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swelling in the lungs. The third area was the evidence which purported to support circumstances surrounding the death. The Crown’s theory was that Valin was killed during an episode of sexual assault. This was supported by signs of injury in the form of bruises in Valin’s genital area, the markedly dilated anal opening, and the presence of a tear or fissure in the anal canal. The theory that Valin was killed during sexual assault was further strengthened by lay witnesses’ testimony such as the discovery of Valin’s body in the knee-chest position.

In this section, I will critically analyze each one of these three areas of pathological evidence under the following structure. First, I will present the trial expert evidence and the fresh evidence submitted at the appeal. Secondly, I will critically assess both sets of expert evidence, using the evidence-based approach described in Part II above. I will examine how the adversarial process failed in this case. Based on the analysis, I will then suggest questions that the trial judge could have posed that could have exposed these flaws. I will show how the judge could have discovered that the Crown’s expert opinions were flawed, if he had performed his own independent research. This will lead us to Part IV of the thesis, which discusses how a judge could have implemented any specialized technical knowledge gained through previous independent education or exogenous research performed while presiding over the trial. We will examine the debate over whether the virtue of having judges specially trained to handle expert evidence conflicts with the fundamental principles in the common law trial system of judicial passivity and party prosecution.

The following documents were examined in this thesis:

1996 Appeal Record for R v Mullins-Johnson, 31 OR (3d) 660. CV#20591
-Set of Trial transcript used is the one titled “Case on Appeal in the Supreme Court of Canada”

151 The line number markings on the left hand edge on the transcript pages are used as aids to pinpoints. However, since these markings do not completely correspond to the actual line numbers, a range of line number will be included to facilitate location of the quoted excerpts.
Chapter 3.1. Time of Death

The expert evidence on the time of death was highly significant in this case, as Mr. Mullins-Johnson was alone with Valin from about 7 p.m. to 9:30 p.m. on the evening before she was discovered dead. Indeed, arresting officer Constable Martynuck’s made the following entry in her notebook: “Death between 8 to 10 p.m. Arrest to be made by Welton and myself.” Narrowing the time of death would provide the prosecution with a convincing case of exclusive opportunity for Mr. Mullins-Johnson to commit the alleged murder.

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152 There is in fact a report by Dr. Charles Smith and Dr. Marcella Mian that was included in the 2007 Appeal Record. However, since this report was not brought into trial, it was not reviewed by this author.

153 The court record for the 2007 appeal (CV 47664) was marked “sealed” to the public. A motion was brought by the author to access the expert evidence on appeal. The author thanks defence counsels James Lockyer and Michael Bayliss, and Crown counsel Katie Doherty for their cooperation in allowing her to access to the unsealed portion of the record which contained the expert evidence.

There are three methods in forensic pathology used to estimate the time of death based on the rate of physical and chemical changes in the body after death.\textsuperscript{155}

(1) Livor mortis: the purplish skin discoloration caused by post-mortem settling of blood

(2) Rigor Mortis: onset and fading of the stiffness of muscles

(3) Algor Mortis: the rate of cooling of the body of the deceased

While it is in general agreement amongst all the experts that these methods only provide estimates, nevertheless, there was a great deal of court time spent on the experts’ conclusions on the time of death. Even though all three methods were used together by Crown expert, Dr. Rasaiah, the method relying on the actual measured rectal temperature in a formula that purportedly governs post-mortem cooling was subjected to the most scrutiny. I will first introduce the reader to the basic concepts behind these three phenomena. The information is based on two textbooks on forensic pathology used at trial, Werner Spitz’s textbook titled “Spitz and Fisher’s Medicolegal Investigation of Death”, 3\textsuperscript{rd} edition\textsuperscript{156} and “The Essentials of Forensic Medicine”, authored by Knight, Polson and Gee.\textsuperscript{157} I will then review the expert testimony related to the livor and rigor mortis methods. Finally, I will analyze in greater depth the method based on the rate of cooling of the deceased’s body.

3.1.1 Trial testimony: Livor and Rigor Mortis

When a person dies, circulation of the blood stops. The blood then settles and accumulates in blood vessels due to gravitational forces. Such accumulation in the blood vessels

\textsuperscript{155} These three methods are still being taught to forensic science students as being currently used. The author was enrolled in the Introductory Forensic Science course at University of Toronto in 2016. The textbook used, (Saferstein, Richard. Criminalistics. An Introduction to Forensic Science, 11\textsuperscript{th} ed. (Pearson Education, 2015)) also described these methods used to estimate time of death, at 108-110.

\textsuperscript{156} Werner Spitz (editor), 3\textsuperscript{rd} edition Spitz and Fisher’s Medicolegal Investigation of Death. Guidelines for the Application of Pathology to Crime Investigation (Springfield, Illinois: Charles C Thomas Publisher, 1993) [Spitz, Guidelines].

\textsuperscript{157} C. Polson, B. Knight and D. McGee, The Essentials of Forensic Medicine, 4\textsuperscript{th} ed (Pergamon Press, 1985) [Polson, Essentials].
(capillaries) under the skin causes the skin take on a purple or red-purple colour.\textsuperscript{158} This phenomenon is known by various terminology.\textsuperscript{159} In this thesis, I will use the terms lividity and livor mortis. If the deceased’s body is lying on its back, the settling of the blood will give rise to a generalized purple colour on the back of the body, except in areas where the body is pressed on the supporting surface, such as the shoulder blades and buttocks.\textsuperscript{160} Similarly, if a body was lying such that the head and the front of the body faces the ground, ("prone" position), lividity will be present in the front ("anterior") areas of the body. Livor mortis has been documented to be apparent anywhere from 20 minutes to several hours after death\textsuperscript{161} and is complete anywhere from 6 to 12 hours.\textsuperscript{162} The colouring may shift in the early stages. This means that if the body was moved, the discoloration will move to other areas of the skin. It also means that the purple colour on the skin could be “blanched”, that is, the purple colour disappears upon points of compression. It is “fixed” after 8 to 12 hours.\textsuperscript{163} In addition, the tiny capillaries under the skin could burst, giving rise to pin-point bleeds or petechiae hemorrhages, called “Tardieu Spots.”\textsuperscript{164}

The stiffening of the muscles and joints is another a time dependent process that occurs after death. This phenomenon is known as postmortem rigidity or “rigor mortis.” When a body dies, the muscles become relaxed, or “flaccid”\textsuperscript{165} but then becomes stiff or rigid, which then “freezes the joints.”\textsuperscript{166} The time of onset varies, with different textbooks citing different time frames, anywhere from within half an hour to 4 hours after death.\textsuperscript{167} The process maximizes

\begin{itemize}
\item \textsuperscript{158} C. Polson \textit{et al.} note that livor mortis occurs not only in blood vessels under the skin, but also in the blood vessels of organs. This is significant, as lividity can be misinterpreted as injury or other symptoms of disease. Polson, \textit{Essentials} at 13.
\item \textsuperscript{159} Other names include post-mortem hypostasis, postmortem lividity, postmortem staining, suggilation, livor mortis. Spitz, \textit{Guidelines supra} note 157 at 23; Polson, \textit{Essentials supra} note 158 at 13.
\item \textsuperscript{160} Polson, \textit{Essentials} at 13.
\item \textsuperscript{161} Spitz, \textit{Guidelines, supra} at note 157 at 24.
\item \textsuperscript{162} Polson, \textit{Essentials supra} at note 158 at 13.
\item \textsuperscript{163} Spitz, \textit{Guidelines supra} at note 157 at 24.
\item \textsuperscript{164} Spitz, \textit{Guidelines supra} at note 157 at 24.
\item \textsuperscript{165} Ibid. at 26.
\item \textsuperscript{166} Spitz, \textit{Guidelines supra} at note 157 at 26; Polson, \textit{Essentials} at 15.
\item \textsuperscript{167} Spitz, \textit{Guidelines supra} at note 157 at 26; Polson, \textit{Essentials} at 15.
\end{itemize}
within 12 hours.\textsuperscript{168} It gradually wanes, although the time taken for this to occur also varies, anywhere from 12 hours\textsuperscript{169} to 60 hours.\textsuperscript{170} It is clear that the time frame in which livor and rigor mortis occurs varies widely. Nevertheless, the fact that there is a time dependence makes it tempting for pathologists to use the observations of livor and rigor mortis to estimate the time of death.

\textit{Dr. B. Rasaiah (Crown Expert)}

Dr. Rasaiah’s teaching of the timing of livor mortis was that it “begins normally around two hours and said to be fixed around 12 hours” from the time of death.\textsuperscript{171} Applying to the case at hand, his opined as follows: “All I can say is that from the post mortem, fixed post mortem staining of the front of the body, that the body had been in that position in excess of 12 hours.”\textsuperscript{172} Despite his comment on the lividity being fixed, he also noted that the staining had shifted when he saw the body the day after the post mortem:\textsuperscript{173}

Q: When you examined the body, you did the post mortem examination, where was the staining?
A: The fixed staining was in the front of the face, chest and abdomen, and there was minimal blue staining on the back, which was not fixed.

Q: Well, did you see the body the next day?
A: Yes.

Q: Did you note where the staining was the next day?
A: Yes, the next day the staining was more prominent in the back, because the body has been lying on its back.

\textsuperscript{168} Spitz, \textit{Guidelines supra} at note 157 at 26.
\textsuperscript{169} Spitz, \textit{Guidelines supra} at note 157 at 26.
\textsuperscript{170} Polson, \textit{Essentials supra} at note 158 at 15.
\textsuperscript{171} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Dr. B. Rasaiah, at 284, lines 15-20.
\textsuperscript{172} \textit{Ibid.} at 287 lines 20-25.
\textsuperscript{173} \textit{Ibid.} at 287 lines 1-15
His opinion was that judging from the observed rigor mortis, the time of death would be 15 to 17 hours, counting back from the time of the post mortem examination:174

Q: How long does it take, when does it start?
A: It ...usually rigor mortis appears in about one-and-a-half to two hours, and become maximal around, is easily detected and maximal around 12 hours. And after 12 hours or so, you begin to get relaxation of the smaller muscles of the face, neck.

Q: When did you see the body...at what time?
A: at 12:55 pm on the 27th.

Q: And rigor was where?
A: There was no rigor mortis in the face or neck but was present in the upper limbs and lower limbs, and my estimation was that post mortem death interval would be an estimate and the range would be 15-17 hours.

Q: 15-17 hours from when?
A: From the post mortem examination.

Dr. Rasaiaah thus estimated the time of death to be 8-10 p.m. on June 26, based on his observation that the rigor mortis was beginning to fade in the face and neck, and his teaching that rigor mortis fades after 12 hours of death. (Note that he did not give any reason as to why he chose the particular interval of 15-17 hour mark as the range for the time of death.)

Dr. Charles Smith (Crown Expert)

Dr. Smith’s testimony on the use of lividity to estimate time of death was more conservative. His teaching was that the method is “not precise at all”,175 but suggested that since lividity is fixed between 8-12 hours.176 He suggested caution in deriving a time of death estimate, as he was concerned that the fixation process is different in a child. He frankly conceded that he was not personally aware of any literature that addressed the rate of fixation for a child. Despite

174 Trial Transcript of R v Mullins-Johnson, Evidence of Dr. B. Rasaiah, at 289, lines 1-5.
175 Trial Transcript of R v Mullins-Johnson, Evidence of Dr. Charles Smith, at 515 lines 1-5.
176 Ibid. at 513, lines 30-35.
these caveats, his opinion was that as a starting point, one could estimate the time of death by counting 8-12 hours back from the time the first observation was made of the deceased body, which would be around 7:30 a.m. June 27.\textsuperscript{177} Counting back as suggested would lead to a time of death interval between 7:30 p.m. to 11:30 p.m. on June 26, an interval which was considerably wider than that given by Dr. Rasaiah.

Dr. Smith’s teaching on rigor mortis was that it starts “perhaps eight to 12 hours, and then it starts as these chemical bonds start to break down it will disappear, about a day, about 24 hours after a person died.”\textsuperscript{178} He offered the same caveats as in livor mortis, that the process could be different in a child. It was not clear whether he was suggesting the time of death to be 12 hours counting back from 7:30 a.m. (when the body was discovered by the parents) or whether it was 12 hours from the time Dr. Rasaiah made his first observation autopsy. Regardless, he conceded that the estimate is variable due to “a whole variety of conditions.”\textsuperscript{179} He added, “I wish I could help you more, but the science is just not there.”\textsuperscript{180}

\textit{Dr. Frederick Jaffe (Defence Expert)}

Defence expert Dr. Jaffe’s opinion of both lividity and rigor mortis was that both methods are highly unreliable to be used to estimate time of death. Both processes are variable and prone to subjective interpretation.\textsuperscript{181} Dr. Jaffe did not provide a time of death interval in his report or in his oral testimony.

\textit{Dr. James Ferris (Defence Expert)}

\begin{footnotesize}
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\item \textsuperscript{177} \textit{Ibid.} at 514, lines 1-15.
\item \textsuperscript{178} \textit{Ibid} at 516, lines 15-25.
\item \textsuperscript{179} \textit{Ibid} at 517-518.
\item \textsuperscript{180} \textit{Ibid} at 517, lines 25-30.
\item \textsuperscript{181} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Dr. F. Jaffe, at 575, lines 18-25, at 575, lines 10-15. Frederick Jaffe, Report, Exhibit #32, Trial transcript of \textit{R v Mullins-Johnson}.
\end{itemize}
\end{footnotesize}
Dr. Ferris testified that he would not rely on lividity to give a time of death. His teaching is as follows:

Lividity begins to be visible after about two hours, or so, but it will vary and it tends to become fixed in the tissues after eight to 14 hours. Again that will vary. And even when it becomes fixed, you can get secondary lividity if the body is repositioned. Now, all of those may help but they are not means of determining the time of death. I don’t think you can. In an autopsy report, I would never give a time of death based on those observations.

As for the use of rigor mortis to estimate the time of death, Dr. Ferris’s teaching was that one cannot use this phenomenon, as it is variable. Furthermore, it may not occur in children at all. As in the case for Dr. Jaffe, no time of death interval estimate was given.

3.1.2 Appeal Defence Expert Testimony on Livor and Rigor Mortis

Dr. Michael Pollanen

Dr. Pollanen’s opinion was similar to both trial defence experts. Unlike Dr. Smith and Dr. Rasaiah, he did not provide any time interval estimate. He wrote that given the variability in the time courses of these two processes, there was “no known scientific basis for quantifying such a narrow estimate of the postmortem interval.”

Prof. Bernard Knight

Prof. Knight taught that the onset of lividity varies between half an hour to 4 hours. The colouring may be absent in certain individuals, such as anaemic or small infants. There is

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182 Trial Transcript of R v Mullins-Johnson, Evidence of Dr. J. Ferris, at 650, lines 30-35.
183 Ibid. at 650, lines 20-25. See also James A. Ferris, Report, Exhibit #36, Trial transcript of R v Mullins-Johnson.
maximum lividity around 12 hours after death but this could be earlier. Prof. Knight cited a study\textsuperscript{186} that noted that these benchmarks all suffer from extreme variability, where fixation can occur between 1 to 20 hours.

As for rigor mortis, Prof. Knight cited from a study that opinions of the timelines of rigor varies widely:\textsuperscript{187}

- onset of rigor: 0.5 to 7 hours
- completion of rigidity: 2-20 hours
- persistence of rigor: 24-96 hours
- time to full resolution (passing off) 24-192 hours

His opinion was that this method is “next to useless” for estimating time of death.\textsuperscript{188} His opinion was that it was “frankly ludicrous” to conclude that the time of death occurred 15-17 hours before autopsy, as claimed by Dr. Rasaiah.\textsuperscript{189}

\textit{Dr. John Butt}

Dr. Butt cited from a 2001 textbook\textsuperscript{190} that fixation of lividity occurring at the 8-12 hour is only a generalization.\textsuperscript{191} In analyzing photographs which showed the actual lividity pattern on Valin’s body,\textsuperscript{192} he noted that there had been movement of the lividity onto Valin’s back. This means that Dr. Rasaiah’s conclusion that time of death was more than 12 hours based on his observation of fixation was unreliable. (Recall Dr. Rasaiah’s own testimony above where he stated that he had observed the shifting of the lividity the following day at the morgue.)

\footnotesize
\textsuperscript{186} Ibid. at 5.
\textsuperscript{187} Ibid. at 4.
\textsuperscript{188} Ibid. at 4.
\textsuperscript{189} Ibid. at 4.
\textsuperscript{191} See section A.1 in Dr. Butt’s report at 1.
\textsuperscript{192} See p.2 of report, which noted that it was photo VMJ 37.
As for rigor mortis, Dr. Butt noted a possible confounding factor in using rigor mortis as time estimation. The absence of rigor in the face and neck may be due to the fact that the body had been moved several times, rather than a consequence of the natural relaxation process. His opinion was that lividity and rigor cannot be used to estimate the time of death.

*Prof. Jack Crane*

There was no opinion in Dr. Crane’s report related to the time of death.

*Prof. Christopher Milroy*

Prof. Milroy essentially adopted Dr. Knight’s opinion on the time of death.

### 3.1.3. Critical Commentary of the Expert testimony on Livor and Rigor Mortis

It is easy to see why both the Crown and defence counsels at the appeal accepted the fresh defence expert testimony. All experts, apart from Dr. Rasaiah, were unanimous in their disapproval of using livor and rigor mortis to give time of death estimates. What is noteworthy is that the appeal experts’ knowledge on the variability was supported by independent academic literature. Prof. Knight and Dr. Butt cited from various textbooks on the nature of the extremely wide variability in livor and rigor mortis, which clearly supported why such methods could give no meaningful time of death estimates.

In contrast, at trial, none of the experts cited from specific independent sources on the issue of livor and rigor mortis as a time of death estimate. Dr. Rasaiah’s opinion was presented to the court dogmatically. He taught that lividity starts around 2 hours and is fixed around 12 hours, but did not give any independent support as to why one should accept that this teaching is true. He provided no details as to the variations well known in the pathology field, nor the source of his knowledge. In his letters written to Crown counsel in response to the review of his and Dr. Charles Smith’s opinions for the 2007 appeal, he repeated his claim that the three
methods are used all over internationally, he did not give any specific sources, nor provide the actual Report from the Coroner’s Act that he claimed relies on estimations from these methods. What also added to a weakness in his opinion was that he failed to take into consideration the observation that lividity had started to shift to the back. His own observation that lividity was not fixed means that there was no basis, to conclude that death occurred in excess of 12 hours. (This was pointed out by Dr. Butt at the appeal, as noted above.) With respect to rigor mortis, Dr. Rasaiah opined that the time of death would be 15 to 17 hours before autopsy. However, even from his own teaching that rigor starts to relax after 12 hours, there was no logical basis why he would choose in particular the 15 to 17 hour range as the time of death.

Rebuttal from the trial defence experts also suffered from lack of independent support. Pitting bare opinions against each other forces a factfinder to pick between them, based on heuristics (who has better credentials, who survived cross exam, or assumptions that defence expert is biased as a hired gun). To assess whether livor and rigor can be used to estimate time of death, a factfinder needed substantiation that this method actually works and has been tested. Looking at the trial testimony, neither side gave independent proof that what they are saying is accurate and reliable. There was no discussion of whether the knowledge they are relying on is the up to date, state of the art knowledge reflected in the forensic pathology community.

In the common law trial, the factfinder is restricted to using only on the evidence adduced by counsel. Therefore, even though certain excerpts within a textbook may be selectively introduced by counsel at trial the factfinder is only allowed to see the excerpt, not the remainder of the text. This has an obvious disadvantage that the factfinder is in effect

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194 There is a formal process in a common law trial when introducing textbook excerpts into evidence, which involves asking the witness whether he recognizes the text or not. This will be elaborated in Part IV below.
forbidden to determine for himself whether a particular selected excerpt is taken out of context. Moreover, it should be noted here that if the trial judge or jury had been allowed to review the textbooks used by counsel, such as the textbook by Spitz, he would have seen that the information was contradictory to Dr. Rasaiah’s evidence. Spitz noted that fixation of lividity occurred in as little as 8 hours\(^{195}\), not 12 hours as Dr. Rasaiah suggested. Spitz noted that there was great variability in the time it takes for the stiffness to fade, which leads one to wonder what basis Dr. Rasaiah had to support his time of death estimate to the narrow window of “15-17 hours.” Spitz wrote: “The variability of postmortem rigor makes its use as a postmortem clock rather tenuous, to be considered only in conjunction with other timing indicies.”\(^{196}\) The Polson text noted that rigor is established in 6 hours and lasts about 36 hours. It also noted that factors such as temperature, humidity and air currents and type and volume of muscle affect the rate of onset and disappearance (“passing off”) of rigor.\(^{197}\) If this independent information on rigor mortis had been presented and brought to the factfinder’s attention, it would have raised doubt to Dr. Rasaiah’s opinion that the time of death was 15-17 hours from the time of autopsy (1 p.m.).

The pros and cons of allowing a judge or jury to conduct independent research (accessing information beyond what is provided by counsel) will be discussed in Part IV of this thesis.

3.1.4 Trial testimony: Rate of Body Cooling

As seen in the previous section, the processes of livor and rigor mortis are highly variable, and its interpretation is prone to subjectivity of the observer. Therefore, it may seem that the use of a measured quantity, such as the body temperature of the deceased’s body would offer a more accurate and objective estimate of the time of death. In addition, the availability of

\(^{195}\) Spitz, Guidelines, supra note 157 at 24.
\(^{196}\) Spitz, Guidelines, supra note 157 at 28.
\(^{197}\) Polson, Essentials, supra note 158, at 15.
a mathematical formula that could be applied to describe the cooling rate further adds to the perception that this method of estimating the time of death has a degree of rigour and validity. However, there is controversy in the reliability of this method. A significant amount of time was devoted to the examination of the experts on this method.

The theory underlying this method of estimating the time of death is that the deceased body cools down and comes to an equilibrium temperature with its surroundings in a process referred to as “post mortem cooling” or “algor mortis.” Hence, if one assumes a starting temperature of 98.6°F as an average normal pre-mortem body temperature, one could theoretically perform a retrograde estimation of the time of death, given the temperature of the deceased and the time that the temperature was taken. As intuitive and appealing as this may be, academic literature has commented that there are numerous factors that can affect this rate of cooling. Furthermore, some sources have indicated that the temperature should be taken at least twice before the body is moved. Therefore, at the time of the trial, it was well known that there were many factors that affect this rate, such as environmental temperature, clothing of deceased, size of the body, etc. Rates of cooling have been quoted to be anywhere from 1°F to 2.5°F per hour.

In this section, we will examine the testimony on using the rate of body cooling as a measure of the time of death. As in the previous section, the expert opinions will first be presented, which will be followed by a critique of the opinions.

Dr. Rasaiah (Crown expert)

Dr. Rasaiah opined that the time of death occurred between 8 to 10 p.m. He explained that the temperature of the deceased can be measured and applied in a simple mathematical

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198 Spitz, Guidelines, supra note 157 at 22-23.
199 Spitz, Guidelines, supra note 157 at 22.
formula to give the post mortem interval: “The calculation is that for every hour there’s a drop in the body temperature of 1.5 degrees Fahrenheit. So for every hour the body cools 1.5 degrees Fahrenheit. So by using that a figure is arrived at as to estimated post mortem death interval.”

The relationship can be expressed this way (also known as the Moritz formula):

\[
No. \text{ hours since death} = \frac{\text{ante mortem body temp} - \text{deceased body temp}}{\text{Rate of cooling of deceased body}}
\]

He subtracted the rectal temperature of 82°F which taken by the Coroner at around 8 a.m. at the Johnson home from the normal, average body temperature of 98.4°F, not Valin’s actual ante-mortem body temperature, which was unknown. The difference was divided by the rate of 1.5°F per hour, giving an answer of 11 hours since the time of death. Counting backwards from 8 a.m., the time the rectal temperature was taken, the time of death was thus approximately 9 p.m. the evening. Dr. Rasaiah testified that even though the room temperature was not measured, the estimate was valid, because the internal temperature of the body is not affected unless the room temperature was extreme, and the fact that Valin did not test positive for any natural disease.

During cross-examination, defence counsel attempted to introduce doubt into the reliability of the body cooling method. What caused confusion at this point was the defence counsel’s error in applying Dr. Rasaiah’s formula. Earlier in direct exam, Dr. Rasaiah had taken the difference between assumed normal pre-mortem body temperature and the temperature of the deceased, and divide that difference by the rate of cooling (1.5°F/hour). During cross-examination, defence counsel asked Dr. Rasaiah to perform the calculation by assuming the

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200 Trial Transcript of R v Mullins-Johnson. Evidence of Dr. B. Rasaiah at 281, lines 10-15.
201 Ibid. at 281, lines 20-25.
202 “ante-mortem” and “pre-mortem” means before death.
203 Ibid. at 282, lines 10-15.
204 Ibid. at 281, lines 1-5.
room temperature to be 74°F. The original intent of defence counsel in this exercise was to show how the time of death could vary depending on what value of ambient temperature one assumes. Of course, the problem is that this particular formula does not include an ambient temperature variable anywhere. Surprisingly, perhaps under the stress of cross-examination, Dr. Rasaiah followed defence counsel’s lead and applied erroneously the room temperature of 74°F to the formula. When the room temperature of 74°F was substituted into the formula instead of Dr. Crookston’s reading of the body temperature of 82°F, the formula returned a time of death estimate of 16.2 hours (as opposed to 10-12 hours from the time the temperature was taken).

Defence counsel pointed out that by applying 74°F, the time of death was different by 4 hours. This was a faulty conclusion on defence’s part, since the formula used by Dr. Rasaiah did not depend on room temperature at all. This segment of the cross exam yielded no useable information. In fact, it probably created further confusion to the whole issue of using body cooling as an estimate of the time of death. It is unknown whether the judge or jury caught this error. There was no mention of this in the jury charge or closing addresses.

Despite the unfortunate segment of cross-examination, defence counsel did have some success in casting doubt on Dr. Rasaiah’s formula. Dr. Rasaiah was cross examined with a textbook which he himself recognized as authoritative, the Spitz text mentioned above.

Defence cited the very sections from Spitz which commented on the limitations of the retrograde calculation. The text stated: “Following this rather naive view, numerous research projects and papers appeared over a long period, which though recognizing the pitfalls and permutations of modifying factors, did not greatly improve the accuracy of the estimation of the time since death.” Further, defence counsel added the even more damming line from the

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205 Ibid. at 302, lines 1-35.
206 Ibid. at 324, lines 15-20.
207 Ibid. at 330, lines 15-20.
textbook “These opinions did the investigating officer and possible justice- a disservice by offering dogmatic and misleading precise times of death.”208 In response to this attack, Dr. Rasaiah rebutted as follows:

A: ...But I think what you have said here is one opinion in an authoritative textbook, but I have to make an individual judgement when I do a post mortem examination in a specific case, and from the examination of the case, I consider all the factors that are involved and make an estimate. That is what I’ve done in the case of Valin Johnson.”209

Dr. Smith (Crown Expert)

Crown expert Dr. Charles Smith strongly contradicted Dr. Rasaiah’s opinion on the use of the rate of body cooling as a method to estimate time of death. Dr. Smith testified during direct exam that he cannot say for certain what the time of death would be applying the Moritz formula. He explained that the mathematical formula one would need to describe body cooling was a “differential equation”, and that even “first order differential equations” would be inadequate.210 He clearly explained that “bodies do not cool at a fixed rate.”211 He testified that since there was no information on air temperature, humidity, clothing or her temperature when she was just alive, even though “there is science, it’s of no value to us here.”212 Indeed, with regards to the Moritz formula, he “had “no idea if it’s right or wrong.”213 In fact, Dr. Smith was quite clear during his direct exam, that he was not confident on using the body cooling as an
estimate of time of death. His position triggered defence counsel to raise a warning to the judge that it was beginning to sound like cross-examination.\(^{214}\)

*Dr. F. Jaffe (Defence expert)*

Similar to Dr. Smith’s opinion, defence expert Dr. Jaffe explained that the use of the cooling of body temperature is based on the assumption that the body cools at \(1.5^\circ F\) per hour “in a straight line”.\(^{215}\) Dr. Jaffe said, “You need a fair bit of calculus to handle this, and besides, again, there are very many variables.”\(^{216}\) He explained that while this formula was easy to use, it was not accurate, in that the deceased’s temperature does not fall in a straight line as the formula suggested, but rather in an exponential function.\(^{217}\) Dr. Jaffe cited the number of factors that can affect the calculation, such as the body position, the size of the body (child), whether it is close to a heat source, what the body temperature was just before death. He also emphasized that “A very important factor of course is the outside temperature because what the body does after death, the body is just an object then, a material object, it cools to the environmental temperature... if there is a large difference, the temperature falls very rapidly at first, if there is a small difference the body cools slowly, so it’s important to now the environmental temperature.”\(^{218}\)

*Dr. James Ferris (Defence Expert)*

Dr. Ferris taught that this method was only good for police investigative purposes but not for evidentiary purposes.\(^{219}\) He was not cross-examined on this point. Dr. Ferris’s evidence

\(^{214}\) The entire segment is located in trial transcript at 521-523.

\(^{215}\) Trial Transcript of *R v Mullins-Johnson*, Evidence of Dr. F. Jaffe at 576, lines 10-15.

\(^{216}\) Ibid. at 576, lines 20-22.

\(^{217}\) It is interesting to note that the transcriber misspelled the phrase “exponential function” to be “ex-planantial function”, further illustrating that such terms and concepts are unfamiliar to lay people.

\(^{218}\) Ibid. at 576, lines 1-5.

\(^{219}\) Trial Transcript of *R v Mullins-Johnson*, Evidence of Dr. James Ferris, at 650, lines 5-15. Note that a similar type situation occurred in *R v Trochym* [2007] 1 SCR 239. In that case, even though hypnosis was an effective tool
on cooling was the same as Dr. Jaffe.\textsuperscript{220} His evidence was that there is little temperature drop for
an hour and then rapid cooling until the body reaches environmental temperature, at which
point, the temperature levels off. He stated that the cooling curve is not predictable. The
variables include uncertainty in initial body temperature (rectal is 0.5 higher than regular body)
and the fact that during the 12 hour window of that evening when Valin was put to bed and
when she was found dead, the environmental temperature changed 5 to 6 degrees.\textsuperscript{221} He also
cited the other variables like clothing, and the fact that children have different cooling rates,
similar to what Dr. Smith described. Dr. Ferris’s report included a complicated chart that was
supposed to be used by pathologists when attending a death scene. He testified that the chart
was presented to show an “illustration of the problem”\textsuperscript{222} which is that relating the cooling of
body temperature to a time of death estimate is highly complex.

3.1.5 Appeal Defence Expert Evidence on Post-Mortem Body Cooling

\textit{Dr. M. Pollanen}

Dr. Pollanen’s opinion was that since there was no recording of the room temperature, it was
impossible to “know whether the body was at thermal equilibrium with the environment.”\textsuperscript{223} He
added that nomograms (charts which are used to derive time of death) would require the room
temperature. He noted that there is uncertainty in the shape of the cooling curve due to the fact
that a small child’s body could cool faster than an adult’s.

\textit{Prof. B. Knight}

\textsuperscript{220} \textit{Ibid.} at 646.
\textsuperscript{221} \textit{Ibid.} at 646-647.
\textsuperscript{222} \textit{Ibid.} at 652, lines 10-15.
Pathologists’ Reports and Correspondence (And Related Report of Dr. Zehr)”) at 19.
Prof. Knight’s report was highly critical of Dr. Rasaiah’s opinion. He raised his concern over the fact that the coroner had used a spring loaded dairy thermometer, and the omission of recording the room temperature, which must be included in time estimates. He taught that modern methods require an input of many variables, such as body weight, clothing, posture, and consideration of surface area to body ratio (child versus adult).\textsuperscript{224} He taught that the Moritz formula is an “over-simplification” because it does not take into consideration the factors just mentioned. Furthermore, the body cools in a “double exponential” way, which means that the cooling curve is sigmoidal, and has a “very variable plateau at the outset.”\textsuperscript{225} He cited work from other pathologists to support his opinion. He taught that the variable plateau had already been noted for many years.\textsuperscript{226} He also noted the most accurate method to date would be a technique known as Henssge’s formula.\textsuperscript{227} Prof. Knight’s opinion on this case was that he found “it extremely difficult to offer any range of times within the 0-36 hours, within which it might confidently expected that Valin’s death might have occurred.”\textsuperscript{228} Notwithstanding this warning, he provided two possible time estimates. First, he said that death was likely to have taken place between 8 p.m. to 3 a.m., but did not explain exactly how he arrived at this range. Using the Henssge formula gives a slightly different interval: 10 p.m. to 5 a.m., with the caveat\textsuperscript{229} that the room temperature’s approximation. In summary, even though Prof. Knight did provide time of death estimates, they were all qualified with ample warnings of uncertainty.

\textit{Dr. John Butt}

Dr. Butt’s comment on the use of body temperature was brief. He taught that even if correctly performed, this method would give a “significant range” in the time of death estimate, and

\textsuperscript{225} \textit{Ibid.} at 7.
\textsuperscript{226} \textit{Ibid.} at 7.
\textsuperscript{227} \textit{Ibid.} at 7-8.
\textsuperscript{228} \textit{Ibid.} at 9.
\textsuperscript{229} \textit{Ibid.} at 9.
“ought not be used if proper consideration of the ambient temperature or coverings on the body has not been made.”

Prof. Jack Crane

There was no comment from Dr. Crane on this aspect.

Dr. Christopher Milroy

Dr. Milroy’s opinion generally supported Prof. Knight’s opinion, in that time of death is inexact, and that Prof. Knight’s estimate, along with his caveats were reasonable.

3.1.6. Critical Commentary of Expert Testimony on the Use of Post-Mortem Body Cooling to determine Time of Death

Dr. Rasaiah’s evidence on the time of death based on the rate of cooling of the deceased body was compelling. His opinion was further supported from his observations of lividity and rigor to corroborate the time of death interval to be 8-10 p.m. It may at first glance appear that it could be difficult to challenge his opinion. He provided a positive, concrete answer: a 2 hour time range that seemed plausible. Dr. Rasaiah’s evidence may have carried more weight than the other experts because of its relative simplicity in presentation, compared with that of Dr. Ferris multi curve plot (tool for estimation) only provided further confusion. Dr. Rasaiah’s opinion was simple, direct, easy to understand. He did what an expert was expected to do: provide a tangible answer to the court on a time range of when death occurred. In contrast, the other experts claimed time of death cannot be estimated at all. Dr. Smith’s and Dr. Jaffe’s use of


technical mathematical terminology likely made it difficult for jurors or the judge to comprehend why the Moritz formula was a totally unreliable formula to use. There were numerous counter opinions, even from Dr. Smith himself, which cast doubt on the reliability on this two hour window. Yet, to return a guilty verdict, the jury must have given some weight to Dr. Rasaiah’s opinion, which was based on not only the body cooling method, but also on the observations of the state of rigor and livor mortis.

Studies have shown that confidence is not always a good indicator of reliability or accuracy. It is noteworthy in this case that Dr. Rasaiah was very confident in arriving at a two-hour window for the time of death, even in the face of the well-known and numerous uncertainties in all three methods. It may be that Dr. Rasaiah was under contextual influence. Studies have shown that scientists can be influenced even subconsciously by the contextual information that they receive. For example, as mentioned in Part II, studies show that the knowledge of a suspect’s confession caused more handwriting experts to return more “match” opinions. In this case, if the police had mentioned or were already suspicious of Mr. Mullins-Johnson as having exclusive opportunity to commit the crime between 8-10 p.m., Dr. Rasaiah may have been influenced by this information to choose the rate of 1.5°F/hr, without further questioning the validity of using this rate.

Why was rebuttal expert testimony ineffective in this case on the issue of time of death? One major obstacle for the defence arose during the cross exam of their expert, Dr. Jaffe. Crown counsel referred to a book that Dr. Jaffe had authored titled Guide to Pathological Evidence,

233 Ibid. at 146-147.
234 According to the Will-Say of Sgt. Martynuck, in Appeal Record for R v Mullins-Johnson, 2007 ONCA 720 (CanLII), 87 O.R. (3d) 425. Joint Record-Vol.3 “Other Expert Reports and Crown Brief Extracts”. Sgt. Welton had interviewed Mr. Mullins-Johnson that morning, before the autopsy began. He was present with Dr. Rasaiah early on in the autopsy. It is possible that Sgt. Welton told Dr. Rasaiah that William Mullins-Johnson was alone with Valin at 8 to 10 p.m. the night before.
published in 1991, in which he was quoted to say that body temperature method of estimating time of death “is still the most useful single indicator of the time of death during the first 15 hours.” This statement clearly supported the utility of using body temperature, in spite of the numerous objections raised by other experts, including himself. It should be noted that the unreliability of the body cooling method was documented as early as 1985, in the Polson text.\textsuperscript{235} As such, it was not that science had developed since Dr. Jaffe published his book in 1991. It is unclear why Dr. Jaffe wrote that statement in his book, which he clearly seemed to disagree with at trial. It is unfortunate that he was not asked by defence counsel to explain on re-direct why that was.

In addition, Crown counsel succeeded in leading Dr. Jaffe to contradict his own direct testimony by quoting Dr. Jaffe’s testimony out of context. Crown questioned Dr. Jaffe whether he had testified earlier in direct examination that the “body temperature falls very rapidly at first and then it slows down.” Dr. Jaffe agreed “Yes, it...that’s right.”\textsuperscript{236} Crown counsel then quoted from Dr. Jaffe’s book where he had written that the body does not cool down for half an hour to 3 hours initially.\textsuperscript{237} This appeared to contradict what Dr. Jaffe testified during direct examination. However, when one refers back to Dr. Jaffe’s direct testimony in the trial transcript, one can see that Dr. Jaffe was actually explaining that in the special circumstance where the ambient temperature was significantly different, the body would cool rapidly at first, then slow down. This is a completely different point from what Dr. Jaffe was making in his textbook, which was describing the general 3 phase process of cooling, which starts with a slow rate (plateau), proceeds to a more rapid fall in temperature, then finally, the body gradually equilibrium with the ambient temperature. Unfortunately, since the jury or the judge did not have access to the trial transcript, it is unlikely that they would be able to recognize that the

\textsuperscript{235} Polson, Essentials, supra note 158 at 10.
\textsuperscript{236} Trial Transcript of R v Mullins-Johnson, Evidence of Dr. Jaffe, at 616, lines 10-20.
\textsuperscript{237} Cross-examination question from Crown counsel, Trial Transcript at 617 lines 7-10.
Crown quoted Dr. Jaffe out of context. Crown counsel’s strategy was to make Dr. Jaffe’s knowledge on body cooling seem inconsistent, hence unreliable. The seeming internal inconsistency of Dr. Jaffe’s evidence undermined his credibility.

At trial, the jury was presented with a confident opinion from Dr. Rasaiah, based on a simple, easy to understand formula. The jury observed how Dr. Jaffe’s testimony appeared to have inconsistencies. In addition, the jury was faced with opinions that offered no definitive, clear understanding of the range of error one can expect. Even though variables such as body mass, and position of the body have been cited as factors that could affect the cooling, no expert gave the jury any information on how much the change could be. For example, what is the difference in the adult rate versus a child’s rate? Would it only be a small percentage difference? Merely telling the jury the various factors that could affect the rate does not provide them with enough useful information to critically evaluate Dr. Rasaiah’s definitive opinion. It is unfortunate that, for the body cooling method, while defence counsel was on the right track in trying to demonstrate that a little change in room temperature would give a drastically different range of time of death, his method of doing so was itself in error, the effectiveness of his cross exam was diminished.

One line of questioning that would have helped understand the substance of the conflicting expert opinions is to elicit the reasoning or logic behind the expert opinion. One can question the validity of the Moritz formula, which describes the falling of the body temperature in a linear fashion with time, given the complicated behaviour of cooling as shown in independent texts. In general, a lay person with high school mathematics education would

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238 The complexity and low accuracy of the body cooling method was well explained in Spitz’s text, Spitz, Guidelines, supra note 157 at 22-23. It is also well explained in Polson, Essentials, supra note 158 at 10.
recognize that the Moritz formula would be incorrect and insufficient in describing non-linear cooling behaviour.\textsuperscript{239}

Another way that would assist in the critical assessment is to seek out any assumptions in an expert’s opinion or theory. This is best accomplished with the help of independent texts in academic literature. One can ask the expert to clarify the basis for relying on the assumption. It would have been useful to ask Dr. Rasaiah to identify the basis for his use of the rate of 1.5°F/hr. It is interesting that Spitz’s textbook also explained the complexity of post mortem cooling, including the non-linear rate of cooling. Indeed, the initial cooling rate suggested by Spitz was 2.0-2.5°F/hr during the “first hours” and an average rate of 1.5-2.0°F/hr in the first 12 hours. Using this information, defence could have challenged Dr. Rasaiah on his assumptions. Defence could have asked Dr. Rasaiah to demonstrate that just by changing the rate of cooling by half a degree, that is, by taking 2.0°F, instead of 1.5°F, one would arrive at 8.2 hours as the number of hours since death, instead of Dr. Rasaiah’s result of 11 hours! In other words, the time of death, using a rate of 2.0°F/hr, would give 11:48 p.m. as the time of death, not 9 p.m. as Dr. Rasaiah suggested. A half degree difference in which rate you take as the denominator, even in Dr. Rasaiah’s simple formula, gives a substantial difference in the resulting time of death estimate. Indeed, according to the Spitz text, the rate could have varied between 2.5 to 2.0°F/hr,\textsuperscript{240} which means that it was conceivably that the body could have been cooling at 2.5°F.

Applying a rate of 2.5°F/hr would give a much later time of death. When a rate of 2.5°F is used, instead of Dr. Rasaiah’s rate of 1.5°F, one would arrive at 6.5 hours as the number of hours since death, instead of 11 hours. The time of death, counting back 6.5 hours from 8 a.m. would take us to around 2 a.m. Therefore, even by changing the cooling rate by as little as half to one

\textsuperscript{239} When an object cools in a non-linear fashion, it means that the rate of cooling is not constant over time. In a graph depicting the temperature of the object over time, the curve is thus not a simple straight line, i.e. not “linear”.

\textsuperscript{240} Spitz, Guidelines supra note 157 at 22.
degree can yield substantially different time of death results. A factfinder having access to this independent information on the range of cooling rates would recognize that Dr. Rasaiah had chosen one particular rate out of a range of choices. Understanding that this is a choice on the part of the expert leads one to ask the next question: what is the basis for such a choice, especially when these choices return such different time ranges for the time of death? The time of death evidence was crucial in supporting the Crown’s exclusive opportunity theory. It was therefore important that this estimate was critically evaluated. This is essentially the evidence based approach. It is a constant search for the supporting reason or foundation behind an expert’s opinion. In this case, such an approach would have demanded Dr. Rasaiah to explain his choice in using his formula in the face of uncertainty documented in textbooks alerts the jury to the possibility of confirmation or professional bias.

While the discussion above demonstrated that Dr. Rasaiah’s opinion had a number of shortcomings, the appeal expert opinions could be improved if they had been conducted in a blinded manner, as suggested by Prof. Edmond. In other words, in the quest to verify Dr. Pollanen’s opinion, the “verifying” experts, Drs. Knight, Butt, Crane and Milroy should have been consulted without disclosing the identity of Dr. Pollanen nor his opinion. Ideally, the reviewing experts should be asked for their opinion based on the raw data. It would raise doubt in a factfinder’s mind when the verifying experts simply adopt another expert’s opinion, as in the case of Dr. Milroy, who stated “In my opinion the opinions expressed by Prof. Knight are reasonable and give an acceptable time span, but his caveats must also be taken into account.” Knowledge that it is the chief forensic pathologist of Ontario, Dr. Pollanen’s report may influence the reviewing expert to be deferential, preventing them from objectively reviewing the

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material. In this case, it appears that the reviewing experts were told that they were asked to review the slides and reports because there was an investigation underway against Dr. Charles Smith specifically. Being told that they are to review reports that come from colleagues who are under suspicion for their inferior quality of work potentially colours the reviewer’s frame of mind, much like the way the fingerprint examiner could have been biased if he knew that he was only comparing the crime scene fingerprint with a suspect’s print. In this case, it would have been preferable for the reviewing experts to be given the set of slides and asked them for their interpretation independently. They should not be put into an adversarial context. Reviewing an opinion by a fellow colleague or examining raw data objectively can be accomplished best when the reviewer is free from pressure to please his client or temptations to take sides (eg. “for or against Drs. Smith/Rasaiah”).

3.1.7 Questions facilitating a Critical Approach to the Issue of Time of Death

In summary, it can be seen that Dr. Rasaiah’s opinion on the time of death appeared to be very compelling. His explanation was easy to understand, and he provided a concrete answer: a time interval of 2 hours. He appeared confident as he stood by his answers throughout his cross-examination. His credentials are impressive as an experienced pathologist. However, as discussed in Part II, an expert’s credentials and their confidence are no guarantee of the soundness of their opinion. As suggested in the Beecher-Monas framework, despite all these secondary indicia of reliability, the theory behind the method used should be questioned on its logic and assumptions. In the spirit of the evidence-based approach, I propose a list of questions that a judge can consider when evaluating expert opinions. While a judge is allowed to ask clarifying questions directly to a witness during an examination, these are very limited in nature, the purpose of which is to ensure that the witness’s testimony is clear. These questions must not be partisan in nature. There is always the danger that when a judge asks a witness leading
questions directly in a manner similar to cross-examination, it may be perceived by the jury to be an indication of which side the judge prefers. Hence, the guiding questions that are proposed in this thesis are ones that a judge should consider in evaluating whether the expert opinion has received adequate scrutiny in cross-examination. They are asked to ensure foundation for a witness’s testimony, to reduce any ambiguities in the testimony and to ensure the factfinder has enough information to perform a critical evaluation of the opinion. Such questions should be posed in the presence of both counsel, and should be on the record. The purpose of these questions is to assist in the full understanding of the expert evidence, rather than simply undermining it. The answers to these questions should have the potential to not only expose the weaknesses, but also strengthen an expert’s opinion. As Justice Rosenberg noted, when lawyers do not ask the questions that are necessary to present a full and fair factual record, and since juries are disallowed from asking questions directly to the witnesses (see s. 3.4.7 Limitations of the Adversarial Trial Process), a judge should consider raising them. The manner in which they are raised will be discussed further in Part IV of this thesis (Chapter 4.6, Judicial Intervention: R v Mullins-Johnson).

- Is there consensus in the field of forensic pathology on the reliability of the Moritz formula used? In either case, what is the source of information to support your answer?
- What is the basis for the rate 1.5°F/hour used in the Moritz formula?
- If there was a change in the environmental temperature, how exactly does the time of death range vary? Does the time vary by 2 hours? 5 hours? 20 hours?
- How do the various factors, such as the size of the body, air currents, clothing etc. affect the time of death estimate? Do these factors vary the estimate by 2 hours? 20 hours?

243 Justice Rosenberg noted “that judges need to know what questions should be asked. If the lawyers are not asking them, they might be prodded by the trial judge, albeit cautiously, to ensure that they do.” See Report for Goudge Inquiry, supra note 12, vol.3 at 502.
Chapter 3.2. Cause of Death

The Crown expert opinions that Valin’s death was due to an unnatural cause was key in the prosecution case. Both Dr. Rasaiah and Dr. Smith concluded that Valin died from asphyxia as a result of some form of manual constriction of the airways, such as smothering or strangulation. Trial defence experts concluded that no cause of death could be ascertained. In this section, we review the expert opinions, followed by a critical commentary as before.

3.2.1 Trial Expert testimony on Cause of Death

Dr. Rasaiah and Dr. Smith were both certain that Valin was killed while being sexually assaulted. The physical evidence that they relied on to support the conclusion of asphyxia fall under three main categories:

- pin point bleeds (petechiae) on her eyelids, face, chest and shoulders and on the surfaces of the organs (heart, lungs, thymus)

- bruises on her lips, chest, on the left side of her neck.

- fluid accumulation and bleeding in the lungs, rupture of air sacs

Dr. B. Rasaiah (Crown expert)

Dr. Rasaiah testified that the external examination revealed a number of “injuries and it consisted first of all of pinpoint hemorrhages of the upper eyelids, the sides of the forehead, the centre of the chest, the upper part and front of the shoulder and the upper and front part of the
left chest showed small pinpoint hemorrhages, and then in the centre of the chest there was 17 separate bruises over an area meshing 9 by 6 centimeters.‖

When he was asked to explain how petechiae come about, Dr. Rasaiah’s teaching was:

Q: And how sir, does that come about? How do these petechiae arise?
A: Because as a result of lack of oxygen. As a result of lack of oxygen.
Q: Lack of oxygen.
A: Yes, we use the term by asphyxia.
.. Q: When somebody has a lack of oxygen these marks appear?
A: Yes.
Q: Where did you see those marks?
A: In the eyelids, the face, the shoulders front and the upper chest.
Q: And did that...what is the significance of that, sir?
A: It means that there’s a lack of oxygen to the person. The person is not getting oxygen.

In addition, Dr. Rasaiah testified that he observed bruising in the mouth and lip area, and a hematoma (blood clot) on “the left side of the neck with bleeding around the thyroid gland.”

He also observed some abnormalities in the lungs, such as the hemorrhaging and fluid in the air spaces, as well as rupturing of the air spaces.

Dr. Rasaiah concluded as follows:

A: Yes, the conclusion was that there was a mechanical obstruction either to the nose and mouth, neck or upper chest. The upper chest did show bruising and on reflecting the skin

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244 Trial Transcript of R v Mullins-Johnson, Evidence of Dr. Bhubendra Rasaiah, at 268, lines 5-10.  
245 Ibid. at 271, lines 25-30.  
246 Ibid. at 272, lines 15-20.
in the upper chest there was marked subcutaneous hemorrhaging. So these are areas where I felt there was some form of mechanical obstruction.\textsuperscript{247}

Dr. Rasaiah further opined this could have been caused either by the nose and mouth being obstructed by “smothering, pressure, gagging” or by compression of the neck, such as “manual strangulation, ... compression of the upper chest, pressure on the upper chest so that the rib cage cannot move in and out.”\textsuperscript{248}

In addition to performing the autopsy, Dr. Rasaiah had also ordered several lab tests. He found no evidence of natural cause:

First of all sections were taken from all the tissues of the body and all the organs to look for underlying disease and I found nothing. And, secondly, I took culture studies, swabs were taken and tissue was submitted for culture for bacteria and viruses. Brain tissue and lung tissue were taken and they were cultured and they were all negative for bacteria and viruses.”\textsuperscript{249}

When Dr. Rasaiah was challenged on the inherent difficulty of distinguishing between post mortem staining (livor mortis) and bruising he gave the example of a person who suffered from assault on his face and who died afterwards. He explained that while bruises from the assault would overlap with post mortem staining, histological sections would clearly allow one to distinguish the two.\textsuperscript{250}

In addition to petechiae, Dr. Rasaiah also relied on the observation of a bruise on the neck as well as bruises on the lips to support the theory of asphyxia.\textsuperscript{251} According to Dr. Rasaiah, bruises are always formed before death.\textsuperscript{252} His teaching was that one can determine the age of bruises by the presence or absence of white blood cells. A “recent” bruise, that is, is one

\begin{footnotesize}
\begin{enumerate}
\item \textit{Ibid. at 272 lines} 20-25.
\item \textit{Ibid. at 272 lines} 30-35; at 273 lines 1-10.
\item \textit{Ibid. at 291 lines} 10-20.
\item \textit{Ibid. at} 357-358.
\item \textit{Ibid. at 271 lines} 25-30.
\item \textit{Ibid. at 275 lines} 1-5.
\end{enumerate}
\end{footnotesize}
that was caused within 12 hours of death, “if there are red cells present and there’s no evidence of any white cells, significant number of white cells present in the tissue, then you will call that a recent bruise under 12 hours old.”

**Dr. C. Smith (Crown expert)**

Dr. Smith agreed with Dr. Rasaiah. Dr. Smith based his conclusion on several observations: petechiae on the surfaces of the organs in the chest (heart, lungs, thymus), the presence of fluid in the lungs as well as petechiae in the eye lids and signs of injury to the neck. Dr. Smith’s teaching was that specific findings of hemorrhage into the neck tissues and petechiae in the eye lids are “typical findings in an asphyxial mode of death”:

...petechial hemorrhages or the pin point, pin head size hemorrhages I should say that are found on the surface of the organs in the chest, that is, the heart, the lungs, the thymus. And with that there is congestion of the lungs and fluid accumulation in the lungs, or pulmonary oedema which may be the term that you’ve heard. And so those are the...those are the typical internal findings in an asphyxial mode of death.

He was confident in his opinion that there was a “clear cause of death.” He testified that “it is reasonable to assume that this death occurred as a result of a manual strangulation.” He testified that “we’re dealing with an unnatural event with a physical event that somehow or other her oxygen supply to the tissues of her body and most noticeably the brain was interrupted.”

**Dr. F. Jaffe (Defence expert)**

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253 *Ibid.* at 278 lines 1-10.
258 *Ibid.* at 485 lines 1-5.
Dr. Jaffe’s opinion was that he could “see no clear cut cause of death.”260 Dr. Jaffe disagreed with Dr. Rasaiah in his reliance of using petechiae as indicators of asphyxia. While Dr. Rasaiah and Dr. Smith relied on the presence of petechiae as indicators of mechanical asphyxia, Dr. Jaffe’s teaching was that petechiae can occur both pre-mortem and post-mortem. He explained that if the petechiae was only observed in the areas of lividity, that means that the petechiae were postmortem of origin, hence cannot be used to determine the cause of death. He explained the mechanism of how post mortem petechiae can arise: “In areas of lividity, blood vessels burst after death and petechial hemorrhages can occur.”261 Dr. Jaffe demonstrated this by pointing to the exhibits. He showed that petechiae is only found in areas of lividity on Valin’s chest, face, neck and the pubic area.262 Dr. Jaffe explained that if it were indeed manual compression that caused asphyxia, petechiae would have been present “all over the place” and not confined to areas of lividity.263

As for the neck bruise, he believed that this bruise was caused pre-mortem264 even though it was located in the area of lividity. He did not explain why he believed this particular bleeding was pre-mortem.

Dr. Jaffe suggested that two alternative possibilities for the cause of death, even though he could not be certain of the actual cause of death. One was the possibility of inhaling stomach acid (Mendelson syndrome). However, he agreed with Dr. Smith that he could not see any microscopic evidence for this.265 Another was the possibility of vagal inhibition, which according to Dr. Jaffe, is a condition where if vagus nerves on either side of the neck were

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260 Trial Transcript of R v Mullins-Johnson, Evidence of Dr. F. Jaffe at 588 lines 1-5.
261 Ibid. at 579, lines 20-25.
262 Ibid. at 580-581.
263 Ibid. at 581 lines 25-30.
264 Ibid. at 584 lines 5-10.
265 Ibid. at 588 lines 8-10.
stimulated, the heart could stop. Vagal inhibition has no autopsy findings, which meant that it could not be excluded as a cause of death in this case.²⁶⁶

On cross-examination, Dr. Jaffe appeared to be inconsistent with his direct testimony. Crown counsel led evidence from his own written report²⁶⁷ which read: “The body showed many recent bruises to the head, lips, neck, chest and genital areas...These are not associated with deep injuries but were undoubtedly traumatic in origin...They lack the specific characteristics (finger marks, fingernail scratches etc.) ...and seem to have been caused by blunt trauma.. insufficient to cause death.”²⁶⁸ When asked whether he agreed that these bruises occurred before death, he said, “Yes.”²⁶⁹ When he was asked about the bruises on the chest, he testified that his opinion has since changed:

Q: Okay, so just to be clear, they happened before death?
A: No, I don’t think so. These are post mortem bruises. I may at one point have thought of them as pre-mortem.
Q: Well you said that you did, sir.
A: I may have.
Q: You said that you didn’t regard them as—
A: I may have but, as I pointed out, looking at exhibit 19, these are classical post mortem bruises, and if I at one point considered them pre-mortem, then I changed my mind.²⁷⁰

There was no re-examination as to what led him to change his mind.

When he was asked whether it could be strangulation, he said marks should be present on both sides of a victim’s neck. In Valin’s case, a mark was found on only one side of her neck.

²⁶⁷ Trial Transcript of *R v Mullins-Johnson*, Frederick Jaffe. Report, Exhibit #32.
²⁶⁸ *Ibid.* at 602 lines 1-10.
He concluded by saying that while he has some “difficulty” with strangulation as a possible cause of death, he cannot exclude it.\textsuperscript{271}

\textit{Dr. James Ferris (Defence Expert)}

Similar to Dr. Jaffe’s opinion, Dr. Ferris testified that there was no definitive cause of death.\textsuperscript{272} He said the “only significant area of injury related to a mechanism of death” is the bruise on the left side of Valin’s neck.\textsuperscript{273} His opinion was that Valin could have died from “vagal inhibition.”\textsuperscript{274} This meant Valin was “strangled” but not “somebody grabs the neck and shakes it and squeezes it.”\textsuperscript{275} Rather, it was due to some form of “minimal injury.”\textsuperscript{276} His opinion was that that there was not a “definitive, easily identifiable cause for the death...”\textsuperscript{277}

On cross-examination, Dr. Ferris seemed to be contradicted by his own written report.\textsuperscript{278} Crown counsel led evidence from his report which stated “the external bruising on the left side of the neck is consistent with the application of blunt force to the neck....These injuries were sustained at or around the time of death and when taken in conjunction with the facial petechial hemorrhages can be reasonably interpreted as evidence of manual strangulation.”\textsuperscript{279} There was no re-examination on this point, leaving the jury with the impression that Dr. Ferris’s opinion also supported the Crown experts that Valin was strangled. It is noteworthy at this point that their \textit{vive voce} testimony significantly deviated from their originally submitted expert reports.

\textbf{3.2.2 Appeal Expert testimony on Cause of Death}

\textit{Dr. M. Pollanen}

\textsuperscript{271} Ibid. at 611 lines 5-14.
\textsuperscript{272} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Dr. J. Ferris at 642 lines 30-35.
\textsuperscript{273} Ibid. at 641, lines 15-25.
\textsuperscript{274} Ibid. at 642-645.
\textsuperscript{275} Ibid. at 641 lines 26-30.
\textsuperscript{276} Ibid. at 641 lines 30-35.
\textsuperscript{277} Ibid. at 642 lines 30-40
\textsuperscript{278} Trial Transcript of \textit{R v Mullins-Johnson}, James A. Ferris Report, Exhibit #36.
\textsuperscript{279} Trial Transcript of \textit{R v Mullins-Johnson}, Evidence of Dr. J. Ferris at 663 lines 20-30.
Dr. Pollanen’s conclusion on the cause of death was “unascertained.” According to Dr. Pollanen, there was a lack of full consideration of alternative causes of death. He further qualified it to mean that “both natural and un-natural causes are objectively possible.”

He explained that there are many natural causes which could give rise to sudden death. In fact, the route a pathologist takes in ascertaining the cause of death is by “differential diagnosis”, where one considers all possibilities of sudden death, and then perform tests as necessary to rule out each one. His opinion on this case was that the tests ordered by the prosecution were inadequate in excluding these other causes of death.

Dr. Pollanen did not rule out the possibility that Valin could have been mechanically asphyxiated. Rather, he noted that there is only “negative autopsy” to support this, meaning that it is only one of many other possible causes of sudden death, including natural causes such as myocarditis, bacterial infection, metabolic abnormality, arrhythmic disorder. None of these could be excluded due to the fact that the tests specific for these causes were not performed.

Citing research from independent sources, Dr. Pollanen explained that positive signs for, say, strangulation, would be characteristic injuries in the neck area, such as “bilateral skin traumata with subjacent soft tissue hemorrhages, and laryngeal and hyoid injuries.” Although Dr. Pollanen did not reject this possibility of strangulation outright, since there was an absence of other neck injuries, it was more likely that the neck bruise was an artefact. Such artefacts are

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281 Ibid. at 17.
282 There was a bacterial scan performed before trial, which was shown to Dr. Pollanen subsequently. Dr. Pollanen’s opinion was unaltered. R v Mullins-Johnson, 2007 ONCA 720 (CanLII), 87 O.R. (3d) 425, (Respondent Factum, 2007, Kenneth L. Campbell and Michal Fairburn) at para. 136.
284 Ibid. at 17.
285 Ibid. at 16.
usually called “Pinsloo Gordon” hemorrhage, which could be caused by a number of ways, including the dissection process itself.\textsuperscript{286}

Dr. Pollanen interpreted the petechiae and bruises observed by Dr. Rasaiah to be post mortem bleeding, which were caused by the bursting of blood vessels within areas of lividity.\textsuperscript{287}

Dr. Pollanen cited from Dr. Knight’s textbook, “Knight’s Forensic Pathology” that petechiae are “highly unreliable indicators of an asphyxial process.” These pin point bleeds are often non-specific and could occur post-mortem, especially when the body is face down or head down.\textsuperscript{288}

It should also be noted as well that Dr. Pollanen had made a presentation to Crown and Defence counsel on September 2, 2005\textsuperscript{289} where he explained that the observed brain swelling was a post mortem event. He had performed a study on donated dead bodies at the University of Toronto that showed “sub-scalpular” bleeding that looked similar to that seen in Valin’s case.

\textit{Prof. B. Knight}

Prof. Knight noted that the prone position of the body gave rise to lividity patterns which can superimpose on true bleeding or be mistaken for pre-mortem bleeds. He wrote:

The importance of the very marked hypostasis on the front of the body is that skin hemorrhages, both tiny petechiae and large ecchymoses,\textsuperscript{290} can develop in “dependent hypostasis”\textsuperscript{291} after death and may be mistaken for, or be superimposed upon, true petechial hemorrhages or bruises during life.\textsuperscript{292}

\textsuperscript{288} M. Pollanen, Report, Jan. 2005, \textit{supra} note 281 at 15-16.
\textsuperscript{289} This meeting was attended by counsel to AIDWYC and counsel to Chief Coroner. \textit{R v Mullins-Johnson, 2007 ONCA 720}, 87 OR (3d) 425, (Appellant Factum, 2007, Bayliss, David and James Lockyer) at para. 16.
\textsuperscript{290} “Ecchymoses” means the escape of blood into the tissues from ruptured blood vessels marked by a livid black-and-blue or purple spot or area; also the discoloration so caused. (Mirriam Webster Dictionary online).
\textsuperscript{292} \textit{Ibid.} at 10.
He explained that one cannot use the pin point bleeds observed on the skin in the face and body (“trunk”) to diagnose the cause of death. He added that even though there were pin point bleeds observed in the upper eyelids, there were no pin point bleeds in the eye whites, or inside the eyelids, which were better indicators of neck compression.²⁹³ He noted there were two neck bruises, one on the outside, under the left side of the jaw, which was likely due to lividity. The other deeper bleed inside the neck on the left side of the larynx could be due to “Pinslooo-Gordon” artefacts. He added further that if there had been neck compression, there would have been pin point bleeds in the larynx, root of tongue and whites of eyes, none of which were seen in this case.²⁹⁴ He stated that smothering could not be confirmed or excluded, since this usually does not give rise to any signs. He pointed out that Dr. Rasaiah was incorrect in his explanation that petechiae in circumstances of asphyxia are caused by lack of oxygen. Rather, these are caused when the veins in the neck are obstructed.²⁹⁵

Dr. J. Butt

Dr. Butt’s conclusion was that the cause of death was inconclusive based on the autopsy findings.²⁹⁶ While he could not exclude “inflicted asphyxia”, he excluded compression of the chest and neck strangulation.²⁹⁷

As in Prof. Knight’s opinion, Dr. Butt explained, with support from independent literature, that petechial hemorrhages during asphyxial death is “venous congestion rather than anoxia/hypoxia.”²⁹⁸ He cited supporting texts for this statement. He also noted “even larger hemorrhages in the skin or close by subcutaneous fat possibly representing a coalescence of

²⁹³ Ibid. at 10.
²⁹⁴ Ibid. at 10.
²⁹⁵ Ibid. at 10.
²⁹⁷ Ibid. at 11.
²⁹⁸ Ibid. at 4.
petechiae”, citing support from the text by Spitz. He explained that while petechial hemorrhages in the sclerae and conjunctivae are common in some asphyxial deaths, these are not “absolute signs” of hypoxia, citing the text by DiMao. In agreement with Dr. Pollanen and Prof. Knight, he interpreted the bleeding seen within the areas of lividity are known as “Tardieu spots”, not bruises. He also explained that if Valin’s airways had been blocked by compression to the chest, there would have been petechial hemorrhages “circumferentially on the trunk” and “not just anteriorly in the distribution seen on the body of Valin Johnson.” He noted that there was “no petechiae or other hemorrhagic sequelae described or pictured anywhere on the back of the body (and no written or photographic record re: shaving of the scalp) which is important insofar as a suggestion of pressure on the trunk as a possible cause of death implied the death was possibly a crush immobilizing the thorax such as overlaying.” With respect to strangulation, explained that “the presence of petechiae of the mucosa of the epiglottis or larynx is not diagnostic of strangulation or any specific form of asphyxia.” He raises a fact that was not discussed by any other expert: that there was an abnormally high white cell count in the blood which “adds to the mystery of a recent illness.”

**Prof. J. Crane**

Prof. Crane noted that the prone position gave rise to observations of congestion and bleeding on the face and also internally on the thymus, the lining of the voice-box, on the surfaces of the lungs and in the heart sac, which were mistaken to be indicia of asphyxia.

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299 “Sclera” is defined as the “white outer layer of the eyeball” in Oxford Dictionary 10th edition.
300 “Conjunctivae” is defined as “the mucous membrane that covers the front of the eye and lines the inside of the eyelids”, Oxford Dictionary 10th edition.
With respect to the bleeding in the neck area, his opinion was that this had to be interpreted with caution, as a body lying in a prone position can give rise neck bleeds which are referred to as Gordon Pinsloo artefacts. He explained that the proper autopsy procedure which should have been used to avoid creating such artefacts: “allow drainage of blood from the neck structures and (ii) facilitate a layer by layer prosection of the neck structures including the musculature.”\(^\text{305}\) However, he did not comment on whether he believed such a procedure was carried out by Dr. Rasaiah. He noted also that there was no petechiae observed in the lining of the eyelids or on the eyeballs, which leads to the conclusion that mechanical asphyxia was unlikely cause of death.

*Prof. C. Milroy*

Prof. Milroy was also of the opinion that “the findings in this case did not disclose a cause of death.”\(^\text{306}\) He noted that there was no evidence of any petechiae that was distinct from that which were the consequence of lividity. With respect to the findings of the lungs, he noted that, “the histology of the lungs is not specific.”\(^\text{307}\)

### 3.2.3 Critical Commentary of the Expert opinions on Cause of Death

*Trial Expert Testimony*

At first glance, the Crown’s theory of manual asphyxiation seemed to have strong physical evidentiary support: the swelling of the organs, the bruises and pin point bleeds, the rupturing of the air sacs in the lungs. The jury was shown graphic photographs of Valin’s body taken at autopsy. The many red and blue tinged skin discolorations resembled bruises and signs of injury

\(^{305}\) *Ibid.* at 6.


to a lay person. The Crown experts’ conclusions sounded persuasive. They provided a positive and tangible cause of death. Furthermore, Dr. Rasaiah testified that he had over 20 years of experience in forensic pathology and performed over 4500 autopsies.\(^{308}\) Dr. Smith’s credentials are equally impressive. He was the director of the Ontario Pediatric Forensic Pathology Unit at the Hospital for Sick Children. He has been invited to give lectures on forensic pediatric pathology, including lectures to the Ministry of the Solicitor General.\(^{309}\) Trial Crown counsel argued in closing argument that Dr. Rasaiah and Dr. Smith were not hired guns. Crown counsel said:

First of all, Doctor Rasaiah, well, how did Dr. Rasaiah get involved in this case? Did somebody call him in from some place?...No. Dr. Rasaiah is working at the hospital. He’s a pathologist at the hospital, that’s what he does. He’s there, he’s at the hospital. That’s how he becomes involved, because he’s there, and nobody has asked him about an opinion or anything else or called him in especially because he is directly involved.”\(^{310}\)

On the other hand, trial defence expert testimony appeared uncertain and vague. While both Dr. Jaffe and Dr. Ferris had opined during their direct exam that the cause of death could not be ascertained, they seemed to have wavered in their opinions from their previously submitted written reports. Cross-examination revealed that their written opinions had supported the Crown’s position, casting doubt on the credibility of their live testimony. For example, Dr. Ferris’s report had actually supported a conclusion of manual strangulation. It is unfortunate that he was not asked on re-exam to explain why he changed his mind. Furthermore, in cross-examination, Dr. Jaffe conceded that he could not exclude the possibility of strangulation.\(^{311}\) Another weakness is that Dr. Jaffe’s discussion did not fully address Dr. Rasaiah’s and Dr. Smith’s evidence on the use of petechiae as indicia of asphyxia. Although Dr. Jaffe explained

\(^{308}\) *R v Mullins-Johnson* Trial Transcript, Evidence of Dr. B. Rasaiah at 264, lines 15-30.
\(^{309}\) *R v Mullins-Johnson* Trial Transcript, Evidence of Dr. C. Smith at 477-478.
\(^{310}\) *R v Mullins-Johnson* Trial Transcript, Crown Closing Argument at 786 at lines 25-35.
\(^{311}\) In fact, Dr. Jaffe could have excluded strangulation, because he had also explained on direct, that if it’s manual asphyxia, petechiae would be seen all over the body, not just in the areas of lividity.
that one cannot use petechiae to make any determination on the cause of death due to the fact that they are mostly postmortem, his discussions are confined to the petechiae observed on the skin. He did not address directly the petechiae and swelling observed in the organs that was noted by Dr. Rasaiah and Dr. Smith to be indicative of asphyxia. As a result, it would appear to a factfinder that the swelling of the lungs and the petechiae on the eyelids and on the organs remain as positive signs that there was mechanical asphyxia. In other words, when comparing Dr. Jaffé’s conclusion that the cause of death could not be ascertained, against the positive assertions of Drs. Rasaiah and Smith, even if one accepted Dr. Jaffé’s interpretation that the petechiae on the skin was caused by lividity, the possibility remains that mechanical asphyxia did occur, because of all the other signs of asphyxia discussed by the Crown experts, such as the petechiae on the eyelids, the organs (heart) and the fluid in the lungs. Given these shortcomings of the trial defence expert testimony, it is understandable for a jury to accept the Crown’s expert opinion and return a guilty verdict.

In the evidence based approach, Prof. Beecher-Monas encouraged one to seek to understand the theory behind the opinion. In this case, it can be seen that there was no explanation of the mechanisms that give rise to the pathological indications. For example, the Crown experts taught that petechiae in the chest, face, eyelids are caused by asphyxia, but gave no explanations as to how this arises. Both Dr. Smith and Dr. Rasaiah’s opinions taught that when you see a set of symptoms (petechiae, swelling, neck bruise), these are indicative of mechanical asphyxia. Neither offered any explanations as to why this is so. Why would lack of oxygen cause petechiae to form? Why for example, would there be bleeding spots on the skin or eyelids when someone is deprived of oxygen? If the factfinder has no information on the mechanism behind asphyxial petechiae, he could make no deductions for himself as to whether asphyxial petechiae would appear all over the body or whether it would be localized to a certain
region, such as the chest, as taught by Dr. Rasaiah, for example. For all we know, the petechiae observed on Valin’s chest could have consisted of both petechiae that was truly due to mechanical asphyxia and petechiae resulting from lividity that formed subsequently, after the asphyxial event. However, if the factfinder learned that the asphyxial petechiae are caused by venous obstruction, (as explained by Prof. Knight and Dr. Butt) the factfinder would understand that asphyxial petechiae arises when the blood is blocked from circulation under the stress of mechanical asphyxia, causing blood to burst out of the blood vessels. He would understand why Dr. Jaffe said that petechiae that was observed all over the organ implied mechanical asphyxia, whereas if petechiae was localized only to the areas of lividity, that would mean it must have occurred post mortem. He would be prompted to test out the theory of asphyxia by asking to see whether there are petechiae on the back side of the body, such as the back, the back of the neck or the back side of the scalp. In fact, Dr. Butt noted that “there are no petechiae or other hemorrhagic sequelae described nor pictured anywhere on the back of the body (and no written or photographic record re: shaving the scalp...)”.

At trial, the factfinder was presented with two expert opinions on petechiae: (1) Crown expert opinion: petechiae on Valin’s chest, face, organs are signs of asphyxia; (2) Defence expert opinion: the observed petechiae is a consequence of post-mortem lividity, along with the possibility that strangulation could not be excluded.

Without questioning the experts further to understand the mechanism of petechiae formation, the factfinder may reason that both experts are correct: the petechiae on Valin’s chest, face, organs could have been a sign of mechanical asphyxia, notwithstanding defence expert’s attribution of petechiae to post-mortem lividity. If the factfinder accepted that petechiae on Valin could have been a result of asphyxia, and that Dr. Rasaiah’s time of death could be

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313 This was brought out in cross-examination.
narrowed down to 8 – 10 p.m., these two pieces of evidence together are highly persuasive that Mr. Mullins-Johnson killed his niece by smothering or strangulation.

Critique of the Appeal experts

At the 2007 appeal, defence expert opinion was of such a convincing nature that Crown counsel conceded to acquittal. What attributes did the appeal defence experts’ opinion have that the trial defence expert opinion lacked?

It is interesting to note that part of what the appeal experts taught was already heard at trial, for example, the various discolorations (pin point bleeds or bruises) are post mortem events (caused by lividity pattern due to the deceased’s prone position). What was different in the appeal opinion was the balanced and objective approach that was taken in ascertaining the cause of death. The differential diagnosis approach explained by Dr. Pollanen revealed that there were many other possible causes of sudden death, including suffocation, none of which has been properly excluded by tests. This is contrary to a “conclusion first, factual support second” reasoning. The latter type of reasoning works as follows: an expert begins with a theory, (asphyxia) and then, seeks out supporting observations to confirm it. The problem with this type of reasoning is that one tends to neglect all the other possible causes which could give rise to the same set of observations.

On appeal, Dr. Pollanen listed several possible causes, such as myocarditis, bacterial infection, metabolic abnormality and arrhythmic disorder due to a genetic defect, none of which had been tested so that they could be conclusively excluded. Although there was consideration of Vagal Inhibition and aspiration of vomit as alternative causes of death, the trial

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314 Pollanen Report, Jan 2005, supra note 281 at 17.
expert evidence gave the impression that all biochemical tests have been performed, and all other natural causes, in addition to Vagal Inhibition and Mendel Syndrome have been ruled out. An approach based on differential diagnosis begins by considering all possible causes for sudden death, and only excludes each one when there is clear evidence to do so. What is noteworthy is that Dr. Pollanen is not rejecting Dr. Rasaiah and Dr. Smith’s conclusion outright. He conceded that he could not rule out that Valin was mechanically asphyxiated. Rather, he stated that “the differential diagnosis includes asphyxia not because there are positive findings that allow one to make that conclusion, but rather because the possibility cannot be negated... In my view, given the essentially negative autopsy, it is reasonable to consider mechanical asphyxiation, as a cause of death. On the basis of the same line of reasoning, it is also prudent to consider natural causes.”

Similarly, Prof. Knight wrote, “The possibility of ‘suffocation’ (obstruction of nose and mouth) cannot be confirmed or excluded.” The appeal defence experts approach stands in stark contrast to Dr. Rasaiah’s approach, which begins with a suspicion of foul play. Constable Martynuck’s “Will Say” statement indicated that within 10 minutes of the autopsy, Dr. Rasaiah had already formed an opinion about how Valin died. He was noted to say that “the death was very suspicious and did not believe it to be of natural causes.”

Another aspect in appeal defence expert evidence that was missing from trial defence expert opinion was that the appeal experts emphasized on how the prone position gives rise to discolorations that can be mistaken for petechiae caused by mechanical asphyxiation and other ante-mortem injuries. At trial, none of the experts were questioned as to how death in the prone position could affect post mortem appearances, giving rise to what looked like petechiae or

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315 Ibid. at 16.
bruises in the front side of the face or body.318 We learn from Dr. Pollanen and Prof. Knight that when a body dies in a prone position, blood pools due to gravitational forces onto the front side of the body, causing not only a general discoloration on the skin, but also bleeding spots that range from pin-point in size (petechiae) to larger spots.319 Prof. Crane stated that the prone position of the body caused “apparent congestion on the face and front of the trunk and (ii) the development of petechial and larger congestive hemorrhages, particularly on the fact but also internally on the thymus, the lining of the voice-box, on the surfaces of the lungs and in the heart sac,” observations which were misinterpreted to be caused by asphyxia or injury.320

Despite these strengths in the appeal opinions, there were still some aspects of these opinions which a factfinder would have had to just rely on the expert’s word, due to their highly technical nature. For example, the alternative causes and diagnostic techniques suggested by Dr. Pollanen are unfamiliar to a layperson, therefore, it is unlikely a lay factfinder can truly evaluate the merit of this part of his opinion. Consider the paragraph “Sudden natural death could have been due to a fluid-electrolyte derangement or an underlying metabolic abnormality. The evidence against this diagnosis is the lack of acetone in the toxicology screen (i.e. no ketoacidosis) the lack overt signs of dehydration, and no fatty liver. However vitreous biochemical studies were not performed.”321 A lay factfinder would not be able to assess the validity of statements like these, which require background training in medicine. For a layperson to truly be able to understand such statements enough to critique it, he would have to ask the expert to elaborate or explain the terms and concepts underlying the statements. This example also illustrates a weakness in the common law trial processes, where a factfinder does not

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318 How the prone position gives rise to the petechiae on the front side of the body was mentioned in Dr. Ferris’s report, Exhibit 36, R v Mullins-Johnson Trial Transcript at 929.
converse with the witness. Essentially, witnesses give their testimony through the guidance of their own counsel, or when they are cross examined. The judge or jury listens passively to the testimony, but does not engage in a dialogue with the witness. In the Mullins-Johnson case, the jury did submit questions to the judge, only to be rejected in being provided answers (with the agreement of counsel).\textsuperscript{322} Such one-sided communications make it very difficult for lay factfinders to evaluate an opinion on its substance.

A second issue with the appeal expert opinions is with respect to the neck bruise. Dr. Rasaiah stated in his Response Letter that the neck bruise could not be due to any Pinsloo-Gordon artefacts because he was careful to dissect that part last.\textsuperscript{323} It should also be noted that the bruise was clearly visible in a photo\textsuperscript{324} that was taken of Valin’s head and face area prior to the dissection. Hence, the bruise may not have been attributed to the autopsy procedure itself. Nevertheless, even if the neck bruise occurred pre-mortem, it would have been helpful if the appeal experts opined on whether it was possible that it could have been caused when Valin’s father performed CPR on Valin. Paul Johnson testified that he had difficulty opening her mouth.\textsuperscript{325} Hence, the bruise might have been made when he applied pressure to open her jaw.

\textit{Could the trial judge have intervened to expose the unreliability of Crown expert evidence?}

\textsuperscript{322} For example, the jury asked whether Dr. Rasaiah had taken a temperature of the body at the morgue. (See Trial Transcript, at 591). An answer to this question would have provided a great deal of information on the issue of using post mortem cooling to determine the time of death. If Dr. Rasaiah had taken the temperature at 1 p.m., and comparing it to the reading at 8 a.m. it would have given the jury what the actual rate of cooling had been. It would have also been interesting to determine whether Dr. Rasaiah took the body temperature. The standard autopsy report that he used had a space where the body temperature was to be entered. (See Rasaiah, B. Exhibit #26, Report of Post Mortem Examination. Trial transcript of \textit{R v Mullins-Johnson}). It is unclear why Dr. Rasaiah would rely on the Coroner’s temperature taken early in the morning and not take a temperature himself when he took possession of the body.


\textsuperscript{324} Evidence of Dr. B. Rasaiah. Trial Transcript at 348. A colour copy of the photo, Exhibit 16, can be found in the 1996 appeal record, \textit{R v Mullins-Johnson}, 1996 CanLII 1214, C20591 (ON CA (Respondent’s Supplementary Appeal Book, 1996).

\textsuperscript{325} \textit{R v Mullins-Johnson} Trial Transcript, Evidence of Paul Johnson at 133.
It is fortunate that Mr. Mullins-Johnson had the benefit of Dr. Pollanen and other experts to submit rebuttal opinions in the appeal in 2007. However, the trial judge could have recognized the flaws of the Crown expert opinions, but only if he had learned about the state of existing forensic pathological knowledge on asphyxial deaths through some independent means, such as a continuing education course or conducted independent research. The following section details the existing research on the signs of asphyxia relied on by the Crown experts.

(a) Does petechiae arise solely due a lack of oxygen?

Dr. Rasaiah’s teaching on using petechiae as a specific sign of asphyxia was clearly contrary to existing knowledge on petechiae. One of the authoritative textbooks that Dr. Rasaiah preferred was Spitz’s textbook, titled “Spitz and Fisher’s Medicolegal Investigation of Death. Guidelines for the Application of Pathology to Crime Investigation.”

326 It is noteworthy this textbook explicitly stated that the presence of pin point bleeding, often called “Tardieu spots” was once erroneously thought to be indicative of asphyxia. Spitz noted that it has since been shown that such pin point bleeds are not conclusive of suffocation, “...it has been shown that petechial hemorrhages are by no means conclusive evidence of death by suffocation...Pinpoint hemorrhages about the face and eyelids may also be found following cardiopulmonary resuscitation, independent of the mechanism of death.”

327 With respect to strangulation Spitz noted as follows, “pinpoint and slightly larger hemorrhages are often noted in the face of a strangled victim, especially in the conjunctivae and eyelids. The presence of so-called Tardieu spots is supportive evidence of death by asphyxiation, but as a sole finding must not be considered conclusive.” Even pin point bleeds that have similar appearances to Tardieu spots can be observed in the “reflected scalp” (scalp pulled back during autopsy) which are caused by

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327 Ibid. at 460.
the tearing of blood vessels during the separation of the scalp from the skull, hence has no probative value as to the cause of death.\textsuperscript{328} The Polson text, published in 1985, was also cautious of using petechiae as indicators of asphyxia. It noted that petechiae “may be seen in circumstances other than those of mechanical asphyxia.”\textsuperscript{329} Petechial hemorrhages found in other locations (pleura and pericardium) were no longer considered to be diagnostic of mechanical asphyxia. Although they should be considered to indicate a possibility of asphyxia, Polson cautioned, “Clearly the time has come to disregard these hemorrhages as diagnostic of mechanical asphyxia.”\textsuperscript{330}

\textit{(b) Does a body bruise after death?}

One compelling piece of evidence to support manual strangulation was the presence of the neck bruise. Dr. Rasaiah taught that all bruises are pre-mortem\textsuperscript{331} and the presence of a neck bruise supported the theory that Valin sustained the neck bruise while she was strangled. Whether the bruises can only be pre-mortem is significant. If one assumes bruises can only be caused during life, then that means that the bruise was likely caused just before death, making the theory of murder more likely. However, if bruises can also be caused post mortem, the bruise could have occurred when Valin’s father performed CPR on her, or caused during the autopsy procedure (artefact).

The “Essentials of Forensic Medicine”\textsuperscript{332} by Polson et al. was a textbook that was used by counsel during trial. Polson noted that bleeding and bruises can occur after death.\textsuperscript{333} This was

\textsuperscript{328} Ibid. at 469.
\textsuperscript{329} Polson, Essentials, supra note 158 at 354.
\textsuperscript{330} Ibid. at 354.
\textsuperscript{331} R v Mullins-Johnson Trial Transcript, Evidence of Dr. B. Rasaiah, at 275, lines 1-5.
\textsuperscript{332} Polson C., B. Knight and D. McGee. The Essentials of Forensic Medicine, 4\textsuperscript{th} ed (Pergammon Press, 1985).
\textsuperscript{333} Polson, p. 140.
confirmed in a more recent (2001) textbook by DiMaio and DiMaio\textsuperscript{334} who stated unequivocally that bruises can form after death. In another paper on bruises, Langlois and Gresham\textsuperscript{335} documented in their 1991 paper that “lesions resembling ante mortem bruises can be produced in neck muscles while removing neck organs in autopsy, or upon the body if sufficient force is applied within a few hours of death.”\textsuperscript{336} Dissection artefacts have also been documented much earlier in 1951 by Pinsloo and Gordon\textsuperscript{337} who described how procedures performed during autopsy can give rise to what appears to be ante-mortem bruising. In that study of 51 cases, the authors discovered that artefacts could not be distinguished from ante-mortem bruises by visual inspection or microscopic evaluation (histology examination).

\textit{(c) Post mortem observations unique to “head down” deaths}

The court was not shown existing scientific knowledge that individuals who die in a prone position will have post mortem appearances that are quite different from those who die in a supine position. In a recent (2001) forensic pathology publication “Forensic Pathology Reviews”, Dr. Achim Schafer reviewed studies on deaths in head-down position, dating from 1970 to 2000. He noted that when the body dies in a prone position, in addition to the general hue of a blue or purple discolouration of the face, neck and scalp attributed to lividity, other observations include swelling of soft tissues, and petechiae in conjunctivae, brain edema, pulmonary edema.\textsuperscript{338} Hence, what appears to be numerous bruises and swelling in the tissue are

\textsuperscript{334} Dominick DiMaio and Vincent DiMaio. Forensic Pathology, 2\textsuperscript{nd} edition, CRC Press, New York, 2001, p. 102. These authors cited an older study by I. Robertson (\textit{J. Forensic Medicine} 1957; 4:2-10) which studied ante and post mortem bruises.


\textsuperscript{336} \textit{Ibid.} at 229.


in fact not due to injury causing death, but rather, post mortem events that naturally occur upon death.

3.2.4 Questions facilitating a critical analysis of the Issue of Cause of Death

Based on the analysis above, I propose several questions which a judge can consider as guiding questions which help assess the adequacy of the expert opinions. These considerations can serve as a springboard which can help form clarifying questions that could be asked to the expert to fill out any gaps in information. Its purpose is to draw out as full an understanding as possible of the expert opinions. As in the discussion on Time of Death, that while these questions are a start in the evidence based approach, the extent that the “truth” or full answer will be successfully elicited will depend on the competence and bias of the expert.

- What is the mechanism that gives rise to petechiae when someone is manually asphyxiated? (Recall that Dr. Rasaiah only stated that lack of oxygen causes petechiae to appear, without explaining why that is.)
- Why would one observe petechiae on the surfaces of the organs (heart, thymus) in circumstances of asphyxia?
- Why would one observe swelling in the brain or lungs when one is manually asphyxiated?
- Would there be alternative causes for the observations of lung, brain swelling, and petechiae?

339 The most reliable answer is one that is based on the most up-to-date knowledge that has general acceptance where there is no controversy. Where there is debate or uncertainty in the subject matter, the expert should also be disclosing this to the court.
• Is there support from independent academic journals on the information (teachings) that you have provided to the court? (This question is testing whether there is general consensus and whether the teaching is up to date in the subject area.)

• The controversy in this case is that the observed petechiae could have been a result of either lividity or manual asphyxia. Since the body was in a prone position, petechiae that is a consequence of lividity would be confined to the front side of the body (as suggested by defence experts). Were there any petechiae formed on the back (“posterior”) side of the body (on the skin of Valin’s back, on the posterior faces of the organs)?

• How is a neck bruise that is due to pre-mortem injury different in appearance from a Pinsloo-Gordon artefact?

Chapter 3.3 Circumstances of Death: Evidence of Sexual Assault committed during the alleged murder

We now review the testimony of the experts on the circumstances of death. The Crown’s theory was that Mr. Mullins-Johnson killed Valin during an episode of sodomy. The supporting evidence included the face down, knee-chest position of that the deceased body was discovered in; the noticeably dilated anal opening; the bruises in the genital areas, and the presence of a tear in the anal canal. Indeed, Dr. Smith opined that looking at this “whole picture”, he concluded that “sodomy did occur.” At the appeal, the experts concluded that there was no pathological basis for the conclusion that Valin was sodomized. In this section, I will present an analysis of these opinions.

340 R v Mullins-Johnson Trial Transcript, Evidence of Dr. C. Smith at 493 lines 1-35.
3.3.1 Trial Expert testimony on sexual assault

Evidence to support the theory of sodomy began on the first day of trial, as several lay witnesses testified that Valin died in a face-down position, where her knees were bent and tucked under her chest (also referred to as the “prone” or “knee-chest position”). Constable Brad Clarida, who attended the Johnson home that morning, testified that “her knees pulled up and her arms like this, like she has been kneeling on her knees and elbows.” Valin’s mother, Kim Lariviere, who was the first person to discover Valin’s body, testified that she was “just right on her knees, her bum in the air.”

*Dr. Patricia Zehr (Crown Expert)*

On the second day of the trial, Crown expert Dr. Patricia Zehr, a medical practitioner with a specialization in obstetrics and gynecology tested to what she interpreted as obvious abnormality in the size of the anal opening. In direct exam, she testified as follows:

Q (Crown Counsel): You had indicated that that area was unusual to you, or at least it was striking to you.
A: Yes.
Q: And as a result of your observations you made some... you were able to give an opinion about sexual abuse, is that right?
A: That’s right.
Q: And can you tell us now with words,
A: When you look at the photograph, the most striking feature is the size of the anal gaping, which not normal. The size that I measured was about 10 by 12 millimeters...when I looked closer and this photograph doesn’t completely demonstrate that, it was clear to see that the normal folds around the anus were missing. It looked very smooth and attenuated, which is a medical term for wearing away or smoothing of an area, which looked very abnormal, and it’s also what you see in children who have been sexually assaulted or sodomized.
Q: And based on that observation what if anything can you tell about ...you’re talking about... what is that caused from?"

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341 R v Mullins-Johnson Trial Transcript Evidence of Constable Clarida at 52 lines 25-35.
342 R v Mullins-Johnson Trial Transcript Evidence of Kim Lariviere at 94 lines 15-20.
343 R v Mullins-Johnson Trial Transcript Evidence of Dr. P. Zehr at 235 lines 20-25.
A: Penetration with a penis or an object of some kind, over..repetitive penetration would give this kind of a picture."

Indeed, upon cross-examination, Dr. Zehr further emphasized on the obvious nature of the abnormality by suggesting that even a lay person would immediately recognize how obvious it is that there has been assault:

Q (Defence Counsel): Would I be correct in suggesting that once you had a look at her anal opening, it was really obvious there was something badly wrong there?
A: Yes, and I think just by looking at the photographs, it would strike every person, medical and non-medical.  

On cross-examination, defence counsel explored the possibility of whether sodomy would have caused a child to complain of the pain associated with it, or whether it could lead to other symptoms, such as constipation. Dr. Zehr responded that such complaints were not a certain consequence.  

In addition to the evidence on the anal opening, Dr. Zehr testified that petechiae was observed in the genital area, and on the inner thighs, there were “large blue areas.” Dr. Zehr noted there was “abnormal coloration of the genital area.” She described the appearance of the hymenal tissue, which “appeared to be sort of worn away on one side”. She also commented it “may have been penetration to the vaginal area, but that certainly was not of the degree of the anal area, if there was.”

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344 Ibid. at 244-245.
345 Ibid. at 255 lines 30-35; at 256 lines 1-10.
346 Ibid. at 257 at lines 1-35.
347 Ibid. at 246-247.
348 Ibid. at 248 at line 1.
349 Ibid. at 250 lines 10-15.
350 Ibid. at 250 lines 25-30.
On cross-examination, while defence counsel was successful in obtaining an admission from Dr. Zehr that she has made assumptions that the discolorations in the pubic area were pre-mortem, and that she was not a pathologist who is familiar with post mortem processes, she nevertheless remained firm in her opinion: “...I think many different pathologists, gynecologist, we all have opinions and I stand by my opinion, as limited as it may be in this area.”\(^{351}\) Counsel did not cross examine on her interpretation on the structure of the hymenal tissue nor of the anal gap.

**Dr. B. Rasaiah (Crown Expert)**

Dr. Rasaiah testimony supported Dr. Zehr’s position. His direct testimony on the anal opening is as follows:\(^{352}\)

A: I then examined the anal opening and that meshed 1.7 by 1.14 centimeters, and although there may be some dilation of the anal muscles post mortem, this was excessive dilation, and because of that and the fact that the anal opening and the interior appeared to be somewhat greyish-brown and narcotic{sic} appearance, I called in Doctor Zehr to come in and do a full proper examination”

While Dr. Rasaiah admitted there was no recent injury to the sex organs,\(^{353}\) he agreed with Dr. Zehr in that he also found the anal gaping to be excessively large, even taking into account for the post-mortem relaxation. Indeed, defence counsel appears to have conceded the point of the enlarged anal gap:\(^{354}\)

Q: Just a couple of other questions, sir. You were immediately struck by injuries to this child which to you seemed obvious signs of sexual abuse, is that correct?

A: Well, I examined and looked at it and I felt that that might be a possibility, and this is why I called Doctor Zehr to come and have a look at the child.

\(^{351}\) *Ibid.* at 260 lines 1-5.

\(^{352}\) *R v Mullins-Johnson* Trial Transcript, Evidence of Dr. Rasaiah at 291-292.


\(^{354}\) *R v Mullins-Johnson* Trial Transcript, Evidence of Dr. Rasaiah at 364 lines 1-20.
Q: And when you, being as careful as you could sir, you mentioned the gaping, for example, of the anus, and even allowing for normal distention after death, you found something that was grossly abnormal, is that correct?

A: That’s correct.

Dr. Rasaiah, confirmed that even when accounting for post mortem distention, the gaping was “excessive.”

Dr. C. Smith (Crown)

Dr. Smith was firmly of the opinion that Valin was sodomized and mechanically asphyxiated (see section above on Cause of death). He was convinced that there were fresh bruises in the genital area:

A: ..And so, Doctor Meehan and I in examining the photographs were concerned about the possibility of anal penetration especially because there was bruising around the perineum or around, what’s the colloquial term, this little girl’s bottom, can I use that expression, and so we were very concerned that this may be an example of sodomy. And that was just based on the photographs.

His conclusion of sodomy was also supported by histological evidence: the microscopic tear in the tissue or laceration located inside the anus. He relied on Dr. Rasaiah’s report under a section titled “Separate Histological Sections”:

Sections taken from the anus show it to be lined by squamous epithelium with underlying fibrosis, vascular dilatation and mild chronic inflammation. Sections taken further up in the adjacent rectal area shows necrosis of the epithelium with foreign material and fecal material extending from the opening to the underlying tissue that shows marked fibrosis, vascular dilatation, and hemorrhages in the submucosa...... The adjacent rectal epithelium shows large areas of ulceration of the mucosa with fibrosis of the submucosa, vascular dilatation and hemorrhage....

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355 Ibid.
356 R v Mullins-Johnson Trial Transcript Evidence of Dr. C. Smith at 492-493.
357 Ibid. at 492.
358 R v Mullins-Johnson Trial Transcript, B. Rasaiah, Report, Exhibit 26, at 862.
Dr. Smith observed “at least microscopically one laceration of the cells called epithelium which lines the surface of the body in that area, the rectum-anal region, skin region down into that.”

He confirmed that “with the bruising and the laceration, it’s my opinion that sodomy did occur.”

He explained that since there was bleeding but no healing reaction as manifested by the presence of white blood cells, he could determine the laceration was caused when Valin was alive, shortly before death, as there was insufficient time for the healing reaction to begin, which normally takes about 45 minutes to an hour for it to begin. He explained:

Now, what he is describing here, as I examined down the microscope was that there was a defect, there as a gap as it were in the epithelium which was the special cells that line your gastro-intestinal track and down in the rectum it is lined by epithelial cells, and there was a laceration or a fissure or a defect that extended into the underlying tissues, the connective tissues and towards the muscle which normally forms the wall of the rectum....Now, there was no acute inflammatory reaction associated with that. Let me repeat that. There was no acute reaction or acute healing reaction associated with that, and that’s very important because you don’t have to be a brain surgeon to realize that if you cut your arm, cut your skin and it was bleeding, and you were outside and you took dirt, or you took leaves or if you’re on a farm and you took manure, and you rubbed it into that laceration, and then we could actually look at it down the microscope, we would see a healing reaction. We would see the body reacting to that foreign material. Now, it takes some time for the reaction to kick in, and perhaps it might even take 45 minutes or an hour before down the microscope, one would see the first of the white blood cells beginning to move into the area. So, and there was none of that healing reaction in that one laceration that I saw in section number five. So that tells me that whatever caused the injury occurred at the time of death or shortly before the time of death.

Dr. Smith explained that the lacerations could not have been due to constipation, as there were bruises in the pubic area. Dr. Smith came to that conclusion by looking at “the whole picture.”

Well looking at, in fact let me add a third thing, looking at not only the pattern of bruises and the fissuring that occurred, the fact that the bruises had occurred a short while before death or at the time of death, the fissuring had occurred a short while before death or at

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359 R v Mullins-Johnson Trial Transcript, Evidence of Dr. Smith at 493 lines 1-10.
360 Ibid. at 493 lines1-10.
361 Ibid. at 496-497.
362 Ibid. at 493 lines 25-30.
the time of death and then the position that I understand her body was found in, and there again I didn’t see her body so you will have to accept what other people have told you, but if her body was in the unusual knee-chest position that is my understanding now, then that would certainly fit with that as well.\(^{363}\)

On cross-examination, defence counsel succeeded in obtaining a concession from him on own uncertainty in whether Valin truly died in the knee-chest position.\(^{364}\) Nevertheless, there was little cross-examination on the rest of his opinion. The cross-examination on the anal laceration only confirmed its location in the body (at a part of the anus inaccessible to photography during the external body exam at autopsy.\(^{365}\) Indeed, the cross exam only lasted about 20 minutes.\(^{366}\)

In sum, the Crown’s theory that Valin was sodomized on the night of her death was supported by four main observations: size of anal opening, bruising found in the inner thighs and genital areas, knee-chest position and the presence of a tear or laceration in the anus. The first two observations suggested that Valin had been the victim of chronic abuse, while the latter two suggested that she was sodomized the night of her death.

*Dr. F. Jaffe (Defence Expert)*

The opinions of the defence experts were that the reason why the anal gap appeared larger than normal was not due to assault, but rather, due to a normal post mortem process that causes muscle relaxation, leading to enlarged opening in the anus. The experts also casted doubt about the recollection of the lay witnesses on the knee chest position, due to the inconsistency with the lividity pattern. Neither defence expert believed there was evidence of recent sexual assault.

\(^{364}\) *Ibid.* at 529 lines 1-35.  
\(^{365}\) *Ibid.* at 533 lines 1-10.  
\(^{366}\) *Ibid.* at 524 to 534. Dr. C. Smith was on the stand from 2:35 to 2:55p.m.
Dr. Jaffe’s opinion of the size of the anal opening was ambiguous. While he opined that it was likely due to a post mortem change, he also agreed that it could be larger than normal. However, his opinion was that there was no recent injury to that area:

A: The anal opening is gaping which I think in a living child would be of great significance. In a dead child however, in a dead body of any age, the sphincter muscles relax and the opening tends to gap. It is my impression that perhaps the gaping here is perhaps a little more than one would expect simply by post mortem relaxation. I see no injuries to the anal opening on the photographs which I have seen, no recent injuries. Doctor Rasaiah sent me some sections of the anal area and further up the rectal area. I see some damage which I regard as old damage. I see no recent injury.  

Dr. Jaffe testified that “I have difficulty in reconciling this pattern of lividity with the so-called knee-chest position in which the child is said to have been found in.” However, he did not explain how the observed lividity pattern was inconsistent with the knee chest position.

Dr. Jaffe testified that a “fissure” is a “narrow but deep wound” and he “saw no such wound either on the photographs or on the microscopic examination.”

Dr. Jaffe was not questioned on the bruises on the thighs.

Dr. J. Ferris

Dr. Ferris was not questioned on the size of anal opening specifically. However, in his report (June 1994) he did not rule out chronic sexual abuse, but cautioned that post mortem dilatation must also be considered. He testified that he did not see the anal fissure that Dr. Smith noted, nor “evidence of any sex activity related injury that could be described as occurring at

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367 R v Mullins-Johnson Trial Transcript, Evidence of Dr. F. Jaffe at 585-586.
368 Ibid. at 587 lines 15-25.
369 Ibid. at 586 lines15-20.
370 R v Mullins-Johnson Trial Transcript, Evidence of Dr. J. Ferris at 655 lines 15-17.
or around the time of death.” He explained that based on the blanching and lividity patterns that Valin was in a “semi prone position.”

3.3.2 Appeal Experts Testimony on Sexual Assault

Dr. Pollanen

Dr. Pollanen’s opinion was that there was no evidence to support sodomy. He explained that using the size of the anal opening as a sign of sodomy was unreliable. He also noted the discrepancies of the knee chest position, as inferred from the lividity pattern. He doubted the correctness in the finding of the anal laceration. As for the bruises in the genital areas, Dr. Pollanen agreed that these could have occurred close to the time of death, but provided alternative explanations which could not be excluded for their presence. These will now be discussed in more detail.

Dr. Pollanen provided more details on post mortem dilation. He cited an independent study by McCann et al. which noted that the average post mortem diameter of the anal opening in children is 1.4 cm. (Compare to the dimensions of the anal gap in this case study: 1.4 cm by 1.7cm). The photos of the anus of other children demonstrate that there are features which “mimic fissures/tears and bruising.” Dr. Pollanen also questioned the method employed to prepare the microscopic slides, as the procedure of slide preparation itself can lead to artefacts. He also questioned whether the anus was thoroughly sampled. Dr. Pollanen’s opinion that there was no acute injury to the anus was supported by comparing photos of the anal opening

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371 Ibid. at 655 lines 20-25.
372 Ibid. at 653 lines 30-35.
374 Ibid. at 7.
from a known case of anal injury in a young girl. 375 As for the anal fissure, his view was that this was due to autolysis or histological artefacts, caused by the dissection or tissue preparation. 376 Finally, he noted that body positions do not help diagnose sexual assault, although no elaboration was given on why this is. He noted that he could not conclusively opine on the bruises observed on the limbs, knee or buttock. 377

Prof. B. Knight

Prof. Knight did not observe any evidence of a tear during his examination of the re-cut sections from the ano-rectal-vaginal areas. As for bruises on the thighs and buttocks, his opinion was that the saddle or cross bar of the bicycle could have caused injuries in these areas.

Dr. J. Butt

Dr. Butt noted that the large anal gap could be explained by the fact that the body was placed in a such a position (“frog-leg”) that, together with post mortem relaxation, made the anal gap appeared large. 378 He noted also that he could see no evidence of acute injury to the anus. 379

Prof. J. Crane

Dr. Crane observed bruises on the buttocks and thighs. He wrote, “the inner thigh injuries are not however associated with any apparent vaginal injury to indicate possible sexual interference of the genital region.” 380 He noted that there was no evidence of injury to the vagina. The anal

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375 The report included technical descriptions of both cases which cannot be readily understood by a layperson. The author is unable to follow the logic behind his explanation on how the known case’s characteristics differed from Valin’s. It was also unclear as to whether the “linear breach” is related to the laceration discussed by Dr. Smith. This part of the report was likely supplemented by the in-person Power Point that Dr. Pollanen delivered to counsel before the 2007 appeal.
377 Ibid. at 15.
379 Ibid. at 6.
dilation is within normal range in deceased bodies of young children. He noted he did see a tear in the ano-rectal area, which he attributed to an artefact.381

Prof. C. Milroy

Prof. Milroy’s opinion was that the anal dilation was a normal post mortem event, which is often misinterpreted to be signs of abuse.382 He made no comment on the knee-chest position. While he did not specifically comment on the anal tear, he noted that the histology of ano-rectal-vagina area was normal. He did not opine on the bruises on the buttocks and thighs.

3.3.3 Critical Commentary of the Expert Opinions on the Evidence of Sexual Assault

The Crown experts’ testimony placed a great deal of forensic significance to the size of the dilated anal opening. Crown experts based their opinion on an experienced but subjective interpretation of the size of the anal gap. The defence experts (trial and 2007 appeal) were unanimous that this was a normal post mortem observation. Although Dr. Rasaiah gave some ranges of the sizes in his trial testimony, it was unclear as to the foundation for these dimensions. There was no information as to whether it was based on his own practice experience. Trial defence expert testimony also suffered from ambiguity. Dr. Jaffe said, “It is my impression that perhaps the gaping here is a little more than one would expect.”383 Such generalized description should be supported with more precision. How much is “a little more”? How does an expert know when the enlargement of the opening has forensic significance? In contrast, the appeal defence testimony was much stronger than the trial testimony. Dr. Pollanen cited the support of an academic paper by McCann et al384, published in 1996, that described post mortem dilations of anal gap. Crown counsel wrote in the 2007 Respondent Factum:

381 Ibid. at 7.
383 R v Mullins-Johnson Trial Transcript, Evidence of Dr. F. Jaffe at 586 lines 1-5.
“...none of the experts who testified at trial about postmortem gaping had a scientific foundation for their conclusions about its causes. This is now provided for in this scientific study. This article is published in a reputable journal, and while Dr. Rasaiah rejects its authoritativeness, it represents a significant and first advance in scientific support for postmortem anal gaping.”

Opinion based on subjective interpretation without independent support was also an issue with respect to signs of injury or trauma to the ano-genital area. The opinion of Dr. Zehr was highly convincing that Valin had been a victim of sexual assault when one assumes that she can correctly interpret signs of abuse, due to her experience. What we have here is an expert’s subjective interpretation of raw data: the expert describes how the tissue is worn away and abnormal. We take her word when she said that she has experience examining children who have been injured in the playground and distinguishing bruises resulting from those events from bruises from sexual assault. We assume that she has diligently referred to the literature about how to distinguish these injuries, without asking her to cite the specific references. Her explanation appeals to common sense. It makes intuitive sense that a victim of sexual abuse would sustain physical signs of injuries such as bruises and tears. The interpretations given by Dr. Zehr and Dr. Rasaiah were made without corroboration from independent studies. There was no questioning on whether there was any systematic recording of data. That is, the essence of their opinions was that the anal opening was abnormally large, conclusions which are derived

386 Dr. Zehr was qualified as a medical doctor since 1987. She had additional training in obstetrics and gynecology, including training in sexual abuse in children. Evidence of Dr. Zehr, Trial Testimony at 237-238. Dr. Zehr was asked by the court about her competence in giving an opinion playground versus assault injuries, based on having seen “many children”. She replied in the affirmative. See Trial Transcript 252.
387 R v Mullins-Johnson Trial Transcript, Evidence of Dr. P. Zehr at 251-252.
from their past experience and judgement. This exemplifies the “trust me” approach that the courts are moving away from.\(^{388}\)

It is tempting to simply accept whatever the experts say when they claim they can recognize when a particular observation (e.g., size of anal gap) is normal based on their practical experience. However, studies have shown that human memory is not reliable.\(^{389}\) Therefore, to test Dr. Rasaiah and Dr. Zehr’s opinion, one could ask whether they have been systematically recording the sizes of the anal gap and keeping track of whether the gap in children they know to have been victims of sexual assault are indeed larger. It would be preferable to have numerical data of this sort, rather than relying on their recollection off the top of their heads, as in Dr. Rasaiah’s testimony. Furthermore, years of experience is also not a reassurance that the witness has expertise.\(^{390}\) Both Dr. Zehr and Dr. Rasaiah has many years of practice experience, which leads to the assumption of their expertise in identifying signs of sodomy. It would have been beneficial if the court had information on whether these experts took courses that ensured their skills and knowledge were up to date. Edmond et al. pointed out that practice without feedback does not improve one’s skills.\(^{391}\) For example, if a pathologist does not receive continuous training with feedback, it is likely that they never surpass the level of competence of their initial training. Finally, it is tempting to believe that since these doctors consulted with each other, some sort of peer review has occurred and hence, the doctors’ (Dr. Zehr and Dr. Rasiaah) opinions must have been trustworthy. In other words, one might reason that it was not just one doctor’s opinion that sexual assault occurred. Dr. Zehr had the support of several doctors, which must mean that her opinion must be valid. In fact, proper peer review should be


\(^{390}\) Ibid.

\(^{391}\) Ibid. at 149.
independent and blindly performed,\(^{392}\) meaning that the reviewer should not know the identity of the author of the opinion they are reviewing. Independent reviewing avoids the doctors from influencing each other’s opinions. Blind reviewing prevents one doctor from influencing the other. Of course, in practice, it is natural for doctors working in the same hospital to confer with one another. In such instances, it would not be practical for doctors to obtain “blind” reviews. However, as Dr. Smith was highly regarded at that time, it is difficult not to be influenced by his opinion. Indeed, Dr. Ferris retracted his trial opinion in 2006. He was honest in confessing to having been overly influenced by Dr. Smith in 1994.\(^{393}\) Therefore, the fact that several doctors agree to one opinion does not necessarily make the opinion reliable.

In contrast, Dr. Pollanen’s opinion was not just based on what he believes to be true as a result of his experience. He supported his opinion by relating to the specific details of the body, and referencing his findings to the paper by McCann and also by comparing to a positive control, which was a 10-year old female victim of anal trauma who had a known cause of death (strangulation by ligature).

Despite this strength in including independent support, Dr. Pollanen’s analysis was highly technical and difficult to understand by a lay person. He compared photos and histological slides from Valin to that of the control and to McCann’s paper. His analysis is as follows: (underlined parts are phrases that would require assistance from the expert to understand)

For the positive control, the anus is mild to moderately dilated. The anal columns are visible and the anal margin is minimally irregular (compare to McCann et al, figs. 7 and 8). There is circumferential lividity (compare to McCann et al, figure 5). There is irregular

\(^{392}\) *Ibid.* at 149.

vertically oriented laceration at 12 o’clock and a separate irregularly vertical oriented laceration at 6 o’clock. Microscopically, there is a partial thickness anal laceration characterized by a discontinuity in the non-keratinizing stratified squamous epithelium of the anal surface (figure 2, 50X). There is acute marginal interstitial hemorrhage in the subepithelial connective tissues (figure 3, 200X).

For Valin Johnson, the anus appears dilated. The anal margin is circumferentially smooth (the anus is maximally stretched radially, since the photograph was taken with the body in the knee-chest position). There is circumferential perianal lividity (compare to McCann et al, figure 5). Microscopically, there is a linear branch in the colonic mucosa that extends though [sic] the lamina propria, and the muscularis propria. The linear breach or defect contains fecal matter (figure 5, 50X). There is scanty focal extravasation of erythrocytes at the termination of the linear defect, but there is no interstitial hemorrhage surrounding the defect (figure 6, 100X).

In conclusion, based on the reviewable evidence available to me I find no evidence of acute penetrating anal trauma in Valin Johnson. I find no evidence of old trauma, but this cannot be excluded, since anal mucosal trauma may heal without apparent residual lesions such as scarring. 394

As the terms used to describe the observations are highly technical, it is challenging for a factfinder to reason for himself how Dr. Pollanen came to his conclusion. The thesis author is speculating that the presence of “acute” bleeding or “interstitial hemorrhage” in the control is absent in Valin, which lends support that Valin was not sodomized. It is unclear how the appearance of the anus of the control subject’s (a girl who was known to be sodomized) differed from that of Valin. Both control and Valin exhibited “circumferential lividity”. It is unclear whether it is the difference in the appearance in the anal margin between the control and Valin, or whether the presence of “anal columns” in the control versus its absence in Valin that furnish macroscopic evidence that Valin was not sodomized. Another issue with this analysis, and one that was honestly pointed out by Dr. Pollanen, was that there was only one control subject. Practically, it must be very difficult to find such controls. Nevertheless, having just one control makes it difficult to determine whether any particular characteristic seen in the control subject was truly due to injury from anal penetration.

We now come to the two pieces of evidence that suggested Valin was sodomized the night of her death. Crown experts relied on the body position and the presence of a laceration in the anus. With respect to the body position, there was some confusion as to the exact way the body was positioned. Dr. Ferris noted that the lividity patterns were inconsistent with a position where Valin would have been on both her knees. Dr. Crookston (coroner) described Valin as being found in a "sitting in a cross legged position."395 Indeed, Dr. Smith himself became uncertain during his cross exam about the body position. The reason why this piece of evidence was discussed at length is because the position is suggestive that Valin died while being sodomized (evidence in favour of sodomy being committed). Regardless, the thesis author is in agreement with Dr. Pollanen, that the body position has no probative value. Firstly, while one might have assumed that a knee-chest position meant that sodomy occurred, it could also be a consequence of Valin adopting this position (doubled over) as a result of being in pain from some other cause, perhaps from a disease that escaped diagnosis. Secondly, a perpetrator could have manually asphyxiated Valin, regardless of whether sodomy was committed beforehand, and the knee-chest position could have been adopted as a self-defence posture. This means that the body position has no relation or probative value as to whether sodomy occurred, or whether Valin’s death was from natural causes.

With respect to the evidence on the anal laceration, there was conflicting evidence on the existence of the laceration. Dr. Smith’s comments on this laceration was based on a comment that Dr. Rasaiah made in his report. Clearly, Dr. Rasaiah did see the laceration.396 While Dr. Smith was certain there was a microscopic laceration or tear in the anus, trial defence expert Dr. Jaffe who was present during Dr. Smith’s testimony disagreed: “No, the term fissure applies to a narrow but deep wound, and I saw no such wound on the photographs or on the microscopic

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396 See Dr. Rasaiah’s report, Rasaiah, B. Exhibit #26, Report of Post Mortem Examination. Trial transcript of R v Mullins-Johnson, at p.6b, referring to “slide 5”.
Dr. Ferris also noted that there was “rectal laceration seen on the microscopic examination that can be interpreted as evidence of anal penetration several hours before death.” It would also have been helpful to the court if Dr. Smith, Dr. Rasaiah, or Dr. Ferris, who claimed that they did observe the laceration, to point it out directly on the photo or slide with an associated scale, and marked as an exhibit, so that all experts could comment on this issue without confusion.

The second controversy with respect to the anal laceration was the forensic significance of the laceration, assuming it did exist. Information from independent texts indicated that post mortem bruising or bleeding can occur, which could account for the hemorrhage. As such, one realizes that a wound that has no associated immune response does not necessarily indicate that it was caused before death. In this case, the experts disagree with the interpretation of the laceration. Dr. Smith’s view was that it was “recent” due to the lack of observation of immune response cells. Appeal expert Dr. Pollanen noted in his report that the tear was likely due to “autolysis” or “artefacts” from slide preparation. To resolve this, using an evidence based approach, the question to ask each expert was how would one distinguish a tear that is due to artefact or autolysis from an ante-mortem injury? Since an expert has a duty to the court, if all these causes are indistinguishable, this should be frankly and explicitly stated.

In summary, applying an evidence based approach revealed that both trial and appeal expert opinions could have benefited from more support. Trial expert opinions that claim injury in the ano-genital area would have been stronger had they demonstrated that their interpretations had foundations by comparison to independent studies. On the other hand, Dr. Pollanen’s report

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397 R v Mullins-Johnson Trial Transcript, Evidence of Dr. C. Smith, at 476, lines 1-10; Evidence of Dr. Jaffé, at 586 lines 15-20.
398 R v Mullins-Johnson Trial Transcript, James A. Ferris, Report, Exhibit #36 at 931. Dr. Ferris later retracted his opinion and stated in his 2006 report that the laceration was very likely due to an artifact, see R v Mullins-Johnson, 2007 ONCA 720, (Ferris, James A. Letter to James Lockyer, January 12, 2006 in “Joint Record Vol. 2, Pathologists’ Reports and Correspondence (And Related Report of Dr. Zehr)” ) at 5.
399 Polson, Essentials, supra note 158 at 140.
on its own did not provide an explanation in plain language of how exactly it was that the observations in Valin differed from that in the positive control, or to those in the paper by McCann. The use of only one control subject as comparison gives rise to uncertainty as to whether the characteristics seen in the control subject truly reflects those caused by anal trauma. The report did not discuss which alternative causes (autolysis or dissection) would be more likely, or whether it was possible to distinguish between these causes based on the appearance of the tear. (It is assumed at this point that the oral presentation Dr. Pollanen presented to counsel from AIDWYC and the Crown in 2005 before the appeal had provided such explanation.) ??

3.3.4 Questions facilitating a critical analysis of the issues in the Circumstances of Death

If a trial judge did not have the benefit of the experts at the 2007 appeal, would the weaknesses in the Crown expert testimony on sodomy have been detected? Similar to the Time of Death and Cause of Death issues, a judge who had taken some forensic pathology courses, or who performed his own research could have learned about the caution one must take in assuming enlarged anal openings are signs of sodomy. The Spitz text cautioned that “postmortem dilatation and flaccidity of the vagina and anus may produce the appearance of a sexual attack or sodomy.”400 Spitz’s textbook also taught that rigor mortis begins in the smaller muscles first and progresses onto the larger muscles.401 Moritz also wrote about this as a classic mistake. He noted, under a heading of “Abnormal distensibility of the rectum, vulva and vagina” that “after rigor mortis has dissipated, these muscular canals become readily distensible. Thus the easy admission of a larger instrument or more fingers than the canal would have readily admitted in life is sometimes erroneously construed as evidence of antemortem injury incident to rape or

400 Spitz, Guidelines supra note 157 at 41.
sodomy.⁴⁰² Given these pieces of information, it was likely that since rigor seemed to have begun to fade, the anus could have also begun to become flaccid, which could have accounted for its enlarged appearance.

As in the Time of Death and Cause of Death sections, I propose some guiding questions on the issue of sexual assault:

- There was a great deal of confusion as to whether the laceration was there or not. Were the slides labelled unambiguously? Are all the experts looking at the same slide? Are they looking at the same area in that slide that has a pattern which could be interpreted to be a laceration?
- What are the ranges that are found of post mortem anal openings in literature? Has there been any literature (independent studies) which document the range of sizes one might expect with and without post mortem effects?
- A fact-finder cannot make any meaningful assessment when he is given vague descriptive terms, like “much larger than normal”. What is normal? It would be better to give the range and distribution of sizes.
- How does the fact that rigor has begun to fade in this case affect an interpretation of the size of the anal gap?
- Are there alternative explanations for why a child would be found in a knee-chest position?
- Looking at the exhibit where Valin’s left leg seems to be more extended than the other, and given the fact that rigor has set in, doesn’t that contradict the knee chest position? If

so, can you provide an explanation to reconcile the contradictory lay testimony and the photo evidence (and the lividity evidence).

- How would a pathologist distinguish whether bruises in the ano-genital areas are caused by sexual assault versus bruises caused by riding a bike, or riding on a seesaw, which was present at the park?\(^{403}\)
- Dr. Smith says that he saw a laceration that had some bleeding associated with it. How can one tell whether this injury (bleeding) and absence of immune response is due to the fact that the act was recently before death (hence not enough time to trigger the immune response), and not due to a post-mortem occurrence?

Chapter 3.4 Putting it altogether: lessons learned from \textit{R v Mullins-Johnson}

Alan Moritz, the forensic pathologist and namesake for the body cooling formula used by Dr. Rasaiah, wrote in 1981 about the “classical mistakes” in forensic pathology. Curiously, he presented the scenario of a pathologist who errs in using Sherlock Holmes type of intuitive deduction. He said that the presence of bruises in the neck does not necessarily mean they were caused by “the fingers of an assailant”, nor the presence of “anal excoriations” necessarily being proof of sodomy. Moritz warned that the prestige of a forensic pathologist, and the fact that he had access to the original evidence, gives him an “exceedingly powerful position in the court room,” where his opinion often goes unchallenged. He warned colleagues not to rely on “hunches.”\(^{404}\)

What seems to have happened in this case is that the prosecution based its case on a theory which seemed to have plenty of physical evidentiary support. One might be persuaded of

\(^{403}\) In the Appellant Factum (2007), it was noted that Valin was learning how to ride a bike around that time, and that there was a seesaw in the playground where she played the day before she died. \textit{R v Mullins-Johnson}, 2007 ONCA 720, 87 OR (3d) 425, (Appellant Factum, 2007, David Bayliss and James Lockyer) at para. 135.

foul play if all one was told was that there was a healthy girl, who suddenly died overnight, without apparent reason. When she was found, she was crouched over on her knees, and her face and her chest had many dark purple spots and broader which looked like bruises. There were pin point blood spots under her eyelids. Her anal opening was larger than what one expected to see. There were also bruises in the pubic area. There was vomit found close to her on the bed. At one point during that evening, the only people who were at home with her was her younger brother and her uncle, Mr. Mullins-Johnson, who was her babysitter. To add fuel to the fire, the uncle had previously been convicted for armed robbery, and had attended counselling for anger management.405 Facing this set of circumstantial facts, it is tempting to suspect the uncle. Imagine adding to these facts was the autopsy doctor’s opinion that the girl died between 8 to 10 p.m, and that she had either been strangled or smothered. This medical opinion would easily convince one that the uncle had killed the girl.

Why were the courts unable to reach an acquittal until 2007? Instead of seeking out the cause of death objectively, the trial process yielded a verdict of guilt, even when there was no supporting forensic pathology evidence. The Crown earnestly looked for further facts to secure a conviction. Defence also did their best in trying to undermine Crown evidence, including adducing a theory that Valin had been chronically abused, and that her father was a possible suspect. Circumstantial facts were presented as probative evidence of “guilt”, such as the whereabouts of Mr. Mullins-Johnson the night before, his demeanor the morning Valin was discovered dead, the fact that he had taken a shower that day at a relative’s place instead of at the Johnson home, where he resided,406 the fact that he had gone to counselling (for anger management),407 and that he had a problem with drugs.408 None of these facts were direct

405 R v Mullins-Johnson Trial Transcript, Evidence of William Mullins-Johnson at 686-687.
406 R v Mullins-Johnson Trial Transcript, Evidence of William Mullins-Johnson, at 697.
407 Ibid. at 687.
408 Ibid. at 688.
evidence that proved Mr. Mullins-Johnson raped or murdered Valin. As appeal defence counsel James Lockyer wrote in the factum for the appeal, there was no direct physical evidence whatsoever linking Mr. Mullins-Johnson to assault.

One assumes that the trial process should have exposed any inadequacies and flaws in the medical experts. In this case, the process failed, partly because the trial defence medical experts were also flawed. As will be discussed in s.3.4.4 below, Dr. Ferris conceded later in 2006 that he was too deferential to Dr. Smith, and he was influenced by defence counsel. Raising the possibility of Paul Johnson as a suspect is in effect supporting the view that murder did occur, rather than focusing on the inconclusive nature of the pathology evidence. This may also be why trial defence experts also seemed to have supported strangulation as a possibility of cause of death.

Had it not been for the notoriety of Dr. Charles Smith, it is uncertain whether this case (and many other cases) would have received a “second look” by AIDWYC. It is fortunate that AIDWYC had the assistance of various experts, including Dr. Pollanen in 2005. However, as shown in the critical commentary sections above, it was possible for a lay judge to critically evaluate the expert opinions, using an evidence based approach, even if the judge did not have access to additional experts. In this particular case, one can see basic forensic pathology courses would of course be helpful. Indeed, such a course could well have educated a judge about known facts, such as Tardieu spots, and their potential for misleading a pathologist to conclude asphyxia. Courses in forensic pathology would have educated judges that time of death estimates are very unreliable. These courses could have shown judges that the post-mortem

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410 It should be noted as well that Dr. Pollanen was not commissioned by any party to write a report. According to the appeal Crown factum, AIDWYC had originally intended for Dr. B. Knight to review the work of Dr. Smith. Dr. Pollanen took it upon himself to review Dr. Smith’s work. R v Mullins-Johnson, 2007 ONCA 720, 87 OR (3d) 425, (Respondent Factum, 2007, Campbell, Kenneth L. and Michal Fairburn) at para. 51.
cooling process is complex, where the rate of cooling is not a simple fixed quantity. For criminal judges who often have to sit on murder trials, it is worthwhile to attend such courses. Apart from specialized training in forensic pathology, there may be more general considerations about approaching expert opinions which helps evaluating the validity of expert opinions. Even where the judge is presiding over a jury trial, a judge specially educated on handling expert opinions is better equipped in his role as gatekeeper or referee, or in giving instructions to the jury in critically evaluating the expert evidence. The next section is a summary of the lessons learned from this particular case study, which might be taken as a useful general approach to forensic expert opinions.

3.4.1 On the Limitations of the Adversarial Trial process

In the adversarial process, the judge or jury evaluates the witnesses on live testimony, which includes direct and cross-examination. This process is assumed to be effective in revealing the truth. Secondly, the judge and the jury are expected to be passive observers, who are invited to evaluate only the evidence chosen by counsel. These aspects of the trial are fundamental. Yet, in this case, the trial did not expose the flaws in the Crown expert testimony. In fact, these traditional aspects hindered the ability to thoroughly evaluate evidence in this case.

Ordinarily, the jury is asked to assess whether a witness’s testimony is credible. A jury often considers whether the witness is being honest, or whether they can competently recall the facts. When evaluating experts, it is also tempting to assess the credibility of person, rather than the substance of their opinion, much of which often does appear beyond their intellectual capacity to evaluate. It is assumed that these assessments could lead the fact finder to successfully gauge whether the expert’s evidence is reliable. For example, factfinders may find

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it easier to consider the personal characteristics of the expert, such as the sources of bias (hired guns), confidence in their testimony, experience in the field. In this case, all the experts have seemingly stellar credentials. Yet, it did not prevent a wrongful conviction.

Judges should recognize that demeanor is ineffective in assessing expert opinion. Confident opinions are not necessarily accurate and reliable. Edmond et al. describes the problems with the use of jurors to use confidence as an indicator of reliability, also known as “Confidence Heuristic Model”. Studies have shown that the correlation between confidence and accuracy is weak. This has been demonstrated in studies in doctors’ confidence as related to their accuracy in diagnosis to lay people’s confidence in their ability to detect deception. Dr. Rasaiah came across very confident. His answers are easy to understand and appeals to common sense. Yet, it was subsequently shown that he was incorrect. Furthermore, juries must distinguish whether an expert is conceding his own ignorance in a subject matter and whether he/she is educating the court on the fact that the scientific evidence itself has limitations. In a trial, the role of experts is to give answers to important questions, not to come to court and say they do not know. In this case, everyone wanted an expert to tell them clearly and confidently “when did Valin die?” Dr. Rasaiah provided a clear and easy to understand answer. He was definitive in using 1.5°F/hr as the general cooling rate. His formula was simple and appeals to intuition. Other experts’ answers revolved around uncertainty and complicated mathematical concepts.

Another hallmark of the common law adversarial process is the passivity and neutrality of the judge and jury. While judges and juries are allowed to ask few questions, their scope for intervention is very limited. In this case, the jury asked whether Dr. Rasaiah took the

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413 Ibid. at 150.
temperature of Valin during autopsy: “If Doctor Rasaiah is recalled to the stand, could he tell us what the rectal temperature was when he did the autopsy? To give us a better indication of how quickly the body cools, that is, 82ºF at eight a.m. what temperature at one p.m.” 414 The court declined to have the expert return to answer the jury’s question. If another reading had been taken, it could have demonstrated to the jury that the rate of cooling may not be 1.5ºF/hr as Dr. Rasaiah taught. The inability of the judge/jury to ask questions also means that any misunderstanding of the factfinder of the expert testimony cannot be cleared up, which is frustrating both to the expert and to the factfinder.

3.4.2 On Experts: Do not assume the “teaching” of the expert is correct

As articulated in White Burgess Langille Inman v Abbott415, the duty of the expert is to the court, not the party which retained him. He must be impartial and assist the court in understanding technical facts. The Supreme Court has held that the expert witness must testify on oath that he understands this duty. There is an assumption that the expert is a person who can be trusted to provide an objective and unbiased opinion.416 One may assume that when an expert is merely explaining concepts and providing information or knowledge to the court, that their testimony is likely reliable. It is not their subjective opinion that they are providing at this point in their testimony. Rather, we are relying on them to educate the court on knowledge the court needs to make its own decision. When the expert is in the role of an educator, they are providing “statements of teaching”, that is, neutral information and knowledge that is pertinent to an issue.

Education is often perceived to be a neutral activity. Based on the experts’ credentials, and after the release of White Burgess, the trier of fact may be tempted to accept the expert’s

414 Jury Question. Trial Transcript at 595.
teachings without question. He may trust that the expert is fully competent and that he will perform his duty to the court in good faith. It is very difficult to adopt a deferential attitude to learn new material from a teacher, while simultaneously be on guard for possible flaws in the content being taught. In other words, a student rarely “second guesses” a teacher’s competence. A partisan expert may well take advantage of this vulnerability in factfinders to attempt to mislead during his role as an educator. This makes it even more important that the court must be vigilant to incorrect or misleading information taught by experts. In this case study, for example, the court was not presented by experts with the up-to-date scientific knowledge about pathological significance of petechiae or bruises. The assumption that the teaching of an expert must be correct was never challenged.

Rigorous scrutiny of an expert’s evidence on purportedly neutral factual knowledge could not achieved by the jury without the help of independent sources. In this case, we can see that if an independent report, like that of Dr. Pollanen’s, had been presented to the jury, by way of an amicus brief, we would likely have an acquittal, as we did at the appeal in 2007. However, unfortunately, he was not retained at that time, nor were the other experts who also supported Dr. Pollanen at the appeal. Nevertheless, it is clear that by bringing in independent sources of knowledge on the subject, this could have assisted the jury in analyzing the expert opinion.

One of the major strengths of Dr. Pollanen’s report was that references to academic literature was cited to support his opinion in his 2005 report. This is particularly helpful because in an adversarial process, there is always the possibility that an expert for one party is biased, whereas knowledge cited from a totally independent source, and especially from academic
studies that has no relation to the litigation ought to be more objective. The expert opinion should be probed for independent support for their statements of knowledge. When one is evaluating an expert’s opinion which consists of their interpretation of the observations, it is obvious that one would ask the expert for the logic or reasons used to arrive at their conclusions. When it is an explanation of factual scientific knowledge, support should still nevertheless be demanded from the expert. For example, instead of simply relying on what Dr. Rasaiah said about his teaching on petechiae, he should be asked for his support behind his teachings. What is the source of their knowledge? How do they know the particular fact that they are putting forward? This same question should be asked either in direct or cross. One can also lead one’s own expert to support their evidence by independent corroboration from academic literature. This support was lacking in both Crown and defence expert testimony. Experts from both sides simply recounted their versions of the state of knowledge without support. Such statements did not have any independent source of corroboration. It meant that the jury had to decide which opinion to accept solely based on whether they believe the experts are correct. The trial court was not presented with the existing literature which completely contradicted what the Crown experts said about the reliability of using petechiae as signs of asphyxia, and the existence of both ante and post mortem bruises. In other words, when the court was not presented with information from independent studies, it did not have access to the complete picture to assess the correctness of the expert’s teachings.

\[417\] Of course, academic literature that is peer reviewed is not fool proof for total reliability either. Still, if one can locate articles which contradict the experts, this would be a good place to start in testing the expert evidence in cross exam. In the end, one may have to concede that a lay juror will never be able to critically analyze specialized subject matter, even when presented with independent academic articles. Notwithstanding this difficulty, one should remember that the default in criminal law is innocent until proven guilty. The introduction of contrary knowledge should serve to a finding of reasonable doubt by the jury in the event that resolution of expert opinion is impossible due to the inability of the jury to comprehend the subject matter.
3.4.3 On Experts: Possibility that neither side’s expert opinions are reliable

The adversarial process leads one to adopt a binary approach: guilty versus innocent (the accused); truthful versus dishonest (witnesses), right versus wrong (opinions, and verdict). It may be tempting to assume that when there is a battle of experts, that when one expert is correct, the other must be wrong. The question in analyzing expert evidence is not so much choosing which side’s expert to “believe” or who is “telling” the truth. It is about questioning the evidence objectively, regardless of which side they are on. As it turned out, the answers from trial experts from both sides were incomplete on determining the cause of death. Indeed, as this case demonstrates, sometimes, the science and the trial process are unable to reveal the truth: that is, what caused Valin’s death? The trial process is focused on the determination of the culpability of an individual, rather than a purely scientific question of determining what happened. The pressure to pick sides (guilt or innocence of the accused) may distract us from diligently seeking to understand and critically assess the expert evidence objectively. In this case, both the trial Crown and defence erroneously concluded there was evidence of chronic sexual abuse.

It is worthwhile to note again here, that Dr. Ferris submitted a letter to Mr. Lockyer (counsel at AIDWYC) in January 2006, recanting his opinion at trial. He was quite candid in admitting that he was “unduly influenced by the apparent authoritative opinions given by Drs. Smith and Mian who strongly supported the observations and opinions of Dr. Zehr.” He admitted that he had based his opinion on the assumption that these doctors were correct in their interpretation of the observations in the ano-genital area. Recall that at trial, he had noted the presence of a laceration in the anus. In the letter, he stated that he “had interpreted these

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419 Ibid. at 5.
observations in the context of the opinions of Drs. Zehr, Mian and Smith.” Dr. Ferris’s letter demonstrates that an expert can also be blinded by the credentials of an authority figure in their field of expertise, resulting in a deference that would undermine their ability to form an objective and accurate opinion.

3.4.4 On Experts: Bias can affect Prosecution Experts too

Even though experts are advised they have a duty to the court, it may not prevent one from acting as an advocate. There may be an assumption that the defence expert has more potential to bias, because they are the hired guns, while Crown experts are more objective, since they have no relation with the accused. They are merely performing their duties. As such their opinions ought to be objective. Indeed, this line of argument was used by Crown counsel in his closing address.

As an example, consider the issue on the use of petechiae as indicators of asphyxia in this case. Recall that it was Dr. Rasaiah’s position at trial was that asphyxia did occur based on his observations of petechiae on various parts of Valin’s body. Dr. Pollanen’s 2005 report had contradicted this view, by citing Prof. Knight’s view that petechial hemorrhages are unreliable indicators of asphyxia. In rebuttal letter in 2005, Dr. Rasaiah cited from Prof. Knight’s “Forensic Medicine” published in 1985 which gave the appearance that Prof. Knight contradicted his own view. Dr. Rasaiah quoted a passage from Prof. Knight’s book: “Petechial hemorrhage is a classic observation and a striking characteristic of all forms of congestive asphyxia.” Dr. Rasaiah argued, “Which statement is true and did Dr. Knight mislead

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420 Ibid. at 5.
421 R v Mullins-Johnson Trial Transcript, Crown closing, at 786-788.
pathologists over the years?” This argument by Dr. Rasaiah shows us that an expert can easily adopt the role of an adversary. Dr. Rasaiah should have discovered that Prof. Knight had retracted this view in more modern texts. Indeed, in the 11th edition of the same textbook, Prof. Knight clearly noted that these are unreliable signs. Dr. Rasaiah was incorrect in suggesting Prof. Knight was misleading the public. In fact, Prof. Knight appropriately updated the textbooks to reflect the change in the state of knowledge. Dr. Rasaiah could easily have disclosed the update, but instead, he chose to highlight a statement made by Prof. Knight in 1985. This shows that when counsel or a judge asks an expert to disclose the limitations of a particular technique (eg. using petechiae to diagnose asphyxia), the expert may respond the way Dr. Rasaiah did, that is, in a biased fashion, by choosing to only discuss Prof. Knight’s 1985 statement, instead of the statement in the more up to date edition (1997).

Another example of bias in this case is illustrated when expert witnesses are influenced by counsel to testify in a way that supports their position, distorting the fact finding process. Dr. Ferris admitted in 2006 that defence counsel told him that it could be assumed that Valin was a victim of sexual abuse in the past. Dr. Ferris wrote, “My information from Mr. O’Hara (trial defence counsel) was that it could be assumed that the child Valin Johnson had been the victim of chronic sexual abuse and had apparently been murdered.” This affected the way Dr. Ferris interpreted the pathological data and formulated his opinion. It is unclear whether Dr. Jaffe was also similarly influenced. However, his unexplained change of opinion in the cause of death (see s.3.2.1) gave rise to the possibility that he too, was under pressure to testify in favour of his

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Judges should be aware that the enormous pressure from litigants to “win” can result in biased presentations and conclusions, and not assume that scientists are professionals who never succumb to such pressures.

Bias can affect both Crown and defence experts. Therefore, it is important not to make assumptions about which expert would be more biased. Instead, the factfinder should focus on the substance of the opinion.

3.4.5 On the Substance: Concept of Differential Diagnosis in Medical Science

As noted above, Dr. Pollanen’s report gave four alternative possibilities for sudden death (myocarditis, bacterial infection, metabolic abnormality and arrhythmic disorder). Such information was entirely missing at trial. What was also important was that Dr. Pollanen pointed out that various lab tests were not ordered, and as a result, these possibilities were not explored. It was not as though Dr. Pollanen simply cited a number of alternatives only for the purpose to be adversarial. While alternative explanations for cause of death was explored at trial, it was very superficial. The court was unaware that there could have been so many other additional tests that exist which could have been used to diagnose the cause. Without this full set of information, the jury was left to make their decision based on a very incomplete set of knowledge and facts about what could give rise to sudden death.

“Differential diagnosis” is a method where one gathers all the observation, and proposes all possible theories, which then gets eliminated one by one. One begins not with a theory in mind, which one then proceeds to actively seek out observations to support it. In this case, one learns that there are multiple possibilities that can fit pathological data. In this case, there are numerous possibilities that have not been ruled out. Asphyxia is only one possibility. What one

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needs to understand is that while one cannot rule out asphyxia, it is also not the only possible cause of death. This concept was completely missing in the trial examination and on appeal.

Even though the term “differential diagnosis” seems very technical, in principle, this is a logical method which should be applied in fact finding. In common law trial, parties are expected to selectively present facts in order to put their best case forward. It is thus incumbent on the neutral trier of fact (judge/jury) to understand the importance of including all the relevant facts and considering all theories and explanations, rather than only relying on the parties’ submissions.

3.4.6 On the Substance: seek to understand the mechanism that gives rise to the observation

In this case, there was a battle between experts on the cause of death. Dr. Rasaiah stated it was asphyxia and cited petechiae on the face and on the organs as evidentiary support. Dr. Smith added that the fluid accumulation or swelling (edema) and petechiae of the organs also supported the conclusion of asphyxia. The defence experts countered this opinion by explaining that the petechiae was in the areas of lividity and therefore could not have caused by asphyxia. What would have been helpful was to elicit an explanation of why petechiae would arise in the event of a mechanical asphyxiation. If the jury understood how this phenomenon came about, as opposed to simply having to accept a factual observation, and thus having to choose between the statement “all petechiae are due to asphyxia” versus “petechiae located within regions of lividity are inconclusive of asphyxia.” In other words, it would be helpful for the jury to understand the scientific mechanisms behind the observations. For example, if the expert explained why there would be swelling and petechiae in the organs when a person is strangled, and how the fluids (blood and other fluids in the body) would be distributed after death, including the special case when a person died in a prone position, it would have led a fact finder to then ask the next question: would the lividity colouring on the skin, distribution of petechiae and swelling of the
organs be located mostly on the front side of the body? Analysis based on the true understanding of the relevant phenomenon (e.g. understanding that petechiae is a bursting of the blood vessels, which can occur under various situations, not uniquely to asphyxial circumstances) is preferable to statements of medical facts (e.g. swelling of the organs indicate asphyxia.)

It should also be noted at this point that an evidence based approach involves more than simply asking an expert to provide the “evidence”, or observations they made from this case. It should question the reasoning process the expert used to link the observations to his conclusions. For example, suppose a pathologist claimed the following: “The victim was strangled. I say this because there were petechiae observed in his eyelids and face.” A lay factfinder may reason that since the pathologist is an expert, and since he points to the petechiae as evidential support, one must thus accept his conclusion without further inquiry. However, a more rigorous analysis should be seeking the scientific basis to justify the conclusions based on these observations.

3.4.7 On the Substance: No Evidence of a cause does not mean it does not exist.

Recall that in the past, people did not know the real cause of stomach ulcers. For a long time, there was no evidence to support a bacterial cause of ulcers. Doctors thought that stress caused stomach ulcers. This seemed logical, when stress does seem to worsen the symptoms. It was not until the 1984 that Dr. Barry Marshall discovered that ulcers were caused by H. Pylori bacteria. Therefore, the lack of any evidence of a pathogen does not mean that the illness must necessarily be due to psychosomatic causes.

In this case, Dr. Rasaiah was firm that since there was no evidence from natural disease, this must have been a homicidal death. Dr. Rasaiah’s statement is persuasive, as one would assume that he must have performed all the necessary tests necessary to support such a conclusion. If one did not have Dr. Pollanen’s evidence which taught the court about all the other possibilities which could also account for sudden death, we would have been quite convinced by Dr. Rasaiah’s opinion. We learn from this case that the absence of evidence was not proof of the absence of natural causes. Rather, it could well be that the tests were inexhaustive.

It may be pointless to ask the expert if all the alternatives are exhausted when the expert herself may not realize that her own knowledge is limited. A judge, knowing not to trust such a statement, should ask for follow up from experts from both sides.\(^{429}\) It may well be necessary at times like this to consult amicus expert if only one side has an expert.

3.4.8 On the Assumption that a Factfinder only needs to rely on Common Sense

The adversarial process assumes that lay factfinders can adequately assess the testimony based on common sense. Trial Crown counsel said, during his closing address, “One of the

\(^{429}\) It may be worthwhile to have the assistance of doctors as experts. It is not always forensic pathologists who may be able to assist the court as this is a question of diseases, not just “forensic” pathology.
things that I want to say to you now, His Honour may tell you this but, it’s also a matter of common sense, and strangely enough, part of the law too I think. It’s this: that when you look at a witness and test what a witness has to say and determine the credibility of the weight that you want to put on that evidence you must use common sense."

The Goudge Report Recommendation reads as follows: “Judges should remind jurors that they should apply their common sense to expert testimony and that it is up to them to decide whether to accept all, part or none of the expert’s opinion.” The intention behind this recommendation is to remind jury members that they are not obliged to accept an opinion just because it comes from an expert. However, this case study shows that one cannot always rely on common sense to reach a just verdict. As Dr. Pollanen wrote, “Expertise often provides conclusions that are not within the scope of common sense.”

Recall in the section above on Cause of Death that the Crown expert opinions appealed to common sense. Common sense does not help in assessing the evidence on petechiae and lividity. Everyday experience does not encompass what bodies look like after death, especially when the deceased died in a face down position. A jury confronted with the graphic photos of the deceased, which show what look like signs of injury, would find it difficult not to accept Dr. Rasaiah’s explanation that such signs arise from mechanical asphyxia.

3.4.9 The Need for Independent investigation by the Judge

Recall in Part II that scholars have provided questions that could be posed to an expert in order to bring out any weaknesses inherent in their testimony. The effectiveness in this approach

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433 R v Mullins-Johnson Trial Transcript, Closing Address of Crown, Trial Transcript at 785.
would depend on the objectivity, cooperativeness and competence of the expert. This case study showed that one cannot rely on an expert to be fully objective.

As an example, imagine if Dr. Rasaiah had indeed been asked (either by opposing counsel or the judge) to discuss the limitations of his methods. He would have likely have defended his opinion by saying that these are the standard methods that are commonly used. He remained steadfast in this position even in 2005, where he wrote that “The criteria of temperature, rigor mortis and post-mortem lividity are used internationally and are in all textbooks including the Report Form of the Coroner’s Act of the Province of Ontario, which we normally use to complete after post-mortem examinations.”

A better question might be to ask Dr. Rasaiah to name the specific sources he relied on, instead of accepting his testimony without question that his methods are used “internationally.” However, even this question may draw a biased answer if the expert chose to reveal only sources that do use livor and rigor mortis, or obtain out of date textbooks that support the use of these methods. For example, as mentioned in the section above on bias, in his Response Letter in 2005, Dr. Rasaiah chose to cite Prof. Knight from an older edition of Forensic Medicine, which supported the use of petechiae as markers of asphyxia, even though there were more recent editions in existence which taught that this was no longer held to be true.

Another example is that if one asked Dr. Rasaiah if he had considered alternative causes of death, other than mechanical asphyxia. He had tested for other natural causes of death, all of which returned a negative result. A lay factfinder would assume that Dr. Rasaiah knew what tests to run and that he had exhaustively excluded all possible natural causes of death. Indeed, during his cross-examination, he said, “I have considered every possible factor and this is why I

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ordered a complete toxicological analysis, and virology and bacteriology.”

Two alternative causes were explored at trial: Vagal Inhibition and Mendelson syndrome. Dr. Smith also explained it could not be Mendelson syndrome because that afflicts pregnant women. Dr. Smith also testified that “no healthy infant or child whose brain is working normally and whose bones and muscles are working normally will die from vomiting and aspirating.” Furthermore, Dr. Smith opined that since there was “a clear cause of death” in this case, that it was unnecessary to consider vagal inhibition as a possible alternative cause of death, “when we have adequate evidence to explain it without.” None of the causes mentioned by Dr. Pollanen was raised at trial. Crown experts believed that they had already canvassed all alternatives. They had erroneously interpreted the presence of petechiae and swelling in various parts of the body to prove that asphyxia was the cause of death. Therefore, asking experts to provide a list of alternative causes may not necessarily mean that the court would have obtained a full picture of alternative causes of death, which was eventually provided to the court in the appeal in 2007.

Instead of relying on the expert to provide the court with information related to any limitations and weaknesses inherent in their opinion, a judge could have learned about the weaknesses by doing his own independent research. It can be seen in this case that the textbook by Spitz contained information that were contradictory to Dr. Rasaiah’s testimony. Recall that the Spitz text contradicted Dr. Rasaiah’s teaching of post-mortem body temperature cooling. The same text noted: “Under average conditions, the body cools at a rate of 2.0°F to 2.5°F per hour during the first few hours and slower thereafter, with an average loss of 1.5°F to 2°F during the first twelve hours, and 1°F for the next twelve to eighteen hours. Careful studies under controlled conditions have shown that the decrease in the post-mortem body temperature is not rectilinear but sigmoid in shape with a plateau at the beginning and at the end of the cooling

437 R v Mullins-Johnson Trial Transcript, Evidence of Dr. Rasaiah at 317 lines 10-15.
438 R v Mullins-Johnson Trial Transcript, Evidence of Dr. Smith at 486 lines 15-20.
439 Ibid. at 90 lines 10-15.
This information contradicted what was taught by Dr. Rasaiah, who assumed a cooling rate constant of 1.5ºF/hr.

Recall in the Critical Commentary sections above, had the judge performed independent research, he would have realized that existing scientific knowledge was contradictory to what Dr. Rasaiah taught. This information would have cast doubt on the reliability of Dr. Rasaiah’s opinion. Ideally, it should be the cross-examining counsel who have caught these crucial sections. It is unclear why trial defence did not do this in this case. It could be that he was reluctant himself to do his own scientific research, and funding made it impossible for him to seek the help of a consulting expert. It could also be that defence counsel himself was convinced that Crown experts must be correct in their diagnosis of asphyxia, who decided to strategically raise reasonable doubt by implicating Paul Johnson as a possible suspect, which led counsel away from further attempts at scrutinizing the science. As Justice Rosenberg said, if such information was not brought to the attention of the factfinder, the judge should “prod lawyers” to ask the right questions. The judge could have alerted counsel to such information so that it can be tested in open court. Table 1 in Appendix B is a chart summarizing the contradictions of the Crown expert opinions to the information found in Spitz and Polson, as well as existing scientific articles.

Ultimately, this case study shows that one cannot always rely solely on the expert witness to assist the court in bringing out the full picture. The only ways a court could have learned about the unreliability in the time of death methods is through a rebuttal or amicus expert. If none are present, it would then be dependent on whether the factfinder discovered this information on his own, an issue which will be discussed in Part IV of this thesis.

440 Spitz, Guidelines supra note 157 at 22.
441 Report of Goudge Inquiry, supra note 12 at 239.
The concept of judges performing their own independent research is a controversial one in the common law system. The motivation for a judge to acquire specialized knowledge in order to understand technical facts conflicts with some of the fundamental principles in the common law trial process: party prosecution and judicial impartiality. We now move on to explore how a judge may guide a trial to avoid miscarriages of justice, in the common law adversarial process which discourages judicial intervention.
PART IV. The Role of the Judge

In Part III, it can be seen that the trial judge could have learned about the shortcomings of the Crown expert opinions either in a previously taken a course in forensic pathology, or if he had performed independent research during trial. The question we now explore is how a judge could implement specialized knowledge that was acquired independently (i.e. specialized knowledge not provided by the experts) in a trial. In the common law adversarial process, the judge takes on three distinct roles: gatekeeping, managing evidence during trial, and providing instructions to the jury before their deliberations. This section of the thesis will explore these roles. We will also review the debate on independent judicial research, citing one recent British Columbia case, *R v Bornyk*, as an example to illustrate the controversies in this area.

4.1 Role of Judge As Gatekeeper

The Supreme Court of Canada has made it clear that the judge has a duty to vet expert evidence. In *R v Mohan*, the Supreme Court held that expert evidence must be subjected to a four-part admissibility criteria. Expert evidence must be relevant, necessary, be absent of any exclusionary rule and be given by a properly qualified expert. Justice Sopinka was concerned about the dangers of expert evidence creating confusion in the minds of the jury. “Dressed up in scientific language which the jury does not easily understand and submitted through a witness of impressive antecedents, this evidence is apt to be accepted by the jury as being virtually infallible and as having more weight that it deserves.” Furthermore, there is a concern that experts could “usurp the functions of the trier of fact.” More recently, in *White Burgess Langille Inman v. Abbott and Haliburton Co.*, the Supreme Court held: “Mohan also underlined

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the important role of trial judges in assessing whether otherwise admissible expert evidence should be excluded because its probative value was overborne by its prejudicial effect — a residual discretion to exclude evidence based on a cost-benefit analysis.”446 The court therefore has always placed a great deal of responsibility on the judge to make sure expert evidence only gets admitted under special conditions, so that the jury does not get misled.

Notwithstanding the court’s paternalistic attitude, there is debate over whether a judge should take on the role of screening expert evidence, or liberally allowing all expert opinions in, so that the jury can assess the weight of the evidence. Beecher-Monas and Edmond are proponents of placing the gatekeeping role on the judge. Firstly, the fact that they are “repeat” players makes it more efficient for them to be trained to perform this task. This again calls for the need of judicial education. Secondly, juries are not held to account at the same level as judges because they do not have to give reasons. Therefore, it is impossible to find out what bases the jury relied on to reach the verdict.447 There is also the issue of the social “loafing”448 factor, where a jury member could easily just default to the most opinionated member of the jury. Another issue is the danger of a lay jury resorting to the heuristics described in Edmond and Oren Perez’s work mentioned in Part II, instead of fully engaging in the substance of the evidence. Prof. Beecher-Monas notes that judges and juries are both prone to “unconscious shortcuts.”449 Thirdly, the use of common sense is not always adequate in critically evaluating expert evidence. This is one of the reasons why it is preferable for a judge to assess the soundness of the expert testimony during the gatekeeping stage. Lay people are unaware of the challenges surrounding evaluating expert evidence. Work by scholars like Edmond and Beecher-Monas provide research that shows how expert opinions have caused miscarriage of

448 Ibid. at 32.
449 Ibid. at 15.
justice in the past. They have developed methods of inquiry and frameworks which, in effect, create a lens with which a judge could apply to perceive expert evidence with precision. These sets of criteria are not something that is apparent to a lay person. Thus, lay juries are ill equipped to assess the expert evidence.

As an illustration, in *R v Aitken*, the expert was a podiatrist who claimed that he could identify a person by analyzing their gait. He testified that his extensive experience was such that reliability testing was unnecessary. It is easy to see why a lay person could find this expert’s opinion credible. In our everyday lives, we often rely on trusting our own perceptions and interpretations based on experience. For example, a parent would believe they can identify the type of stain is on their child’s clothes without having witnessed first-hand how the child got the stain (e.g. ketchup), because they have seen tomato stains many times before. Along the same logic, if this parent was a juror, the podiatrist’s justification that he could recognize a unique gait would also make sense. However, a judge who has been alerted to the issues of expert evidence has a heightened awareness of the need to be skeptical. The judge understands the need for performance specifications for any method relied upon by an expert. A properly educated judge would not allow heuristics such as credentials or technical jargon persuade him to favour the expert opinion. Instead, they would apply a rigorous approach to analyze the substance of the opinion, such as the ones suggested by Edmond or Beecher-Monas.

On the other hand, allowing a judge to screen out evidence creates the danger of the jury not having access to all relevant facts. It places substantial discretionary power on the judge. This also presupposes that the judge is more competent than the jury in handling the science, which is not necessarily true, as discussed in Part II (see S. Gatowski’s study). In the *Mullins-

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Johnson case, the question from the jury (see s.3.4.1) showed that it was able to engage to a certain extent with the substance of Dr. Rasaiah’s opinion on the issue of using body cooling to determine the time of death. As such, it may seem dangerous for a lay judge to be given the sole discretion to vet expert evidence. If the judge is biased, or if he could not understand the substance of the opinion, or, if he had based his scientific learning on inaccurate teachings from the past cases he presided over, his screening out of the evidence would distort the truth-seeking process of the trial. As an example, in the Mullins-Johnson case, the trial judge could have assumed that the Crown expert teachings were reliable in the years after the trial, but before the result was finally overturned in 2007. He may have “learned” from Dr. Smith and Dr. Rasaiah that bruises are only formed during life, and that the petechiae on the face, chest and organs are sure signs of asphyxia. Learning about forensic pathology from partisan experts is clearly less desirable than learning in a neutral educational setting, such as taking a course in university or reading from texts that are authored by authoritative and independent sources, such as the National Judicial Institute. As mentioned in s.2.1.4, even though experts are supposed to be impartial, bias may operate at a subconscious level that will undermine the reliability of their opinion.

Based on my review of the literature and my analysis on the case study, in the context of jury trials, I argue that excluding evidence should be kept to a minimum. Giving judges the power to exclude evidence creates the danger of giving too much discretion to the judge to withhold access to the full facts. At the same time, one must not forget that assessing expert evidence requires more than common sense, and that trained judges could be much more competent in handling expert evidence. Keeping both points in mind, I propose that unless it is absolutely clear that severe prejudice will result, instead of excluding expert evidence altogether, a judge could rely on any special knowledge he has learned to raise any concerns
about the expert evidence in open court, subject to comment from all counsels. In other words, instead of being a gatekeeper, the judge could adopt the role of a shepherd, guiding the jury in a critical analysis, raising questions that would not have been apparent to a lay person, completely untrained in handling expert evidence.

As mentioned previously, judges are also referees as the trial unfolds. Judges are expected to ask clarifying questions to ensure witness testimony is clear and can be understood. While there is always the danger that judges could nevertheless pose clarifying questions in a biased way, as the questions are on record, they are reviewable on an appeal. In jury trials, it is the jury that is the factfinder. The role of a judge is to ensure that the jury can make its own decision, based on a full factual record. Evidence that may seem confusing to a judge may not be so to the jury, and thus should not be screened out on a subjective basis. Even if a judge has a forensic pathology background, and is thus more qualified to assess the expert evidence than a lay jury, it does not justify his authority or discretion to hide evidence. Instead, he should raise questions to counsel and to experts in a way that brings out all the necessary facts and information required for the jury to make its own decision. Allowing a judge the discretion to screen out evidence is a form of usurping the role of the jury.

In addition to gatekeeping, a trial judge is required to guide the jury at the end of the trial in giving instructions or “charge” to the jury. As Justice Borins, one of the judges in the 1996 Mullins-Johnson appeal wrote, the trial judge must “provide sufficient assistance to the jury to enable it to perform its duties in an informed and judicial manner. This requires that the trial judge must explain the respective positions of the prosecution and defence.”

Borins J.A., citing Azoulay v The Queen, (104 Can. C.C. 97, [1952] 2 S.C.R. 495), stated that the general rule is “that the trial judge in the course of his charge should review the substantial part of the

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451 R v Mullins-Johnson, 31 OR (3d) at 675.
evidence and give the jury the theory of the defence so that they may appreciate the value and effect of that evidence and how the law is to be applied to the facts as they find them.”

Furthermore, Justice Borins cited Justice Spence from *R v Colpitts* that it is “the duty of the trial judge in his charge to go further and to not only outline the theory of the defence but to give to the jury matters of evidence essential in arriving at a just conclusion in reference to that defence.” 452 Under the traditional adversarial process, these essential “matters of evidence” would normally refer only to the material that counsel presented at trial. However, if counsel failed to introduce this evidence, and if a judge had this knowledge, it could be argued that the judge could have a duty to ensure this information is introduced, in order to secure arriving at a just conclusion. We now enter into the debate of this very issue: the propriety of a judge conducting independent research to educate himself on the scientific issues and implementing this research at trial.

4.2 Judicial Education: Multi-level approach

Given that counsel’s goal is to advocate, and given that biases operate on a sub-conscious level on expert witnesses, the goal of ensuring a fair and full fact-finding process in cases involving complex expert evidence is ultimately up to the judge. To that end, whether it is in gatekeeping or acting as a referee, or outlining the litigants’ theory in the jury charge, it is crucial that a judge is specially trained for this task. In the *Mullins-Johnson* case, we can see that a judge who was fully engaged with the substance of the scientific aspects in an evidence based approach could have brought notice of the flaws in the expert opinions to the trial process.

Judicial education should not be limited to learning the specific details within a scientific discipline. It should begin with a course that describes how fact finding has gone awry in the

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past. It should also include the more general issues that affect expert evidence, such as the various biases that affect experts. Judges should understand that all expert evidence should be treated with skepticism, and that they should not allow themselves to be blinded by the credentials of the experts. It should include an understanding of an evidence based approach, which will prevent judges from complacently relying on the safeguards of the trial process to render a right outcome. The discussion above shows that a judge starting with an evidence-based approach could have some success in exposing the weaknesses in the Crown expert opinions. However, independent research on the particular scientific issues is often necessary either to trigger critical questions to be asked, or to verify whether the expert’s answers are accurate.

Hence, based on what we learned from this case study, I would recommend the evidence based approach articulated in Part II:

(1) *On the theory or method used*

One should seek to understand the theory and the method used. If the opinion is shrouded in technical language, could the expert assist in explaining it in layman’s terms? Is there any controversy surrounding the use of this method? What are the limitations of the method? What assumptions are made when using the method? Seek to have the mechanisms behind the method explained so that the factfinder can understand for himself whether the interpretations of the experts are logical and reasonable. Is there support from independent academic literature on the validity of this method?

(2) *Reviewing the actual procedure taken, ensuring that it was free from contextual bias*

What were the actual steps taken in this case that was used to implement the theory in
order to come to your conclusion?\footnote{In the case study, Sgt.Welton was with Dr. Rasaiah while he was examining Valin, Welton was also the constable who interviewed Mr. Mullins-Johnson that morning and had knowledge of the fact he was alone in the house 8-10 p.m.} This checks for whether there could be any contextual bias that could influence the expert’s opinion.

\textit{(3) Critically evaluating the result}

Can one arrive at alternative conclusions based on these observations (for tests that offer conclusions based on qualitative or subjective interpretations)? What is the error range or uncertainty level of the conclusion? If the conclusion had been verified, was this a blind review?

Finally, judicial education should also include a feedback/testing or certification component. As Prof. Edmond points out, results are only reliable when there is demonstrable proof that they are so. Similarly, judicial education programs should not merely consist of session of lectures that judges attend passively without having to submit any sort of feedback. Rigorous programs should implement tests that prove that the students (judges) actually demonstrate an understanding of the principles being taught. Effective communication is an interactive process, requiring the teacher to communicate the lesson, the student to comprehend what is being taught, and for the teacher to evaluate whether the student had properly understood the lesson by asking the student. Having tests in place allows the program administrators to continually improve their teaching methods. It also allows a feedback mechanism so that judges know how to improve.

\textbf{4.3 Independent Judicial Research}

An active engagement of a judge in assessing the substance of the expert evidence is crucial to ensuring adjudication based on the merits. Naturally, in order to do so, a judge must
be able to comprehend the expert evidence itself. It is one thing to lament the inability of judges
to comprehend expert testimony. It is another to ask, if the judge had received specialized
education on forensic pathology, for example, in this litigation, how would he bring that
knowledge into the trial process? Furthermore, can he supplement his knowledge while
presiding on a trial to refresh his learning and to keep up to date with the most current scientific
knowledge? The common law is content with granting a judge the power to exclude evidence
(gatekeeping). However, if a judge were allowed to introduce information into the trial process
through independent research in the name of fully engaging in the expert opinions, would this
not appear to be adding evidence to the trial process by a judge? This section reviews some of
these issues that arise from independent judicial research in the common law trial process.

While it is clearly beneficial for a judge to have some basic education on the various
areas of sciences, it would be impractical for judges to be well versed in all forensic disciplines.
There are several ways in which judges acquire specialized knowledge. One is from what they
“learned” in previous trials that they presided over, as mentioned in the previous section. A
second way is through continuing professional education courses (“CLE”). A third way, and the
most controversial one, is that judges may gain knowledge through their own research while
they are presiding over a trial. A judge will often be tempted to conduct independent research if
he is motivated to fully understand the evidence at hand for two reasons: (1) CLE’s will often
only provide basic and generalized knowledge in a particular scientific area, and hence, specific
details on a particular topic may require more tailored research; (2) ever evolving scientific
progress means that what a judge learned a few years ago at a CLE may be obsolete by the time
they preside at a trial.
According to a study in the United States, opinion is divided amongst judges themselves over whether they should do their own independent research. Some argue that a judge (and jury) should have access to the whole picture. Therefore, if the parties were unable to provide this, due to lack of resources or incompetence, then surely a judge should be allowed to do his own research to ensure that all relevant information is available for a fair analysis on the facts. Others argue that allowing independent research violates some of the most basic tenets in the trial process, including the party prosecution principle, judicial neutrality, and that a judge should only act an adjudicator, and not also as a witness and an advocate. In this section, I explore the debate in independent judicial research. I first review some of the fundamental principles behind the role of a judge. I describe the legal limits that constrain a judge in their role as fact finders, and the reasons behind these limits. I will review *R v Bornyk* where a trial judge in British Columbia conducted his own research, which was overturned by the appellate court. This is an interesting case, because unlike the *Mullins-Johnson* case, the trial judge in *Bornyk* did discover limitations of the forensic method used by the expert based on research conducted on his own initiative. *Bornyk* demonstrates how fundamental principles of the adversarial process discourage judges from diligently seeking more information to comprehend technical trial evidence. Learning from the *Bornyk* case, I will comment on how a judge could have handled the *Mullins-Johnson* case differently, with a discussion on whether doing so can still preserve the fundamental values of neutrality, fair notice and party prosecution.

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4.3.1 Principles underlying the role of a judge in the common law adversarial process

One of the hallmarks in the common law adversarial process is the passivity of the judge. Judges are not allowed to do their own investigation on the facts. In trials, the factfinder is only permitted to consider the evidence adduced by the parties. In a jury trial, it is the jury that must decide on the facts. In a judge-only trial, the judge is not only a judge of law, but also the factfinder. An appellate judge’s role is to review what is on record in the court below, and hence, is also not allowed to do their own research. Thus, there is a general prohibition for a judge to do their own research into the facts of a case. The trial proceeding is designed so that both parties are given equal opportunity to present their case. The burden is entirely on the parties to provide all the necessary and relevant facts to resolve the dispute. This model allows parties to maintain control by deciding which facts are presented to the adjudicator.

The prohibition on a judge to investigate case specific facts in dispute is grounded in “ex parte communication.” This is easy to understand by a simple example. Suppose a judge who on his own initiative interviews third parties or witnesses about facts of a case. If a judge speaks to a witness whose evidence is favourable to one party outside of the trial hearing, this gives the appearance that he is biased in only approaching that side’s witness. Furthermore, a judge who hears the facts from this witness outside of the presence of the other side does not have the benefit of hearing any rebuttal evidence from the other side. Hence, such ex parte

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456 Interestingly, judicial passivity was not always the case in common law. Judges intervened much more often in the eighteenth century, including examining the witnesses and the accused, as well as conversing with the jury during trial. See Christopher Allen’s The Law of Evidence In Victorian England. Cambridge University Press 1997 at 3.
458 There is an exception to this general rule. Facts are categorized into two types. As Elizabeth Thornburg explains, judges may not independently investigate “adjudicative facts”, which are the case specific facts in dispute. However, they are given full freedom to investigate “legislative facts”, which are those facts that are relevant to the court’s decision on questions of law or policy. (Thornburg, “Curious Appellate Judge” at 135).
459 Ibid. at 135.
communication destroys the integrity of the system, by undermining the independence and impartiality of the judge.

A few examples that illustrate where a judge’s research was held improper is when a judge telephoned a victim’s relatives before a pre-sentence hearing\(^460\) or a judge presiding over a case where the accused was suspected of using insulin, speaking to his friends who are medical practitioners at a cocktail party on the effects of insulin.\(^461\) Even internet research was found improper when a judge looked up a defendant’s website on his own.\(^462\)

What is more pertinent to this thesis is research on scientific knowledge. While it is easy to see that a judge reading scientific textbooks is not quite the same as when a judge discusses the facts of a litigation with a witness outside of court, it may not be so easy to distinguish the situation of a judge reading scientific textbook authored by a certain professor from an instance in which the judge speaks to the same professor at a cocktail party. In both scenarios, the judge is conducting *ex-parte* communication with a party, gaining information that can potentially influence the way the judge makes a decision, without all parties present. The cases in the U.S. are inconsistent. A Colorado court reversed a lower court’s use of medical texts to determine the effects of electric shock.\(^463\) The court said that the court below “assumed the role of an expert medical witness” using a treatise “which properly should be interpreted only by experts in the appropriate field.” Another court approved independent research when a trial judge educated himself on the effects of iron poisoning, stating that “it is a matter of common knowledge that courts occasionally consult sources not in evidence, ranging anywhere from dictionaries to medical treatises.”\(^464\)

\(^{460}\) Ibid. at 162.
\(^{461}\) Ibid. at 162.
\(^{462}\) Ibid. at 163.
\(^{463}\) Ibid. at 166.
\(^{464}\) Ibid at 166.
4.3.2 Judicial Notice

Even though the rule is that all evidence should be adduced by parties, there is an exemption under the concept of “judicial notice”, which means that a judge can admit into evidence information which is not open to question. The standard in Canada is “notorious or generally beyond debate.” Similarly in U.S., judges are also allowed to take judicial notice which is one that is not “subject to reasonable dispute in that it is either (1) generally known within the territorial jurisdiction of the trial court or (2) capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned.” In the U.S., judicial notice applies to technical information that is indisputable and from an “ unquestionably” accurate source. Judicial notice allows judges to consult dictionaries and maps, encyclopedias, and well-recognized treatises. Note that the trial judge must not usurp the jury’s fact finding role by relying on judicial notice to decide on the facts that the judge feels should be under judicial notice.

In Canada, R v Spence 2005 SCC 71 gave the following guidance of judicial notice:

Judicial notice dispenses with the need for proof of facts that are clearly uncontroversial or beyond reasonable dispute. Facts judicially noticed are not proved by evidence under oath. Nor are they tested by cross-examination. Therefore, the threshold for judicial notice is strict: a court may properly take judicial notice of facts that are either: (1) so notorious or generally accepted as not to be the subject of debate among reasonable persons; or (2) capable of immediate and accurate demonstration by resort to readily accessible sources of indisputable accuracy . . .

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466 Thornburg, “Curious Appellate Judge” supra note 459 at 158, citing US rule of procedure FRE 201(b).
467 Ibid. at 159, citing, United States Federal Rules of Evidence, FRE 201(b)).
468 Ibid. at 159. (See Thornburg’s article on p. 160 for a list of documents that qualify).
469 Ibid. at 169.
470 R v Spence 2005 SCC 71 at para. 53.
It may be argued that a judge should be able to introduce evidence from authoritative texts under judicial notice. However, since scientific methods are often not without its own controversies, it would likely be improper for a judge to bring in the knowledge they discover from their own research through this legal mechanism.

4.3.3. Pros and Cons of Independent Judicial Research

One can see that facts are introduced in a trial through a very limited and controlled manner. A judge is only allowed to consider the evidence before him, and cannot bring in any knowledge or information from his own research. Hence, there is a risk that any gap in the factual record (either intentional or inadvertent) has no way of being filled. This model works if both sides are equally well resourced and are able to provide the court with all the necessary and relevant information. It also assumes the rules of procedure and evidence would expose any shortcomings in expert opinions. Indeed, in *Daubert*, the court was of the opinion 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.”\(^{471}\) However, if the parties fail to provide all the relevant information required for a fair adjudication, the court will be forced to make a decision with incomplete facts. In addition, as mentioned previously, studies have shown that trial safeguards have been ineffective in exposing flawed expert opinions.\(^{472}\) Therefore, it seems sensible that one should allow the judge to conduct research will fill in gaps of knowledge in cases where parties were unable to provide full information. However, there are some drawbacks, as will be discussed below.

\(^{471}\) *Daubert v Merrel Dow Pharmaceutical, Inc.*, 509 US 579 at 596.

\(^{472}\) G. Edmond, David Hamer and Emma Cunliffe, “A Little Ignorance is a dangerous thing: engaging with exogenous knowledge not adduced by the parties” (2016) 25:3 Griffith Law Review at 385.
4.3.3.1: Uncertainty and Inconsistency

Allowing judges to conduct their own research creates a few issues: uncertainty and inconsistency. Firstly, it is impossible to know beforehand what they will discover,\textsuperscript{473} and as a result, it becomes very difficult for parties (counsel) to prepare to respond to the information that the judge has learned. What this means is that parties cannot be in control of the process. Although one may argue that fairness would be achieved if the judge is transparent and discloses all the information he found, with all parties given time to respond, there is no guarantee that the judge will necessarily disclose every single detail he discovered. There is also the problem of inconsistency amongst judges. Judges are not scientists. Even scientists have their individual specialties. Moreover, if judges resort to general internet searches, they may not recognize which sources are the truly reliable or academic ones. All these factors contribute to the uncertainties generated by judicial independent research.

4.3.3.2: Fair Notice

Another danger in allowing judicial independent research is the potential of inadequate notice. For example, in the Criminal Code of Canada, s.657.3(3)\textsuperscript{474} provides that when parties rely on experts, they are to supply the expert reports beforehand, so that the opponent has time to formulate a rebuttal, or make an informed decision on litigation or negotiation strategy. Counsel often plans far in advance of the hearing. It would be unfair if the judge should spring new technical information on counsel during the hearing, which can be perceived of as a torpedo effect. In essence, information produced by a judge last minute has the effect of turning the judge into an advocate, especially if the expert being challenged by the information is not given time to prepare a full response to the information.

\textsuperscript{473} Thornburg, “Curious Appellate Judge” supra note 459 at 184.
\textsuperscript{474} Criminal Code, RSC 1985, c C-46.
4.3.3.3: Misinterpretation of the information retrieved in independent research due to bias and lack of skill

Allowing judicial independent research can compromise judicial impartiality. There is also the danger that a judge may inadvertently research only the sources that confirm his own biases.\(^{475}\) In many areas of science, where there are existing controversies, there is a danger that the judge may settle on sources that present only the side of the controversy that the judge prefers. When a judge consults dictionaries, it is easy to see there should not be any disputable matters. However, even in medical encyclopedias and authoritative texts, there is concern that the information has since been superseded with more up to date research, that is only available in specialized journals. Usually, only experts who are familiar with the subject area would be knowledgeable as to the authoritativeness of a text. Furthermore, there is also the danger of a lay judge misinterpreting technical information.\(^{476}\)

4.3.3.4: Who is Responsible for Evidence?

Allowing a judge to do independent research also creates a question as to who has the burden of adducing evidence. One of the foundations in the adversarial process is the party prosecution principle: the parties bear the ultimate burden of providing all the evidence necessary for fact finding. Introducing the possibility that judges can also contribute to fact finding will add increased uncertainty to the parties, as they are no longer in control of the evidence. Parties will not know what a judge might find in their own research, and they cannot

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\(^{475}\) Thornburg, at 184 and 198. Judges, like experts, can also be prone to confirmation bias.

\(^{476}\) Ibid. at 185 and at 199.
control how that external research may influence the judge’s mind, especially if the judge does not disclose the entirety of their research.\textsuperscript{477}

It would thus seem that judicial research runs afoul of many aspects of the fundamental principles of the adversarial process, in terms of notice, judicial neutrality, uncertainty to the control of information and the danger of a judge misunderstanding the technical information. However, this should not come as a surprise, as the trial process was not designed with the need to deal with technical evidence that was beyond the ability of a lay person to comprehend. The limitations of our trial process have been discussed for many decades. The challenges that confront lay judges in handling scientific expert evidence is becoming increasingly pressing, as expert evidence is increasingly being relied upon, evidence which can often make or break a case. As a result, it makes sense for us to re-examine these principles in light of the issue of judicial incompetence in handling technical evidence.

Having reviewed the pros and cons of independent judicial research above, we now examine briefly the trial and appellate decisions in \textit{R v Bornyk}.\textsuperscript{478} This case is relevant, because the trial judge discovered information that undermined the reliability of the Crown expert, unlike the Mullins-Johnson case, where the error in the Crown experts’ evidence was not discovered for over ten years post-conviction. I ask the question of whether it would have been possible for the trial judge or even the appellate judges (in the 1996 appeal) to have acquitted Mr. Mullins-Johnson, if they had taken their own initiative to examine the information in the independent textbooks or did their own research in understanding the limitations in the pathology methods of estimating time and cause of death. I will explore what the relevant legal

\begin{itemize}
\item \textsuperscript{477} \textit{Ibid.} at 184.
\item \textsuperscript{478} \textit{R v Bornyk}, 2013 BCSC 1927 [\textit{Bornyk} 2013]; \textit{R v Bornyk}, 2015 BCCA 28 [\textit{Bornyk} 2015].
\end{itemize}
principles apply, when a judge discovers limitations in an expert witness from his own independent research, and brings this into adversarial process.

4.4 Unique Case of Trial Judge relying on independent research: R v Bornyk

R v Bornyk (British Columbia) serves as a good example of how a judge who has been educated on the limitations of a forensic method was able to recognize the many weaknesses in an expert opinion. He actively engaged in a critical analysis on the substance of the expert’s opinion, and acquitted the defendant, after finding that the expert evidence was unreliable. Unfortunately, his diligence was not rewarded, as the B.C. Court of Appeal overturned his decision of acquittal. This case sheds light on the law on independent judicial research on scientific facts.

This is a break and enter case. A home in Surrey B.C. was broken into in July 2010 while the homeowners were away on vacation. The police investigated the scene. The entire house had been ransacked, but the police found only one latent fingerprint on the plastic wrap of a toy box in the house. A large portion of the print was located in a rippled area of the wrap, resulting in only a partial part of the fingerprint that could be used for analysis.\textsuperscript{479} The print was run on a computer against a database of known prints called the Automated Fingerprint Identification System (AFIS). Although there was no positive result when the print was first run in July 2010, one did arrive in early May 2011. The latent print was found to match known prints obtained from the accused in 2006. Alerted to this result, the RCMP fingerprint expert, Corporal Wolbeck did a comparison, but using another set of prints from the accused which was taken in 2010.\textsuperscript{480} Corporal Wolbeck testified that he used the ACE-V method in his analysis, that he has never made mistakes and his result was verified by another RCMP officer. Corporal Wolbeck described how fingerprint comparisons are done: individualization can be

\textsuperscript{479} Bornyk 2013 supra note 480 at para. 9.
\textsuperscript{480} Presumably, the accused had been arrested for some other crime, once in 2006 and once in 2010, which resulted in his prints being taken and entered into AFIS.
accomplished by comparing so-called Galton details, such as the paths of the friction ridges, whether they split off or just ends, and the shape of the ends and edges of the ridges. According to Corporal Wolbeck, he concluded that the latent print and the known print both come from the accused’s finger.

This trial is striking for two reasons. Firstly, the accused was linked to the crime by one piece of evidence only: a single latent fingerprint found at the home. Also unique in this trial was the great length to which the judge engaged in the scientific evidence. This was a judge only trial. As such the judge has dual roles of assessing admissibility and weight to the evidence. When the case was on reserve, the trial judge, Justice Funt became aware of scholarly articles which described the limitations on fingerprint analysis. He learned that there is an inherent subjectivity to the interpretation. Comparisons are not as simplistic as one may expect. For example, even when the same finger is used to make two prints in a row, they will not perfectly match. Thus, when an examiner analyses two prints to decide whether there is a match “within tolerance”, his conclusion has a subjective element, as it is dependent on his experience and knowledge.481

In applying what he learned from the articles, Justice Funt pointed out the existence of many “troubling aspects” of the evidence, such as institutional bias; the use of a photocopy of the print instead of the original; non-disclosure of the lab notes to defence; omission of calling the verification of the other RCMP agent as witness amounted to hearsay; possible existence of exculpatory aspects in the areas of the print that was not used; whether the conclusion of a “match” meant that there was zero possibility the latent print could not have come from someone other than the accused; why only the 2006 set of known prints was used, over the 2010 prints, and why not use both; and finally, the discrepancy between the two prints, which

481 Bornyk 2013, at para. 36.
consisted of two gaps. In other words, instead of complacently trusting the Crown expert’s opinion and assuming fingerprint evidence must be reliable due to their long history of use in courts, he critically evaluated the expert’s conclusion with questions that would not have been apparent to a lay judge who is ignorant of the issues particular to fingerprint evidence.

Moreover, he examined the actual evidence himself. He could see that there were clearly discrepancies between the known print from the accused and the latent print. This is the kind of substantial engagement that goes to the very heart of the evidence. He is not simply relying on secondary indicia, such as the credentials of the expert. Indeed, this sort of engagement of the substance of an expert’s opinion was what was recommended by the Scottish Fingerprint Inquiry, which stated:

It is recommended that the test be adopted that features (or ‘events’) on which examiners rely should be demonstrable to a lay person with normal eye sight as being observable in the mark. The fact-finder can trust the evidence of his own eyes: either he sees some ‘event’ in the location indicated or he does not. If not, the evidence of the examiner on that point can be discounted.

Unfortunately, Justice Funt’s diligence was not rewarded. The B.C. Court of Appeal set aside the acquittal, citing that several fundamental principles of the trial process were violated.

One was the party prosecution principle: the only evidence that a factfinder is entitled to is that which is presented by the parties. Another principle that was violated was that the trial judge cannot simultaneously be the adjudicator, a witness and an advocate. A judge in the

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482 As per Justice Funt’s reasons: If one goes to the ridge immediately to the left of the respective red dots marking the centre of the delta on the latent and the known fingerprints and traces a line towards the top of the page, on the known fingerprint there is a continuous ridge, whereas on the latent fingerprint there is a gap, a further ridge, another gap, and then a further ridge. See Bornyk 2013, supra note 480 at para. 56.

483 Edmond notes that judges prefer to rely on past decisions and commentary instead of scrutinize long established techniques, such as fingerprint evidence. Edmond, “Pathological Science”, at 14.

484 Bornyk 2013 supra note 480 at para. 38.

485 As commented by Elizabeth Thornburg, counsel selects the evidence to be adduced, as such, the factfinder will rarely ever see the whole truth. Indeed in the Mullins-Johnson case, as mentioned in Part III, even when the jury asked specific questions, the court declined to have them answered. The jury asked whether Dr. Rasaiah took another temperature reading.
common law trial remains above the fray and stays neutral by being the passive observer. The Court observed that the act of self-directed research causes a judge to assume “the multi-faceted role of ‘advocate, witness and judge’.”\(^\text{486}\)

As to the use of textbooks and other articles, the Court of Appeal cites from \(R v\) \textit{Marquard},

The proper procedure to be followed in examining an expert witness on other expert opinions found in papers or books is to ask the witness if she knows the work. If the answer is “no”, or if the witness denies the work's authority, that is the end of the matter. Counsel cannot read from the work, since that would be to introduce it as evidence. If the answer is “yes”, and the witness acknowledges the work’s authority, then the witness has confirmed it by the witness’s own testimony. Parts of it may be read to the witness, and to the extent they are confirmed, they become evidence in the case.\(^\text{487}\)

The Court of Appeal noted the danger in a trial judge misapplying what he learned from these articles.\(^\text{488}\) After all, this is precisely why the expert is sought in the first place. In particular:

While it may be desirable that a judge personally observe the similarities and differences between the latent point and known point, such examination should be guided by a witness so as to avoid the trier of fact forming a view contrary to an explanation that may be available if only the chance were provided to proffer it. \(^\text{489}\)

In sum, the Court of Appeal was mainly concerned with two issues: that Justice Funt relied on evidence not adduced by the parties and not properly tested in court, and that he performed his own analysis of the fingerprints without the aid of the expert.

\(^{486}\) \textit{Ibid.} at para. 10.
\(^{488}\) Bornyk 2015 \textit{supra} note 480 at para. 14.
\(^{489}\) \textit{Ibid.} at para. 18.
4.5 Judicial Intervention: Preventing miscarriages of justice while Preserving the principle of Judicial Neutrality

From the section above, we see that in a common law trial, the roles of the judge, witness and advocate are clearly distinct. Each must be taken on by entirely separate individuals. Furthermore, the factfinder is restricted to base their decisions solely on the evidence adduced by the parties. This principle works well when only lay witness testimony is involved. Lay testimony is based on direct observations made by witnesses in an ordinary sense, without the use of any specialized equipment. Lay testimony can be understood and assessed by a factfinder without any specialized knowledge.

Expert testimony, on the other hand, has an additional layer of complexity. The technical nature of expert evidence makes it difficult for lay factfinders to comprehend. It also creates a risk that experts could mislead the factfinder by taking advantage of the latter’s ignorance. This vulnerability is one of the main reasons why educational programs are offered to enhance judicial scientific literacy. However, suppose a judge had taken such a program some time before he presided over a trial. Since it is doubtful that such programs have enough scope to cover whatever fine technical details applicable to the case at hand, the judge would likely need to conduct research at the time when he is presiding over a trial in order to supplement his knowledge. In addition, since science is continuously evolving, the judge would require up to date knowledge on the latest advances in the area in question. Therefore, a judge who aims to fully engage in the technical aspects of the evidence would necessarily need to rely on what he has learned in previously attended CLE courses and supplement it with current research.

Forbidding judges to conduct independent research while presiding over a trial is inconsistent with the values and goals behind judicial education in scientific literacy. Ignorance about the forensic method at issue can lead the judge to a reliance on common sense, or any scientific
knowledge they gained from previous trials. As we have learned from the Mullins-Johnson case, common sense is insufficient in evaluating scientific evidence, and that there is no guarantee that the scientific teachings given by experts in a trial setting are accurate and reliable. Ignorance can also lead a judge to be unquestioningly deferential to the expert, resulting in blind acceptance of the expert’s teachings or conclusion. Had Justice Funt not learned about the subjectivity inherent in the process from his own research, or that the Scottish Fingerprint Inquiry had recommended that any feature used in a comparison should be demonstrated to the lay factfinder so that he can see it for himself, he may well have been led to believe that fingerprint comparisons may be completely beyond the capability of a lay person, and that Corporal Wolbeck’s conclusion was totally accurate. This was made even more apparent by Corporal Wolbeck’s testimony that his conclusion was based on his training, knowledge and experience, and that his conclusion was virtually error-free, because he has “never made an error” or he would have been removed from the RCMP’s program.

On the other hand, as articulated in Bornyk 2015, independent research raises the spectre of judicial partisanship. Bringing in the independent research which caused Justice Funt to doubt the expert’s opinion appears to be advocating for the defence. There is also the danger that a lay judge may misunderstand the scientific knowledge gleaned from textbooks or acquired in CLE’s. How then can we ensure a judge’s ability to adjudicate competently, which necessitates his need to consult independent sources, and preserve judicial neutrality?

In my view, I argue that Justice Funt was right to transparently raise his concerns about the expert evidence to counsel, and to cite the sources which led him to his reasons. After all, he could have rejected the expert’s conclusion without making reference to any independent sources.


491 Bornyk 2013, at para. 23.
articles he consulted. Indeed, he could also have simply rejected the expert’s conclusion based on common knowledge, citing the discrepancies in the prints as support for reasonable doubt to merit an acquittal. Instead, he frankly disclosed what sources he used. His reason for rejecting the expert’s evidence was not just based on the difference of the prints alone. It was based on the many procedural factors (see s.4.5 on “troubling aspects”) which cast doubt on the reliability on the conclusion.

Even though I am in favour of Justice Funt’s diligence in engaging with the merits of the evidence, I argue that the expert witness should have been recalled and given the chance to address his concern over the discrepancies between the two prints. Although he gave time for counsel to respond to his concerns, I agree with the Court of Appeal that there is a danger that the discrepancies in the prints had a valid explanation, which Justice Funt did not consider because the expert was never given the chance to respond. After all, fingerprint analysis is specialized knowledge. Fairness requires a judge to consider a response from both sides.

The concept of an interventionist judge applying independently acquired scientific knowledge (whether through contemporaneous research or a previously attended CLE) is perceived to be counter to judicial neutrality in the adversarial process. Firstly, as seen in Bornyk 2015, and as explained in section 4.3 above, there are many reasons why judges should not introduce or apply independent research into the trial. Doing so erodes judicial impartiality by causing the judge to adopt multiple roles of being the witness, advocate and judge; raises the danger of the judge misapplying the specialized knowledge; deprives the parties of fair notice of what evidence the judge might uncover; removes control over what evidence is adduced by the party for strategic reasons (party prosecution). Secondly, aside from independent research, a judge in an adversarial process is limited to asking only clarifying questions directly to witnesses during their examination. This is to prevent judges from becoming an advocate in
confronting or intimidating the witness.\textsuperscript{492} A judge who has become inquisitorial has in effect caused the court to be composed of two opposing advocates against the expert witness, with no judge to rule on objections. For example, if the judge himself confronts the expert witness, the counsel who called the expert has no neutral referee to appeal to for objections.

While the above gives the impression that judicial passivity is the norm in the adversarial process, judges are not completely passive either. In motions, appeals and in closing arguments at judge-only trial, judges routinely ask counsel challenging questions.\textsuperscript{493} The purpose of this is to test out each party’s position. Therefore, elements of active judicial participation are already present in the current system. In addition, appeal courts can appoint special commissioners, such as a trial judge, to investigate the facts, including the interviewing of witnesses.\textsuperscript{494} Moreover, in the context of expert witnesses, the purpose of these questions is consistent with the role of the experts as impartial assistants to the court in understanding technical facts. As to the possibility of judicial intervention undermining counsel strategies, I argue that the court’s interest in seeking the objective truth is paramount. In \textit{Trochym}, the Supreme Court pointed out the prejudice caused when the omission of crucial information is intentionally imposed for strategic purposes. The court ruled that the Crown’s post hypnosis evidence was inadmissible, despite the fact that defence counsel had made a strategic agreement with Crown not to challenge the reliability. The court noted that hiding this fact from the jury meant that it did not “have the proper evidentiary basis on which to assess the accuracy of the witness’s testimony.”\textsuperscript{495} While the court did not forbid counsel from making strategic agreements, it is also noteworthy that the

\textsuperscript{492} Hamilton H. Hobgood. “When Should a Trial Judge Intervene to Question a Witness?”\textsuperscript{(1981) 3:1 Campbell Law Review at 74.}
\textsuperscript{493} The author thanks lawyers Monick Grenier and Mick Hassell for their insight on trial experience.
\textsuperscript{495} R \textit{v Trochym}, [2007] 1 SCR 239 at para. 67.
court ruled in the interest of justice. It ruled that unreliable evidence should be excluded, despite the fact that it was left in place for a strategic purpose.

I suggest an approach which balances these issues with the need for judges to competently engage in the substance of the expert evidence. Instead of the judge asking too many questions during direct and cross-examination, these should be asked after the examination, before closing arguments. This way of proceeding preserves the traditional adversarial procedure, which is to allow full opportunity for counsel to present their case, and test out the opponent’s case. It prevents the judge from taking over the role of opposing counsel during the examination phase. It is only where the judge recognizes that trial process did not subject expert evidence to a robust critical analysis that guiding questions should be posed to counsel, subject to allowing counsel enough time to prepare a response, and recalling the experts where necessary. Prof. Edmond suggests that it is preferable for judges to raise issues early on in the trial. However, in reality, a judge may not know what issues to raise until at least the expert examination is over. Expert evidence usually involves technical subject matter that often requires more time and effort in analysis than normal evidence from lay witnesses.

Where the judge’s concerns are triggered by independent research, he should name the source of the research, as Justice Funt did. However, to be more cautious about the reliability of the source, he should have asked the expert to verify as to whether the source is authoritative. This sequence of proceeding therefore gives fair notice to counsel, giving them enough time to consult with their experts to return a properly considered and prepared answer to the judge’s questions. It also allows counsel to craft their closing arguments, taking into consideration of the judge’s questions and any answers subsequently provided by experts.

When a judge frankly raises any issues arising from his own specialized knowledge, it allows for an open and thorough testing in open court. It will expose any out-dated learning, or
mistaken understandings of the scientific concepts, both on the part of the judge and on the experts. It also allows the parties’ experts to correct any misunderstandings the judge may have from his independent research. For example, in this case, Justice Funt noticed the prints did not match, a fact that supports the inference that the print from the crime scene did not belong to the accused. However, it may also be the case that the mismatch may be due to artifacts. It is known that even when the same finger makes two consecutive prints in a row, the two prints will not be completely identical. Therefore, Justice Funt should have raised his concerns about the mismatch so that the expert can be given a chance to address them. Asking an expert to explain this mismatch is not necessarily a leading question, such as the ones normally used by opposing counsel to undermine an opponent’s witness. This is because the expert could potentially have a valid explanation for the mismatch. Asking the expert for an explanation means that the judge is seeking to fully understand and test the robustness of the expert’s opinion.

The above approach should not be perceived as a fool proof solution to handling expert evidence. It does not guarantee that the judge will be able to fully engage in the substance of the expert evidence. Some types of expert evidence may be so difficult to comprehend that even with additional questioning, a full understanding of the expert’s testimony may be beyond the capability of the factfinder. In such cases, amicus experts may be required to assist the court. Furthermore, whenever a judge is given the chance to ask questions, there is always the potential for him to do so with the sole purpose of undermining an expert, in the guise of asking guiding questions. While there is always the option of appeal if judicial bias is suspected, it is not an ideal remedy as parties’ financial resources are often depleted by the time trial is over. Thus, while my proposed approach may assist in some instances towards the balancing of the need for judicial competence with judicial neutrality, it is not the “cure-all” solution. Further
research into other strategies, such as “hot-tubbing”⁴⁹⁶ (experts from both sides appear in court at the same time, where the experts are asked questions by the judge, lawyers and by each other) and the use of amicus experts should also be explored, especially when only one side of the litigation has an expert.

Canada’s Federal Court of Appeal Justice David Stratas said in a recent podcast that while counsel’s role is to maximize their client’s chance of success, a judge has the “far more stressful” role of getting it “right.”⁴⁹⁷ The onus is on a judge to ensure a fair trial which leads to the right result. This has to be balanced against the equally important principle of judicial neutrality, that is, a judge must remain above the fray. A judge who realizes that gaps of fact exist, caused either intentionally (counsel selectively presenting evidence) or inadvertently (counsel’s inability in engaging with the technical content), fulfils his role of neutrality by asking questions to fill in any gaps in knowledge or bringing attention to any misinformation to be explained. Indeed, it is the judge who recognizes that there are gaps or misinformation led by experts, and who nevertheless chooses to allow the trial process to unfold in the name of passivity that does a disservice to the justice system.

4.6 Judicial Intervention: R v Mullins-Johnson

The Ontario Court of Appeal in 2007 conceded that it was a “terrible miscarriage of justice” in convicting Mr. Mullins-Johnson, based on “flawed pathology evidence.”⁴⁹⁸ Could the trial judge have done anything to prevent the wrongful conviction, if he had been able to

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recognize the flaws in the evidence from independent study? If so, could he have brought this to the attention of the jury without sacrificing judicial neutrality?

I argue that judicial knowledge on forensic pathology, gained through independent research in this particular case, combined with a knowledge of the evidence based approach, could have enhanced the trial judge’s ability to guide the trial process, so that the wrongful conviction could have been avoided. The judge could have raised the issues he has discovered on the expert opinions from (independent research or education) in open court. The judge must be careful not to become an advocate and cross examining the witness directly himself with the sole purpose of undermining their evidence. However, when the judge realizes that there are questions that counsel should have asked, but did not, the judge should have raised these questions in open court, so that a full critical analysis of an expert’s opinion can be achieved. This will be discussed in more detail below.

On the Time of Death issue, applying a critical approach, the judge could have recognized that Dr. Rasaiah’s two-hour window had little foundation. Recall that at trial, all experts had the same opinion: time of death could only be an estimate. The crucial issue was whether a two-hour estimate was reliable. To a juror, there is no information from ordinary experiences against which he could evaluate whether a two-hour range is reasonable or not. All trial experts, except for Dr. Rasaiah, taught that there were multiple uncertainties associated with each of the three methods, yet, none of them gave any information related to the magnitude of how much each factor affects the result. In the end, the jury was faced with having to decide between two sets of conflicting opinions: one set was that the time of death methods are unreliable, against one Crown expert’s opinion which favoured a time of death estimate to be between 8-10 p.m.

499 In this section, “independent knowledge” will be taken to include any specialized knowledge gained by the judge either by independent research or by attending previous CLE’s.
Critical analysis demands seeking support and a true understanding of the reasoning behind an expert’s opinion. Recall in Part III (Critical Commentary, s.3.1.6), Dr. Rasaiah taught that rigor mortis begins to fade after 12 hours. Against this teaching, he concluded without explanation that the time of death to be 15-17 hours from the autopsy, which just happened to match the very time the accused was alone with the children. Furthermore, Dr. Rasaiah used the Moritz formula to arrive at a time of death of 9 p.m., with an error range of an hour before and after. This testimony would be highly probative towards guilt, only if this two-hour estimate was reliable. If the judge had reviewed the very textbook (Spitz) (see Table 1, Appendix B) that Dr. Rasaiah admitted as authoritative, he would have learned that the rate of cooling could vary anywhere between 1.5 to 2.5 ºF/hour in the first 12 hours after death. The judge could have discovered that the time of death could vary by as much as 4.5 hours, just by being one degree off. As such a small difference in temperature could lead to such a different time estimate, the judge should have raised the issue of clarifying the basis for the use of 1.5ºF.

In addition, the judge who had been independently educated that bodies do not cool at a linear rate, but rather, cools according to a complex non-linear curve, would have recognized the invalidity of using a formula that only applies if post mortem cooling was linear. According to the textbook by Spitz, “Careful studies under controlled conditions have shown that the decrease in the post-mortem body temperature in not rectilinear but sigmoid in shape with a plateau at the beginning and at the end of the cooling process.” As such, the cooling rate must necessarily change with time, rather than remain constant at 1.5ºF/hour. Therefore, Dr. Rasaiah should have been asked to explain why he chose 1.5ºF/hour as the rate, as there did not appear to be a way to discern which stage of the body cooling Valin’s body was in at 8 a.m. It would have brought out to the jury’s attention the lack of foundation for the use of the Moritz formula, which would

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500 This goes back to the Beecher-Monas framework, which demands the factfinder to ask “Does the theory make sense?”  
501 Spitz, Guidelines at 22. This was also in agreement with Dr. Ferris and Dr. Jaffé’s teaching.
only be applicable if the body truly cools at the same rate from the time of death to the time the rectal temperature was taken. In summary, a judge using an evidence based approach, and armed with the knowledge that the body cooling rate could take on values other than 1.5°F/hr (obtained from independent textbook, Spitz), would have recognized that supportive evidence was missing in Dr. Rasaiah’s definitive opinion that the time of death could be confined to a two-hour window. However, it is also important to note that this recognition could only have taken place after the judge had heard all rebuttal testimony, or if he had performed independent research. Thus, as in *Bornyk*, it is likely that any realization by the trial judge to raise these issues would only materialize towards the end of the trial process, after expert testimony from both sides have been heard.

With respect to the Cause of Death, a critical approach could have led one to ask Dr. Rasaiah to explain the mechanism behind how a “lack of oxygen” could cause bleeding spots to arise. We learn from appeal experts that in a true case of smothering or strangulation, it is venous blockage that causes the petechiae, not “lack of oxygen.” This is why petechiae that were caused by asphyxia would be found all over, instead of being found just on the front side of the body (the chest) and on the face. Asking Dr. Rasaiah to explain why a “lack of oxygen” could have given rise to petechiae, instead of just accepting that explanation at face value, would have exposed the lack of scientific support for such a statement. An understanding that it is venous obstruction that causes the appearance of petechiae would allow a factfinder to ask whether petechiae was observed also on the back (posterior) side of the head and body, and if so, whether there were pin point bleeds present. Posing this question is not a “leading” question, because no one knew how Dr. Rasaiah would answer. This is a question that seeks to find out the underlying support of the witness’s opinion. Dr. Rasaiah could have answered in one of three ways: (1) he did observe petechiae in the back side of the body, in which case, it would
have supported the theory of asphyxia (he should be asked to support this with physical evidence in an exhibit); (2) Dr. Rasaiah saw no petechiae in the back side, in which case, murder was unlikely; (3) Dr. Rasaiah did not check the back side of the body at all, in which case, the question remains unanswered. Since this question was never asked, there is a gap in data necessary to diagnose asphyxia. Questions such as these should ideally be asked by counsel. However, as mentioned in the previous paragraph on Time of Death, where they are not, a judge should raise these questions with both counsel present, and experts should be recalled to explain further as necessary.

As for the evidence on sexual assault, it is unlikely that a CLE would have equipped a judge with such specialized training needed to analyze histological slides. Thus, independent research or CLE’s would not have been helpful in this regard. Furthermore, the paper that Dr. Pollanen used to support his opinion on the anal gap was only published after the trial. However, a judge who is educated on the frailties of expert evidence and who is equipped with a conceptual framework like that of Beecher-Monas will approach this area of evidence critically. A judge would have recognized the danger in simply accept Dr. Smith’s opinion that he observed a laceration, without asking him to actually show the court where this laceration is (pin pointed in an exhibit). A pathologist must have reasons for identifying a certain feature on a slide as a “tear”. In this trial, there was no description given by Dr. Smith exactly why he thought there was a tear. Hence, a lay juror would accept or reject his opinion based on secondary factors, such as “he must be right because he’s the eminent pathologist, so if he said he saw a tear, the tear must exist.” To avoid allowing a jury making a decision without adequate understanding of how he arrived at his conclusion, the judge could ask the questions suggested in Part III, which tests out assumptions and alternatives explanations for the observations. Table 2 in Appendix B is a summary of the questions.
We see above that a trial judge certainly could have raised questions to flush out weaknesses or gaps in the Crown expert testimony. Even if defence experts or defence counsel had not adduced evidence from sources of text that show that Crown expert knowledge was out of date or inaccurate, the trial judge should have introduced this into the trial process, and allowed for both sides to respond with full opportunity. Ideally, in the common law adversarial process, it should be counsel who raises all the questions, both in direct and cross-examination. However, as explained above, counsel may either strategically or inadvertently omit to raise all the questions.

How would a judge intervene at a jury trial to ensure expert evidence is critically evaluated by the jury, without departing from the adversarial process? As articulated in *Bornyk*, excerpts from textbooks cannot be introduced unless it is introduced through an expert on the witness stand. Therefore, if a judge finds excerpts in textbooks that contradicted an expert’s evidence, such as those listed in Table 1 (Appendix B), he cannot simply bring it into evidence. In this particular case, however, the textbooks were already introduced and acknowledged by the experts, such as the textbook by Spitz, which was expressly accepted as an authoritative text by Dr. Rasiaah. Thus, it could be argued that it should be permissible for the judge to ask Dr. Rasaiah on why he chose a particular rate for post mortem body cooling, when the Spitz textbook he used provided several possible rates.

Apart from introducing specific textbook excerpts, the judge could also have adopted a guidance approach by asking questions such as those suggested in Table 2 (Appendix B). This is especially useful where counsel has not brought a motion (voir-dire) to challenge the admissibility of the evidence. Recall that the list of questions suggested by the Goudge Report and by Edmond *et al.* are tools primarily for the judge to apply in their gatekeeping role. However, there was no challenge to the admissibility in this case. Moreover, a judge cannot
“educate” the jury in critical thinking by suggesting that list of questions to them during the jury charge. Juries are not allowed to ask questions directly to the witnesses. Thus, these questions that help in the critical assessment of an expert cannot be applied directly by the jury. Nevertheless, this should not mean that a judge is powerless to guide the factfinding process either.

In sum, I propose a similar solution to that mentioned in section 4.5 above which could also have been applied in the Mullins-Johnson case. I suggest that direct and cross-examination of the expert witness proceed as is normally done in the existing trial procedure. After all, it is counsels’ role to bring out the evidence. However, as demonstrated in this case, left entirely to counsel alone, the trial process may not succeed in bringing out all the necessary facts that lead to the objective truth. Therefore, where the judge recognizes that there are gaps in crucial information, the judge should raise this in open court in the form of clarifying or guiding questions, such as those suggested in Table 2 (Appendix B) and in the Goudge Report, before the closing arguments. In a normal voir-dire on admissibility, the jury is excluded, in order to protect them from hearing prejudicial evidence. However, in this case, the jury has already heard the expert’s direct and cross-examination. To preserve transparency then, these clarifying questions by the judge should be raised to counsel, with the possibility of recalling the experts to respond, in the presence of the jury. Such transparency also ensures any incorrect or biased understanding of independently acquired scientific knowledge by the judge to be tested in open court.

Judicial intervention can be objectionable to lawyers in the common law system, because their strategies often rely on selectively adducing evidence, which would work well under judicial passivity. Counsel’s lengthy preparations may be completely undermined by a judge’s...

502 For example, existing knowledge summarized in Table 1 was not brought up by defence counsel.
questioning. However, recall in the Mullins-Johnson case, that Dr. Ferris, conceded that his opinion was flawed not only because he was influenced by the reputation of Dr. Smith, but also by defence counsel’s instructions, which was informed by his strategy. Thus, the strategic element in the adversarial process does not always lead to the truth. Nevertheless, one must guard against the potential for judges to enter the fray, whether intentional or otherwise, when they ask clarifying questions. Therefore, when the judge raises questions such as those in Table 2, counsel should be given enough time to prepare a proper response. Failure to do so in effect turns judges into advocates.

It would have been far better for the factfinder at this trial to have been shown the flaws with the Crown expert opinion than to have these flaws finally introduced as fresh evidence on a Ministerial Review, more than a decade later, after the wrongful conviction. It should be noted that the role of the prosecutor, as articulated by the Supreme Court of Canada in Boucher v The Queen, is not to secure a conviction, but to present the evidence for an alleged crime. It would have been better for the trial judge to trigger the trial Crown counsel to realize, as the appeal Crown counsel did in 2007, how the teachings of their experts ran contrary to those taught in textbooks. It may well have led trial Crown counsel to withdraw their case then, instead of at an appeal, twelve years later. We also see that even if a judge had not taken pathology courses, he could have adopted a generalized critical approach, taking into account special issues surrounding expert evidence, such as confirmation bias (Edmond et al.), and approaching the evidence with a critical eye based on the conceptual framework by Beecher-Monas. Having a generalized understanding of an evidence based approach raises the judge’s awareness to demand for foundational support behind an expert opinion, even if he had not taken specific pathology courses.

In summary, in this case, judicial passivity did not bring justice. Judicial neutrality demands that a full exploration and critical analysis of the facts and opinions raised by both sides of the litigation. Raising issues by a judge with any gaps in knowledge or contradictory information in pathology textbooks ensures a fuller fact record. In a jury trial, this should be done in the presence of the jury in an open court, so that all comments from the judge are subsequently reviewable on the record. Counsel should also be given time to respond and consult with their experts (adequate notice). Response to the issues raised by the judge will likely mean that experts have to be recalled to court. However, given today’s technology in video conferencing, this is a minor inconvenience, a small price to pay to avoid wrongful convictions.
Part V. CONCLUSIONS

Mr. Mullins-Johnson was acquitted 12 years after his wrongful conviction. It can be argued that the state of scientific knowledge had advanced by then. The paper by McCann documenting the prevalence of anal dilation was not published until 1996. Yet, as noted in the Analysis (Part III) above, there was existing knowledge at the time in forensic pathology that contradicted what Dr. Rasaiah and Dr. Smith taught. If the trial judge had conducted independent research, he would have discovered the limitations of the forensic methods relied on by the Crown experts. He would have learned from independent literature that the rate of progression in lividity and rigor mortis was so variable that it would have been impossible to derive a two hour window for the time of death. He would have discovered that the Moritz formula was equally prone to uncertainty, given the numerous factors that affect the rate of body cooling. Armed with an evidence based approach that does not allow one to complacently accept expert opinions, he would have questioned why a post-mortem cooling rate of 1.5°F/hour was used, with no scientific justification from the expert. He would have discovered that petechiae was a poor marker for mechanical asphyxia, especially when the deceased body is in a face down position. All this information was available at the time of trial, but was not shown to the jury.

This case study also demonstrated that the adversarial process does not always return the right result. Litigation strategy can distort the truth-seeking process, as illustrated in this case when trial defence adopted the strategy of implicating Valin’s father as a possible perpetrator in an assumed crime. When both sides, Crown and Defence, adopt a theory and actively seek evidence to support that theory, an objective evaluation of the evidence was effectively abandoned.
While experts retained by parties may always be biased to some extent, even if they were advised of their duty to the court, a judge is retained by the state, who must remain neutral. His goal is to ensure that objective truth is brought out at trial. In cases where the truth of what happened cannot be ascertained, this must result in an acquittal. Active engagement should thus be encouraged for a judge in understanding the substance of the opinion. He should be encouraged to ask for clarifying evidence which allows a full picture to emerge in cases where a judge recognizes that the factual record is incomplete. If such questions are not asked by opposing counsel, and the judge is muzzled from raising these questions that brings out the full picture, the jury will be left with a one-sided, distorted and biased opinion, as was the case in the trial of Mr. Mullins-Johnson.

The common law trial process is developed with the purpose to secure a fair process and resulting justice. One must balance the values of party prosecution and judicial passivity with the importance of the factfinder’s access to all the relevant facts. The traditional adversarial process may work well where there are just lay witnesses. However, when it comes to expert evidence, we have an extra dimension. We are no longer dealing with first hand observations only, or information that can be understood by ordinary people. We are asking an expert to help us understand the meaning of the observations. We need the expert’s help, yet, there is also the risk of being misled by that very expert. Even when we have a rebuttal expert opinion, we cannot meaningfully compare all the opinions, unless we have some fundamental tools on hand, such as an understanding of issues and dangers surrounding expert evidence in general, complemented with independent knowledge that is specific to the subject area. When necessary evidence required to evaluate the facts is missing, no one else in the court room, other than a judge has the power to ensure that this evidence is included. Ultimately, the judge has a duty to
the public to ensure that evidence, even scientific ones, are competently adjudicated. Only when cases are truly tried on the substance can we have confidence in our justice system.
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Pod Cast

Private Communications and Interviews
Appendix A: Chronology of the Mullins-Johnson Case


June 26, 1993
- Valin Johnson’s family attended a baseball game
- 7:30 p.m.: Valin went to bed
- 7-9:30 p.m.: William Mullins-Johnson babysat Valin and her younger brother John
- 9:30 p.m.: Kim Lariviere (Valin’s mother) returned home
- Midnight to 2 a.m.: Mr. Mullins-Johnson went out with friends

June 27, 1993
- 2:15 a.m.: Paul Johnson (Valin’s father) returned home
- 7:30 a.m.: Valin was discovered dead 7:30 am in her bedroom in a face-down, crouched position by her mother
- Paul tried to give CPR to Valin
- Paul brought Valin from her bedroom to living room, and laid her down on her back
- 7:32 a.m.: Paramedics arrived
- 8:15 a.m. Constable Biocchi took photos of Valin at the house and of the scene.
- 12:55 p.m. Autopsy began
- 1:08 p.m.: Dr. Rasaiah noted to Sgt. Welton “large opening of rectum”; sexual assault kit ordered.
- Around 2:50 p.m.: Dr. B. Rasaiah consulted with Dr. P. Zehr and Dr. Smith
- 4:50 p.m.: Dr. Rasaiah begins incision
- 5:30 p.m.: Autopsy conclusion
- 6:30 p.m.: Mr. Mullins-Johnson charged and arrested

September 6, 1994: Trial of Mr. Mullins-Johnson began

September 21, 1994: Mr. Mullins-Johnson found guilty

December 19, 1996: Ontario Court of Appeal dismissed the appeal

May 26, 1998: Leave to Appeal to Supreme Court of Canada dismissed

December 2004: Dr. Pollanen, Chief Forensic Pathologist in Ontario was asked by Chief Coroner to conduct an initial assessment of the Mullins-Johnson case

September 7, 2005: Ministerial Review application was filed

April 29, 2007: Chief Coroner for Ontario announced the results of a review of Dr. Charles
Smith’s work.

July 17, 2007: Minister referred the case to Court of Appeal

October 19, 2007: William Mullins-Johnson was acquitted
Appendix B: Tables

**Table 1: Comparison of Crown expert teachings to the Existing scientific knowledge**

<table>
<thead>
<tr>
<th>On the use of post-mortem cooling (Moritz formula)</th>
<th>Crown Expert</th>
<th>Textbooks used at trial(^{511})</th>
<th>Other scholarly articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Rasaiah’s teaching: Use of rate of 1.5(^o)F/hr to a formula that describes linear cooling (Transcript: 280)</td>
<td>Spitz: cooling rates can be anywhere from 1.0 to 2.5(^o)F/hr, also described non-linear cooling behaviour (Spitz, 1993: p.22-23)</td>
<td>Applying a rate of 2.0(^o)F/hr (half a degree different from Dr. Rasaiah’s rate) to the Moritz formula returns a time of death of 11:48 pm. (+/- 1 hr) (See s.3.1.6)</td>
<td></td>
</tr>
<tr>
<td>Dr. Rasaiah’s opinion: applying this formula and assuming a normal body temperature of 98.4(^o)F returns a time of death of 9:00 p.m. (+/- 1 hr) the night before she was discovered dead.</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On whether bruises can form post-mortem</th>
<th>Crown Expert</th>
<th>Textbooks used at trial</th>
<th>Other scholarly articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Rasaiah’s teaching: Bruises cannot form after death (Trial transcript: 271)</td>
<td>Polson: bruises can occur after death (Polson, p.140)</td>
<td>Articles by Langlois and Gresham, published 1991 and Pinsloo Gordon, published 1951 taught how bruises can be formed post mortem (see section titled Critical Commentary on Cause of Death)</td>
<td></td>
</tr>
<tr>
<td>Dr. Rasaiah’s opinion: Valin was strangled. This is supported by a</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| On the use of petechiae as signs of asphyxia | Dr. Rasaiah’s teaching: Petechiae is caused by lack of oxygen or “asphyxia” (Transcript:268) | Spitz: petechiae is not uniquely caused by suffocation. Petechiae found on the face and eyelids could be due to cardiopulmonary resuscitation. (Spitz, p.460) |
| Dr. Rasaiah’s and Dr. Smith’s opinion: petechiae seen on Valin’s face, chest, and organs are signs that Valin died from lack of oxygen | Polson: petechiae on face and eyelids are due to “venous stasis leading to capillary congestion and rupture... may be seen in circumstances other than mechanical asphyxia” (Polson, p. 354.) |
| Excessively large anal gap as a sign of sodomy | Dr. Zehr and Dr. Rasaiah’s opinion: The anal gap observed is indicative of chronic sexual assault. | Spitz: “Postmortem dilatation and flaccidity of the vagina and anus may produce appearance of a sexual attack or sodomy” (Spitz, p.41.) |
| | | Moritz: postmortem muscular relaxation can be mistaken for sodomy (Moritz, p.301) |</p>
<table>
<thead>
<tr>
<th>Expert Opinion controversies</th>
<th>Guiding Questions to Clarify Expert Opinion</th>
</tr>
</thead>
</table>
| **Time of Death**            | • Is there consensus in the field of forensic pathology on the reliability of the Moritz formula used? In either case, what is the source of information to support your answer?  
• What is the basis for the rate 1.5°F/hour used in the Moritz formula?  
• If there was a change in the environmental temperature, how exactly does the time of death range vary? Does the time vary by 2 hours? 5 hours? 20 hours?  
• How do the various factors, such as the size of the body, air currents, clothing etc. affect the time of death estimate? Do these factors vary the estimate by 2 hours? 20 hours? |
| Dr. Rasiah’s opinion: apply Moritz, using cooling rate of 1.5°F/hour, assume linear cooling behaviour of deceased body, gives a time of death of 9 p.m.(plus or minus an hour) the night before the body was discovered.  
Other Experts: variability of body cooling behaviour means estimates are very crude, to the point that time of death estimates have no evidentiary value whatsoever. |  |
| **Cause of Death**           | • What is the mechanism that gives rise to petechiae when someone is manually asphyxiated? (Recall that Dr. Rasaiah only stated that lack of oxygen causes petechiae to appear, without explaining why that is.)  
• Why would one observe petechiae on the surfaces of the organs (heart, thymus) in circumstances of asphyxia?  
• Why would one observe swelling in the brain or lungs when one is manually asphyxiated?  
• Would there be alternative causes for the observations of lung, brain swelling, and petechiae?  
• Is there support from independent academic journals on the information (teachings) that you have provided to the court? (This question is testing whether there is general consensus and whether the teaching is up to date in the subject area.)  
• The controversy in this case is that the observed petechiae could have been a result of either lividity or manual |
| Crown Experts (Drs. Rasaiah and Smith): petechiae and swelling on the various areas of the skin and organs are sure signs of mechanical asphyxia, and neck bruise (strangulation or smothering)  
Defence and Appeal Experts: Petechiae was formed postmortem, as a consequence of lividity; neck bruise was a post-mortem artifact |  |
asphyxia. Since the body was in a prone position, petechiae that is a consequence of lividity would be confined to the front side of the body (as suggested by defence experts). Were there any petechiae formed on the back (“posterior”) side of the body (on the skin of Valin’s back, on the posterior faces of the organs)?

- How is a neck bruise that is due to pre-mortem injury different in appearance from a Pinsloo-Gordon artefact?

<table>
<thead>
<tr>
<th>Occurrence of Sexual Assault</th>
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<tbody>
<tr>
<td>Crown Expert (Dr. Smith): an unexpectedly large size of the anal opening was evidence of chronic sexual abuse; the presence of bruises in the inner thighs and a microscopic tear/laceration in the anal canal was evidence that sodomy occurred recently (inference that Valin was sodomized and killed).</td>
</tr>
</tbody>
</table>

Defence and Appeal Experts: Ambiguity on the existence of laceration: opinions ranged from non-existence to attributing an indeed observed tear to autopsy procedural artefact.

- There was a great deal of confusion as to whether the laceration was there or not. Were the slides labelled unambiguously? Are all the experts looking at the same slide? Are they looking at the same area in that slide that has a pattern which could be interpreted to be a laceration?
- What are the ranges that are found of post mortem anal openings in literature? Has there been any literature (independent studies) which document the range of sizes one might expect with and without post mortem effects?
- A fact-finder cannot make any meaningful assessment when he is given vague descriptive terms, like “much larger than normal”. What is normal? It would be better to give the range and distribution of sizes.
- How does the fact that rigor has begun to fade in this case affect an interpretation of the size of the anal gap?
- Are there alternative explanations for why a child would be found in a knee-chest position?
- Looking at the exhibit where Valin’s left leg seems to be more extended than the other, and given the fact that rigor has set in, doesn’t that contradict the knee chest position? If so, can you provide an explanation to reconcile the contradictory lay testimony and the photo evidence (and the lividity evidence).
| How would a pathologist distinguish whether bruises in the ano-genital areas are caused by sexual assault versus bruises caused by riding a bike? |
| Dr. Smith says that he saw a laceration that had some bleeding associated with it. How can one tell whether this injury (bleeding) and absence of immune response is due to the fact that the act was recently before death (hence not enough time to trigger the immune response), and not due to a post-mortem occurrence? |