ASPECTS OF EXPERT EVIDENCE

IN THE

CRIMINAL JUSTICE SYSTEM

by

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SUMMARY

The rule excluding evidence of opinion is traditionally stated in broad and general terms, subject to a more or less closed list of exemptions. Stephen says that a witness’s opinion is “deemed to be irrelevant”. A witness may depose to the facts which he has observed, but he may not ordinarily state any inferences which he has drawn from those facts, or opinions founded upon facts of which he has no personal knowledge. The general rule is that the evidence of opinion or belief of a witness is irrelevant because it is the function of a court to draw inferences and form its opinion from the facts; the witnesses give evidence as to the facts and the court forms its opinion from those facts.

The opinion of an expert is admissible if it is relevant. It will be relevant if the witness’s skill, training or experience enables him materially to assist the court on matters in which the court itself does not usually have the necessary knowledge to decide. Where the topic is such that an ordinary judicial officer could be expected to be able, unassisted, to draw an inference, expert evidence is superfluous.

In principle, there is no rule that a witness cannot give his opinion on an issue that the court has to decide ultimately. It is not experts alone who may give their opinions on ultimate issues but, in practice, there is a strong tendency to regard the evidence of lay persons on ultimate issues as constituting prima facie evidence only. If such lay testimony remains unchallenged, it may be of greater significance. It is generally true that relevant evidence is admissible and irrelevant evidence is inadmissible. At this stage the following question may be posed: is the opinion of any witness – whether from an expert or lay person – admissible evidence? Should an opinion be admitted for purposes of persuading the court to rely on it in deciding the issue at hand? The basic answer is that relevance remains the fundamental test for admissibility.

Certain issues simply cannot be decided without expert guidance. Expert opinion evidence is therefore readily received on issues relating to ballistics, engineering, chemistry, medicine, accounting and psychiatry, to mention only a few examples.
The problem which arises is this: what is the best way of cross-examining the expert witness? Although the concept of skilful cross-examination conjures up the image of the cross-examiner destroying the expert witness in the witness box, total annihilation of expert evidence in court occurs only rarely. In reality, lawyers who are expected to cross-examine experts are often at a disadvantage in that they do not possess sufficient in-depth knowledge of the specific field of expertise to enable them to cross-examine the witness.

Despite the expert nature of the evidence, it is suggested that the true basis of cross-examination should not be abandoned when dealing with experts. The effectiveness of cross-examination is enhanced by keeping the number of questions to a minimum as well as opening and concluding with good strong points. At the outset it should be mentioned that there is a distinction between matters of scientific fact and matters of mere opinion. On matters of scientific fact experts seldom differ but within the province of opinion one encounters difficulties. Lengthy cross-examination concerning expert’s theoretical knowledge is usually inefficient and should rarely be attempted.

Cross-examination should be directed at pure logic or scientific analysis. The cross-examiner should always have relevant authority with him in court so as to confront the expert with these. The whole effect of the testimony of an expert witness can also be destroyed by putting the witness to test at the trial as to his qualifications, his experience and his ability and discriminations as an expert. A failure to meet this test renders his evidence nugatory.
CHAPTER 1
INTRODUCTION

Experts have been instrumental to assist in the settling of a variety of legal disputes. If matters arise in our law which concern other sciences or faculties, we commonly apply for the aid of those sciences or faculties concerned. An expert in the legal process therefore needs to possess sufficient specialised knowledge, skill, training or experience to enable him to supply information and opinion not generally available to members of the public. There is an increasing trend towards greater use of and reliance on forensic science to provide the necessary evidence in the fight against crime. Certain forms of expert evidence such as DNA evidence can be important and powerful tools in crime detection and proof. Because such evidence can be very persuasive, the danger exists that its incorrect use could lead to miscarriages of justice where the innocent are convicted and the guilty go free. This argument is evident in the case of S v Maqhina.\(^1\) Two accused were jointly charged with murder. The second accused contended that he was not involved in the murder. The prosecution’s case against the accused in question rested entirely on the results of DNA testing. The main thrust of the judgment concerns the role of the expert witness and the procedure that should be followed in the process of scientific analyses. The judge emphasized the responsibility borne by the expert witness towards the court and his duty, especially in circumstances where the court does not possess the expertise and facilities to draw appropriate inferences.

A dilemma that confronts our courts is the question concerning the admissibility of scientific evidence. The law is challenged to devise an admissibility test that will on the one hand allow legitimate expert evidence, while withholding invalid expertise on the other.

The question arises as to whether our existing legal system can adequately address problems spawned by expert evidence? This raises the question of evaluating and cross-examining an expert witness. The purpose of this treatise is to highlight some of the problems encountered in using expert evidence, with the view to serve as an aid towards finding solutions to these problems. It will be considered with reference to the following aspects:

\(^{1}\) 2001 (1) SACR 241 (W).
1. The relevance and admissibility of expert evidence;
2. the presentation of expert evidence;
3. the art of cross-examining an expert witness; and
4. the evaluation of expert evidence.

Chapter 2 contains the general principles of law of evidence and admissibility of expert evidence. Chapter 3 includes a description of the presentation of expert evidence, in particular DNA, and an overview of relevant legislation. Relevant case law is also dealt with within this chapter, with an analysis of the cases of *Maqhina*² and *Dube*.³ Chapter 4 contains an exposition and manner of cross-examining an expert witness and strategies of discrediting an expert witness. The right to a fair trial will also be explored in this chapter. Chapter 5 contains an exposition of the evaluation and assessment of expert evidence in our courts. The discussion is concluded in Chapter 6.

² *Supra.*
³ 2000 (1) SACR 53 (N).
CHAPTER 2  
GENERAL PRINCIPLES OF LAW OF EVIDENCE AND 
ADMISSIBILITY OF EXPERT EVIDENCE

2.1 INTRODUCTION

In achieving a comprehensive understanding of expert evidence, the general principles relating to relevance and admissibility of expert evidence need to be discussed first.

The main general rule governing the entire subject is that all evidence which is sufficiently relevant to an issue before the court is admissible and all that is irrelevant, or insufficiently relevant, should be excluded. The affirmative aspect of this rule as well as its negative aspect will be considered. Thereafter, the distinction between the relevancy, admissibility and weight of evidence will be examined.

2.2 THE RELEVANCE AND ADMISSIBILITY OF EVIDENCE

It is generally true that relevant evidence is admissible and irrelevant evidence is inadmissible. Relevance is essentially a matter of reason and common sense. The general rule is that no evidence as to any fact, matter or thing is admissible if it is immaterial or irrelevant. Opinion evidence is admissible if it is relevant, inadmissible if it is irrelevant. Evidence which is one’s opinion, or reflects the opinion of a witness, is as a rule inadmissible.

When opinion evidence is excluded, it is because of the inadequate relevance. Any opinion, whether expert or non-expert, which is expressed on an issue which the court can decide without receiving such opinion, is in principle inadmissible because of its irrelevance. Affidavits or certificates are frequently used as vehicles for adducing expert testimony.

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4 Civil Proceedings Evidence Act 25 of 1965 s 2; Criminal Procedure Act 51 of 1977 s 210.
5 R v Vilbro 1957 (3) SA 223 (A) 228 - 229; Ruto Flour Mills Ltd v Adelson 1958 (4) SA 235 (T) 237; R v David 1962 (3) SA 305 (SR); S v Nangatuaula 1974 (2) SA 165 (SWA) 167. See further Hollington v Hewthorn & Co Ltd 1943 KB 587 (CA) 589 and Gentirino AG v Firestone SA (Pty) Ltd 1972 (1) SA 589 (A) 618D.
7 See S v H 1981 (2) SA 586 (SWA).
In an earlier edition of *The South African Law of Evidence*, the authors\(^8\) illustrated the flexibility of the principle underlying the reception of expert testimony by looking at the decisions in *R v Villiers & Another\(^9\)* and *Hopes and Lavery v H M Advocate\(^10\)*.

In South Africa the prevalent view is that experts may be introduced not only where the court by lack of special knowledge and skill is incapable of forming an opinion unassisted, but also in circumstances where the court could come to a conclusion, but where the help of the expert would be useful.\(^11\) What constitutes expert opinion is determined by the court.

Courts are charged with the responsibility of not admitting invalid evidence, for to do so would violate the fundamental principle of evidence that only relevant evidence may be admitted.

Equally, a court may not exclude valid information, for to do so would violate the corresponding fundamental principle that all relevant evidence is admissible.

The law is challenged to devise an admissibility test that will allow legitimate expert evidence, while withholding invalid expertise. Expert evidence has come to play a significant and ever-increasing role in litigation.\(^12\)

Expert witnesses are called to testify about matters that are considered to be beyond the ordinary understanding of lay people.\(^13\)

The expert witness is there to assist the court and the test for the admissibility of the opinion of such a witness is whether the expert is better qualified than the judicial officer to draw inference or whether, although the court can come to an unassisted opinion, the help of the expert would be useful.\(^14\)

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\(^9\) 1957 (3) SA 223 (A).

\(^10\) 1960 SC (J) 104.


\(^14\) *Coopers (SA) (Pty) Ltd v Deutsche Gesellschaft für Schädlingsbekämpfung Mbh* 1976 (3) SA 352 (A) at 370G-H; See also *R v Turner* [1975] 2 QB 534 at 841 and *S v Nel* 1990 (2) SACR 136 (C).
Expert witnesses would generally be allowed to testify if they possess some specialised knowledge, skill, training or possible experience sufficient to enable them to supply information and opinion not generally available to the average person.\textsuperscript{15}

An expert need not have any formal qualifications nor need he have acquired his expertise in a profession, as long as the expert gained sufficient knowledge from experience.\textsuperscript{16} In both English and South African law, it has been held that expert evidence is only admissible as to matters outside “ordinary human experience”.\textsuperscript{17}

Within this approach lies the inherent contradiction of expert evidence. Expert witnesses are required in matters that go beyond the ordinary understanding of lay people, yet it is expected of lay judges and jurors to adjudicate on this expert evidence.\textsuperscript{18}

In this treatise the manner in, and guidelines for, dealing with an expert evidence in our criminal justice system will be discussed. It will be argued that sometimes opinions of lay persons are admitted in court.

2.3 THE FORMULATION OF THE OPINION RULE

Evidence which is one’s opinion, or reflects the opinion of a witness, is as a rule inadmissible.\textsuperscript{19} The rule excluding evidence of opinion is traditionally stated in broad and general terms, subject to a more or less closed list of exceptions. The general rule is that the evidence of opinion or belief of a witness is irrelevant, because it is the function of a court to draw inferences and form its opinion from facts; the witnesses give evidence as to the facts and the court forms its opinion from those facts.\textsuperscript{20} The South African case law on opinion evidence tends towards two quite distinct approaches. Both approaches, namely the traditional and \textit{Vilbro} formulation, irreconcilable though they may at times be, co-exist in practice.

\footnotesize
\textsuperscript{16} \textit{Van Graan v Naude 1966 1 PH J 12 (8); R v Silverlock [1894] 2 AB 766.}
\textsuperscript{17} Meintjes-Van der Walt “Science Friction: The Nature of Expert Evidence in General and Scientific Evidence in Particular” 2000 Vol 117(4) \textit{SALJ} 773
\textsuperscript{18} \textit{Ibid.}
\textsuperscript{19} Schmidt 429.
In terms of traditional formulation, as formulated by Stephen, a witness’s opinion is “deemed to be irrelevant”. The Vilbro approach, formulated by Wigmore, stipulates that opinion evidence is accepted if relevant, rejected if irrelevant. An opinion will be relevant if it can appreciably assist the court; it is irrelevant if it cannot assist the court appreciably. That the reception or rejection of opinion depends on its relevance has been recognised in South Africa as well as in England. Other courts have gone further and have expressly adopted Wigmore’s views on the opinion rule.

The opinion of expert witnesses is admissible whenever, by reason of the witnesses’ special knowledge and skill, they are better qualified to draw inferences than the judicial officers. The Vilbro approach indicates that the reception of expert evidence is a manifestation of the principle that opinion is admissible when it can appreciably assist the court.

2.4 EXPERT EVIDENCE

The opinion of expert witnesses is admissible whenever, by reason of their special knowledge and skill, they are better qualified to draw inferences than the judicial officer. There are some subjects upon which the court is usually quite incapable of forming an opinion unassisted, and others upon which it could come to some sort of independent conclusion, but the help of an expert would be useful.

There are issues which simply cannot be decided without expert guidance. Expert opinion evidence is therefore readily received on issues relating to, for example, ballistics, engineering, chemistry, medicine, accounting and psychiatry. The opinion of an expert is admissible if it is relevant. It would be relevant if the witness’s skill, training or experience enable him materially to assist the court on matters in which the court itself does not usually have the necessary knowledge to decide.

22 1997 (4) SA 766 (W) at 776E-G.
23 Hoffmann and Zeffertt 299.
24 Visagie v Gerryts en ’n Ander 2000 (3) SA 670 (C) at 681A-B.
25 Schwikkard, Van der Merwe and Skeen Principles of Evidence (1997) 89.
26 LAWSA Vol 9 par 20.
Where the topic is one in which the ordinary judicial officer could be expected to be able, unassisted, to draw an inference, expert evidence would be superfluous.27

Even at common law the opinions of skilled witnesses were admissible wherever the subject is one upon which competency to form an opinion can only be acquired by a course of special study or experience.28

The evidence given by expert witnesses has traditionally been regarded as an exception to the substantive rule that witnesses in general may not give evidence of opinion but only of fact.29 Expert evidence on a particular matter is admissible if it carries both relevance and probative value. The question of relevance is decided according to precisely the same criteria as for evidence generally, though the expert evidence may be different in form, in particular where it consists of opinion rather than fact. Expert evidence is better regarded as evidence which is admissible because it is relevant and of probative value in relation to matters in issue in the case, and therefore constitutes a particular category of such admissible evidence. Expert evidence is admissible where there are matters in issue before the court which require expertise for their observation, analysis or description. It may be given by any person who has the relevant expertise.

As described by Meintjes-Van der Walt, Kenny notes that: “expert evidence differs from ordinary evidence on matters of fact in that it is not based on the use of untutored senses or on the observation of the average man, but on specialised training; experience out of common and or theoretical information of recondite kind”.30 Fact-finders, in the content of expert evidence, are not only faced with the task of determining which element of experts evidence must be disregarded as irrelevant or unimportant, but must also find means of determining the significance or weight that should be attached to expert evidence in any given case.31

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27 Schmidt 438; S v Nangatuula supra.
29 Hodgkinson 3.
30 Meintjes-Van der Walt “Science Friction: The Nature of Expert Evidence in General and Scientific Evidence in Particular” 771.
2.5 WHAT IS AN EXPERT?

The term “expert”, used as an adjective, can be defined in the following terms: “skilful, skilled, trained, knowledgeable, learned, experienced, practised”. An expert is defined “as a person with the status of an authority by reason of special skill, training or knowledge, a specialist”. An expert in the legal process therefore needs to posses sufficient specialised knowledge, skill, training or experience to enable him to supply information and opinions not generally available to members of the public.\(^3^2\) The dictionary definition of the term “expert” demonstrates that it may be employed both with some particularity and in a more general manner.\(^3^3\) The adjective has two relevant descriptions:

\begin{itemize}
  \item[(i)] experienced;
  \item[(ii)] trained by experience or practice, skilled, skilful.
\end{itemize}

as does the noun:

\begin{itemize}
  \item[(i)] one who is expert or who has gained skill from experience;
  \item[(ii)] one whose special knowledge or skill causes him to be regarded as an authority; a specialist.
\end{itemize}

The term “skilled” when used of persons, is described as meaning

\begin{itemize}
  \item[(i)] possessed of skill or knowledge,
  \item[(ii)] properly trained or experienced.
\end{itemize}

In practice there is a broad discretion vested in the court to decide whether or not a person is capable of giving expert evidence. The two most important qualities are the possession of knowledge of the specialism in question, and an ability to use that knowledge by virtue of training and/or experience in that field.\(^3^4\)

\(^{32}\) Meintjes-Van der Walt “The Paradoxes and Dilemmas of Expertise in the Criminal Justice Process” 58-63.

\(^{33}\) The Oxford English Dictionary (1989) Vol V.

\(^{34}\) Hodgkinson 10-11.
An expert must be qualified. This means that he must satisfy the court that he possesses sufficient skill, training or experience to assist it.\textsuperscript{35}

The concept of what constitutes adequate qualification is elastic. It is not generally \textit{a sine qua non} that an expert must have had theoretical training or practical experience.\textsuperscript{36} The competency of the expert is a preliminary question for the judge and is one upon which, in practice, considerable laxity prevails. Though the expert must be “skilled” by special study or experience, the fact that he has not acquired his knowledge professionally goes merely to weight and not to admissibility.\textsuperscript{37}

The judicial officer must decide in each case whether the witness is sufficiently qualified to assist the court. His experiential capacity need not necessarily be acquired in the course of a profession, but may be the result of personal experience or even his own reading.\textsuperscript{38}

It is the function of the presiding officer to decide whether the witness has sufficient qualification to be able to give assistance. The court must be satisfied that the witness possesses sufficient skill, training or experience to assist it.\textsuperscript{39} In South Africa, there are some cases such as Atlantic Harvesters of Namibia (Pty) Ltd v Unterweser Reederei GMBH of Bremen\textsuperscript{40} that say that experts who give their opinion on matters of foreign law, must be lawyers practising in the courts of the country whose law our courts want to ascertain. There is no general rule that the expert’s knowledge upon the subject matter of his evidence must derive from personal experience rather than from reading. Opinions on scientific matters usually involve reliance upon data provided by others. The generalisations which are the result of one man’s personal observation exclusively are the least acceptable of all.\textsuperscript{41}

\textsuperscript{35} Menday v Protea Assurance Co Ltd 1976 (1) SA 565 (E); Mahomed v Schaik 1978 (4) SA 523 (N).
\textsuperscript{36} LAWSA Vol 9 par 507.
\textsuperscript{38} Du Toit, De Jager, Paizes, Skeen and Van der Merwe \textit{Commentary on the Criminal Procedure Act 51 of 1977} 24-28.
\textsuperscript{39} Meintjes-Van der Walt “Science Friction: The Nature of Expert Evidence in General and Scientific Evidence in Particular” 771.
\textsuperscript{40} 1986 (4) SA 865 (C).
\textsuperscript{41} Hoffmann and Zeffertt 302 and S v Maqhina \textit{supra}.
2.6 THE BASIS OF THE OPINION

The opinion of an expert may be given on facts within his personal knowledge or on hypothetical facts. It is essential for the court to know what facts have been relied on as the basis of the opinion. Bold statements of opinion may have little, if any, value, the weight to be attained to them will depend on the circumstances. An expert may refer to data garnered from the experience of others, provided that he has the necessary qualifications to evaluate the data and to know where to find reliable sources of information. Opinion evidence that is not linked to the facts is mere abstract theory. An expert cannot base his opinion, on for instance documents that are not before the court.

Expert witnesses are in principle required to support their opinions with valid reasons. Much will depend on the nature of the issue and the presence or absence of an attack on the opinion of the expert. If proper reasons are advanced in support of an opinion, the probative value of such opinion will of necessity be strengthened. In Cooper (South Africa) (Pty) Ltd v Deutsche Gesellschaft für Schädlingsbekämpfung Mbh it was said:

“[a]n expert’s opinion represents his reasoned conclusion based on certain facts or data; which are either common cause; or established by his own evidence or that of some other competent witness. Except possibly where it is not controverted an expert’s bold statement of his opinion is not of any real assistance. Proper evaluation of the opinion can only be undertaken if the process of reasoning which led to the conclusion, including the premises from which the reasoning proceeds, are disclosed by the expert.”

There are extreme cases where expert evidence can be so technical that the court may not be in a position to follow the exact reasoning of the expert or observe the specific points of identification. In such an instance great emphasis will be placed upon the general repute of the witness’s profession and the absence or presence of possible bias. In R v Nksatlala it was said:

“[A] Court should not blindly accept and act upon the evidence of an expert witness; even of a finger-print expert; but must decide for itself whether it can safely accept the

42 LAWSA Vol 9 par 509 and S v Gouws 1967 (4) SA 527 (E); S v Mngomezulu 1972 (1) SA 797 (A) and Mohamed v Shaik supra.
43 S v Seedat 1971 (1) SA 789 (N) 792-793.
44 Schwikkard et al 93 and S v Ramgobin 1996 (4) SA 117 (N); S v Mthimkulu 1975 (4) SA 759 (A) and S v Claassen 1976 (2) SA 281 (C).
45 Supra.
46 1960 (3) SA 543 (A).
To guard against the court being misled, it is essential that those facts upon which the witness bases his opinion are given in evidence. This places the court in a position to assess the reasoning of the witness and to reject his opinion if unfounded.47

Expert evidence has little value if it is not linked to the facts of the case. Schmidt says that if the expert is not familiar with the facts of the case, the normal approach would be to put the facts as a hypothetical case to him or to request him to listen to the evidence of other witnesses.48

In S v Williams49 Aaron J remarked that the failure of an expert to furnish reasons for his opinion affected only the weight and not the admissibility of his evidence. While this is so, since it is clear that the courts frequently receive the opinion of an expert that is not supported by reasons, it is respectfully submitted that Zeffertt is correct in suggesting that it is conceivable that a failure to give reasons may so detract from the value of the evidence as to leave it without any weight, in which case it has no probative value and is therefore irrelevant and hence inadmissible.50

2.7 Conclusion

The above discussion merely serves as an exposition of the basis of the opinion of an expert. It should be used to comprehend the discussions in the chapter to follow. It is essential for the court to know what facts have been relied on as the basis of the opinion. What is apparent is that the court should be made aware of the expert’s assumed premises and the facts within his personal knowledge on which he is relying. It is for the court ultimately to decide whether an expert’s opinion is to be relied on or not and to determine what weight has to be given to it.

47 Schmidt 432.
48 Schmidt 439 and S v Laubscher 1979 (3) SA 47 (A) 60C.
49 1985 (1) SA 750 (C) at 753G
CHAPTER 3
THE PRESENTATION AND ADMISSIBILITY OF EXPERT EVIDENCE
DEALING WITH DNA EVIDENCE IN COURT

3.1 INTRODUCTION

There is an increasing trend towards greater use of and reliance on forensic science to provide
the necessary evidence in the fight against crime. If matters arise in our law which concern
other sciences or faculties, our courts commonly apply for the aid of that science or faculty.
Certain forms of expert evidence such as DNA testimony can be important and powerful tools
in crime detection and proof. While science is depicted as explaining and predicting natural
and social phenomena, legal procedures are concerned with setting factual disputes. All
evidence presented at a criminal trial is introduced with the objective of placing the court in a
position to determine the relevant facts of that particular case. Expert evidence is usually
sought because the expert by definition possesses knowledge, skill or expertise that the trier
of fact lacks. The function of the expert is not to decide the matter in issue, but to assist the
tribunal in dealing on issues that are beyond the knowledge of the tribunal.

An expert in the legal process therefore needs to possess sufficient specialised knowledge,
skill, training or experience to enable him to supply information and opinion not generally
available to members of the public.51

In South Africa the prevalent view is that experts can be introduced not only where the court,
by lack of special knowledge and skill is incapable of forming an opinion unassisted, but also
in circumstances where the court could come to a conclusion, but where the help of the expert
could be useful.

Expert opinion is, in general, required to explain the workings and reliability of mechanical
devices.52

51 Meintjes-Van der Walt “The Paradoxes and Dilemmas of Expertise in the Criminal Justice Process” 58-
60; S v Bertrand 1975 (4) SA 142 (C) 149B-C; R v Van Schalkwyk 1948 (2) SA 1000 (O) and S v Adams
1983 (2) SA 577 (A) 586A.
52 S v Mutle 1970 (4) SA 535 (T).
The value of an expert is not to expose and further the cause of a particular party, but to assist the court in coming to a proper decision on technical and scientific matters. It should therefore at all times be remembered that an expert is primarily there to assist the court and not necessarily to further the cause of his particular client.

3.2 ARE EXPERT WITNESSES DIFFERENT FROM OTHER WITNESSES?

A person who, by virtue of some specialised knowledge, skill or training testifies for the prosecution or defence, is deemed to be an expert witness.

In the case of expert evidence, often highly technical and complex issues need to be put across in simple terms to the tribunal of fact, be it a jury of a judge sitting alone or with assessors, all of whom may well know nothing of the area of expertise. In the adversarial system in particular, expert evidence is inherently different from other types of evidence. Gross\textsuperscript{53} supports this view and develops his argument by considering each of the four stages that evidence passes through, namely:

\begin{enumerate}
\item the location and inducement of the witness to testify;
\item witness preparation;
\item presentation of evidence, and
\item the evaluation of the testimony.\textsuperscript{54}
\end{enumerate}

In the ordinary course of events an expert witness need not have had any previous contact with the case. Expert witnesses differ from lay witnesses who are usually observational witnesses, in that the experts’ entire knowledge of the case might have been obtained after they have been enlisted as witnesses.

This means that litigation parties may be able to select those witnesses who will serve their case best.

Firstly, expert opinion witnesses cannot be compelled to testify. Secondly, expert witnesses are reimbursed for their services. Gross further argues that because expert witnesses are paid

\textsuperscript{54} See \textit{S v H} 1981 (2) SA 586 (SWA).
witnesses, they can become professional witnesses, perfecting their courtroom performance by repeated practice in order to present their testimony and achieve the maximum effect. A lay witness, by contrast, usually has no incentive in shading his or her testimony in favour of one or the other side. The expert is subjected to pressure to make findings favourable to the party instructing him.

Experts, like all witnesses, have a duty to state what is, or what they believe to be, the truth about matters upon which their opinion or their recollection is being sought.

There are particular pressures upon experts, who are frequently in more than one sense professional witnesses, to give evidence which is either intentionally false or, though correct, misleading by omission.55

### 3.3 BIAS

The problem of partisanship of experts has long been a cause of concern within the adversarial system. Forensic scientists, even though employed by independent agencies, may be particularly susceptible to subtle bias.

Problems associated with partisan identification is exemplified by the “miscarriage of justice”. In the English case of *R v Maguire*56 it was held that failure on the part of Home Office forensic scientists to disclose matters which might have been of significance to the defence could have given rise to a material irregularity even if the prosecution were unaware of the fact. The three prosecution scientists in *R v Ward*57 were admonished by the Court of Appeal for having “knowingly placed a false and distorted scientific picture before the jury” by withholding data which might have assisted the defence case. The bias concerned may be completely unconscious.58 An expert witness may therefore be honest, yet biased.

Expert bias can range from wilful misrepresentation to unconscious bias existing merely by virtue of being placed in an adversant position. It is my view that expert witnesses who give

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55 S 212(4) of the Criminal Procedure Act 51 of 1977.
56 1992 QB 936.
57 3 ALL E.R. 241.
evidence of an opinion not generally held, could be guilty of perjury, while those who suppress relevant information may be guilty of obstructing the course of justice. Expert witnesses need to be objective and need to express only opinions genuinely held, free from bias in favour of either party.

One way of addressing the problem of partisanship would be to give consideration to the introduction of neutral experts or expert assessors. South African judges and magistrates have the power to call a witness *mero motu*. A witness independent of the parties, should be appointed by the court.

A number of decisions have articulated the advantages of court-appointed experts. Sir Thomas Bingham MR noted in *Abbey National v Key Surveyors*:\(^59\)

> “It was argued that appointment of a court expert was pointless, since it merely meant the instruction of an additional expert whose opinion would carry no more weight than any other. We feel bound to say in our opinion this argument ignores the experience of the court of many years.

> For whatever reason and whether consciously or unconsciously, the fact that expert witnesses instructed on behalf of parties to litigation often tend, if called as witnesses at all, to espouse the cause of those instructing them to a lesser or greater extent, on occasion becoming more partisan than the parties. There must be at least a reasonable chance that an expert appointed by the court, with no axe to grind, but a clear obligation to make a clear and objective valuation, may prove a reliable source of expert opinion. If so, there must be a reasonable chance at least that such an opinion may lead to settlement of a number of valuation issues.”

The adversarial notion of conscious or unconscious identification of the expert is contrary to the rationale for the introduction of expert evidence:

> “The value of an expert is not to espouse and further the cause of a particular party, but to assist the court in coming to a proper decision on technical and scientific matters. It should therefore at all times be remembered that an expert is primarily there to assist the court and not necessarily to further the cause of his particular client to such an extent that he loses objectivity and in fact, undermines his client’s case.”\(^60\)

Arguments against court appointed experts are usually two-fold. Firstly, it is argued that such experts may be too powerful and therefore difficult to contradict.\(^61\) In the second

\(^{59}\) (1996) EGCS 23.  

\(^{60}\) Hodgkinson 14-15.  

\(^{61}\) *Coopers (SA) (Pty) Ltd v Deutsche Gesellschaft für Schädlingsbekämpfung Mbh supra* 370G-H. See also *R v Turner* [1975] 2 QB 534 at 841 and *S v Nel* 1990 (2) SACR 136 (C).
instance it is contended that because the witness has no partisan interest, he will not perform competently. Alldridge dispatches the first concern by countering that court appointed witnesses, “should carry more weight, because there is every reason to believe that their evidence will be better evidence”.

The court has to decide whether the expert opinion evidence is admissible if it is relevant, inadmissible if it is irrelevant. The fact that the cardinal duty of the expert is to the court, has been reiterated on many occasions and emphasised most recently in S v Huma.

In South Africa the role players in the criminal justice process have not yet grappled with the problems surrounding the introduction of expert evidence in the resolution of legal disputes.

An expert owes allegiance to the court and not to the party on whose behalf he has been called. Assistance to the court should therefore serve as the “golden thread” that should inform any solution to be considered in future.

3.4 PRESENTATION OF EXPERT EVIDENCE

In civil trials and criminal proceedings opinion evidence has to be given viva voce.

There are instances where in criminal proceedings opinion may be received on affidavit or certificate, as prima facie evidence. A certificate may be received in lieu of an affidavit in any case where skill is required in chemistry, anatomy or pathology.

Before an affidavit or certificate is produced as prima facie proof, the court may require that the person who made the affidavit or issued the certificate give oral evidence or it may cause

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63 Alldridge “Scientific Expertise and Comparative Criminal Procedure” 1999 Editor and Publisher 152.
64 1995 (1) SACR 409 (W).
65 Meintjes-Van der Walt “Science Friction: The Nature of Expert Evidence in General and Scientific Evidence in Particular” 773.
66 Schmidt 429.
67 Hoffmann and Zeffertt 289.
68 S v Loeve 1996 (1) SACR 560 (N).
written interrogatories to be made. The interrogatories and the purported replies to them, are also admissible.69

In civil proceedings a party who wishes to call an expert has to give notice to his opponent, at least 14 days before the hearing, of his intention to do so.70

He must also deliver a summary of the expert’s conclusions and his reasons for reaching them. The parties may consent to a witness’s being called without these formalities and the court has the power to grant leave to a party to call a witness in the absence of due compliance.71

Rule 24(9) of the Rule of the Magistrate’s Courts and Rule 36(9) of the Rules of the Supreme Court provide as follows:

“No person shall save with the leave of the court or the consent of all parties to the suit; be entitled to call as a witness any person to give evidence as an expert upon any matter upon which the evidence of expert witnesses may be received; unless he shall:

(a) not less than fifteen days before the hearing; have delivered notice of his intention so to do; and

(b) not less than ten days before the trial; have delivered a summary of such expert’s opinion and his reasons therefore.”

In civil trials and criminal proceedings opinion evidence has to be given viva voce.72 There is a series of conflicting and confusing South African cases not only on the procedure to be adopted where an expert testifies from his written report, but also as to the question to what extent the written report as opposed to the viva voce evidence is received as evidence.73

Fairness and efficiency in the administration of justice depend in large measure upon the quality of information available to litigation parties. It has been said that “the right to make full answer and defence and the right to be presumed innocent until proven guilty are the most sacred ideals of the modern criminal justice system”. Pre-trial disclosure by the prosecution

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69 Hoffmann and Zeffertt 299.
70 Visagie v Gerryts en ’n Ander 2000 (3) SA 670 (C) at 681A-B.
71 Schwikkard et al 89.
72 LAWSA Vol 9 par 504.
73 Schmidt 438; S v Nangutuula supra.
is one way in which the defence is able to adequately answer to the case to be met and competently challenge evidence.

Prior to the adoption of the Interim Constitution of the Republic of South Africa\textsuperscript{74} the prosecution was entitled to claim privilege with respect to the police docket and thus could refuse to release the information or documents it contained to the accused.\textsuperscript{75}

The dispute in criminal cases in South Africa was finally laid to rest when the Constitutional Court pronounced that “blanket docket privilege” as expressed by Mahomed DP in \textit{Shabalala v Attorney-General of the Transvaal}\textsuperscript{76} is inconsistent with the Constitution to the extent to which it protects from disclosure all the documents in a police docket in all circumstances, regardless of whether or not such disclosure is justified for the purpose of enabling the accused properly to exercise his right to a fair trial in terms of section 25(3).

It is recommended that objective aspects of forensic science procedures can be addressed by South Africa subscribing to international quality control protocols and professional standards and methods. Reciprocal disclosure of expert evidence should be seen as a device of assisting the court in the adversarial context by the proper presentation and competent challenge of expert evidence, thereby eliminating the obfuscating effect that trial by ambush can have.

In the context of expert evidence, in particular, the criminal justice system cannot be expected to adequately deal with scientific evidence without pre-trial disclosure.

### 3.5 THE PRESENTATION OF DNA EVIDENCE IN SOUTH AFRICA

Where crime scene samples have been collected, forensic scientists become involved in conducting investigative tests. Where suspects are involved, collection of samples for comparative tests also becomes important. The pre-trial investigative procedures can be crucial to the ultimate admissibility, reliability and the weight attached to expert evidence.

\textsuperscript{74} Act 200 of 1993.

\textsuperscript{75} \textit{R v Steyn} 1954 (1) SA 324 (A).

\textsuperscript{76} 1995 (12) BCLR 1593 (CC).
There are many places in the chain of expert evidence where human error may affect the outcome of scientific testing, for example missing samples, contaminating samples, mislabelling and use of non-sterile tools or repositories. No matter how accomplished the expert or how valid the specific scientific technique: if the actual procedures in case do not comply with certain quality assurance standards, the results will be flawed.\textsuperscript{77}

South Africa has no legislation dealing specifically with the collection of bodily samples from suspects and arrested persons.

Section 65(4) of the Road Traffic Act\textsuperscript{78} states that where in any prosecution in terms of this Act proof is tendered of the analysis of a specimen of the blood of any person, it shall be presumed, in the absence of evidence to the contrary, that any syringe used for obtaining such specimen and the receptacle in which such specimen was placed for despatch to an analyst, were free from any substance or contamination which could have affected the result of such analysis.

For the purposes of subsection (5) the concentration of alcohol in any breath specimen shall be ascertained by using the prescribed equipment.

Section 37 of the Criminal Procedure Act\textsuperscript{79} makes provision for the taking of the necessary steps by police officials to ascertain whether the body of an arrested person has “any mark, characteristic or distinguishing feature or shows any condition or appearance”. Section 225(2) provides that evidence of fingerprints, palm prints or footprints will not be inadmissible by reason only that they were not taken in accordance with the provisions of section 37.

In \textit{S v Binta}\textsuperscript{80} the then Cape Supreme Court (now the High Court) was faced with the question of whether a refusal to allow the taking of a blood sample, being a mere omission, could constitute the crime of obstructing the course of justice. Although the court found in favour of the accused, this did not prevent Ackerman J from concluding that the police were entitled

\textsuperscript{77} \textit{S v Binta} 1993 (2) SACR 552 (C) and \textit{S v Kite} 1994 (1) SACR 14 (E).
\textsuperscript{78} Act 93 of 1996.
\textsuperscript{79} Act 55 of 1977.
\textsuperscript{80} \textit{Supra.}
to use such force as is reasonably necessary to achieve this end (the taking of a blood sample),
even if it is against the wishes of the detainee.

There could also be circumstances where bodily samples need to be obtained from people
other than the particular accused for purposes of comparison or exclusion. This could occur
in the context of DNA evidence where, for example, the defence might insist on samples of
relatives of the accused being taken. The general rule would be that the consent of these
individuals or their guardians is required. The decision in *C v Minister of Correctional
Services*\(^81\) dealing with the blood samples taken from a prisoner for an HIV test is
illuminating.

In South Africa in *S v Motloutsi*\(^82\) maintenance of the thermocycler used in the DNA typing of
evidentiary material was challenged by the defence where it was discovered that components
essential to ensuring consistent temperature charges were unavailable at the time of testing.
Furthermore, when the machine was tested, it was discovered that the 4ºC storage facility was
not functional. The prosecution chose not to rely on the DNA evidence.

Application of DNA analysis has recently been extended to forensic investigations and
consequently a profusion of questions have arisen regarding the methodological standards and
the reliability and interpretation of results. In criminal cases in particular, DNA typing can be
extremely powerful in either proving or disproving the presence or involvement of a suspect.
In 1986 the *Pitchfort* case,\(^83\) involving two sexual assaults and murder, pioneered the use of
DNA evidence in criminal investigations. DNA typing was used to exclude one suspect,
while another suspect’s profile was found to match with that of semen found on the victims.
This case elicited immediate recognition of the power of DNA profiling.

The following year DNA typing was introduced in the United States and was hailed as “single
greatest advance in the … goal of convicting the guilty and acquitting the innocent, since the
advent of cross-examination. DNA evidence went unchallenged in courts for the next few
years until the Landmark *Castro* case questioned the procedures and results of DNA typing.

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\(81\) 1996 (4) SA 292 (T).
\(82\) 1996 (1) SACR 78 (C); Menday *v Protea Assurance Co Ltd* supra; Mahomed *v Shaik* supra.
\(83\) (1986) 65 Criminal Review 3rd 122 at 128-9; Easteal, Mcleod and Reed *DNA Profiling Principles; Pitfalls
and Potential* (1991) 42.
This initiated a series of disputes between scientists, which were dramatically referred to as the ‘NDA War’.” 84

Despite attempts to draw attention to the applicability of DNA finger printing evidence in South Africa and despite the existence of unsuitable testing laboratories, the use of extremely small crime samples as a source of DNA for forensic investigation in South Africa in 1995 was both accepted and challenged in court in the same year. 85

Judges and lawyers should not only be aware of the technical aspects of DNA typing, but should also be conversant with the significance of all factors relevant to the evaluation of the data.

3.6 ADMISSIBILITY OF DNA EVIDENCE

In the United States of America special rules pertaining to the legal standard of evidence were originally set in Frye v United States. 86

The court established that for a particular scientific procedure to be admissible as evidence in a court of law, the procedure must be generally accepted in the scientific community. A new legal standard for the admissibility of scientific evidence was established in Daubert v Menell Dow Pharmaceuticals, Inc. 87 In Daubert the Supreme Court of the United States held that general acceptance within the scientific community alone is not an adequate gauge by which to measure whether or not a particular scientific technique should be admitted.

In United States v Martinez 88 the court found that the inquiry raised in Daubert mandates a preliminary hearing to determine if the expert properly performed the scientific procedure. The court held that such a hearing suggests that the inquiry goes beyond merely the reliability of the abstract principles or methodologies. According to the Martinez judgment, Daubert requires the trial court to determine whether the expert applied a reliable technique in the

84 Meintjes-Van der Walt “The Use of DNA Evidence in South Africa: Powerful Tool or Prone to Pitfalls?” 1997 Vol 114(1) SALJ 151-173.
85 S v Nondale & Another (Eastern Cape Division CC 20/95 unreported) and S v Smile 1998 (1) SACR 688 (SCA).
86 293 F 1013 (DC Circuit 1923).
87 113 S Ct 2786 (1993).
88 3F3d1191 (8th Circuit 1993).
particular case. The *Daubert* decision, therefore, has the effect that if the proponent of scientific evidence cannot convince the court of the evidentiary reliability of the evidence, it will not be admitted. In practice, this would mean that the prosecution is obliged to adduce evidence in support of the reliability of the technique. This indicates ensuring that the appropriate protocols and controls are implemented. In the United Kingdom there are no specific rules that are designed to screen out potentially unreliable scientific evidence.

South Africa, unlike the United States, does not have special rules of evidence that control the admissibility of scientific evidence. Section 225 of the Criminal Procedure Act states that whenever it is relevant in criminal proceedings to determine whether the accused has any “characteristic or distinguishing feature”, evidence of such characteristic or distinguishing feature, including the result of any blood test, is admissible.\(^89\)

Generally, DNA evidence will be admitted, and the issue to be determined by the trier of fact goes to the weight that should be attached to such evidence.

The complex technique of DNA typing which combines principles of molecular biology, population genetics and statistics, often provides a compelling nexus between an accused and a particular victim or crime scene. As DNA is found in the nucleus of all cells, it leaves traces wherever persons go. It is now possible to determine a person’s genetic profile utilising very small pieces of evidence such as a single hair, a speck of blood, a drop of saliva left on a glass, in chewing gum, on an envelope, a postage stamp or a toothbrush, from perspiration on clothing and a minute drop of sperm.

The consistency of DNA through a given person’s body and the uniqueness of a given person’s DNA are factors which make DNA evidence valuable for identification purposes. In determining whether the DNA from two separate samples comes from the same person, it is not possible given the current state of science to compare them over the whole genome. Current testing techniques use several markers targeting a particular case on the genome.

For DNA fingerprinting purposes *loci* are chosen that display considerable variability among individuals. In most current methods the variability is manifested by difference in the length

\(^{89}\) *LAWSA* Vol 9 par 509; *S v Gouws* 1967 (4) SA 527 (E); *S v Mngomezulu* supra and *Mohamed v Shaik* supra.
measured by the number of bases or the number of times a given sequence repeats between pre-specified locations. This procedure will yield two measurements for each sample for each locus, one from the father’s side and one from the mother’s side. In comparing two samples at a given locus, if the pair of measurements from one sample is the same as a pair of measurements form the other, the profiles are said to match out that locus. If the two profiles match at each of the loci examined, the profiles are said to match.

Once a match has been declared between the crime sample and that of the suspect, the significance of the match is determined by estimating the frequency with which that profile would occur at random in the population. This is called the match probability and describes the statistical probability with which a randomly selected person will have a DNA profile that matches the crime sample. This obviously requires knowledge of the frequency with which the alleles represented occur within a population. This calculation is of particular importance, as DNA typing cannot claim to provide without doubt the genetic identity of two samples. Such typing evidence, with the aid of population genetics statistics, can merely indicate that two samples are likely or unlikely to have originated from different sources. The calculation would, however, be impossible if the statistician did not have access to the profiles of a large number of randomly chosen people whose DNA was previously profiled.90

The use of DNA profiling in the context of the criminal justice process raises issues ranging from the technical aspects of the procedure to question about population data and statistics. There has been paucity in South Africa of reported judgment dealing with these aspects of DNA evidence. It is against this background that the judgment S v Maqhina91 should be seen in its preparedness to scrutinise genetic evidence.

Facts

Two accused were jointly charged with murder. Only the facts that relate to accused 2 are relevant to the discussion. The second accused contended that he was not involved in the murder. He alleged that he had at all relevant times been working on a neighbouring property

91 Supra.
and had no knowledge of the charge of murder against him. The prosecution case against the accused in question rested entirely on the result of DNA testing.

Based on the results of the DNA profiling conducted at the State Forensic Science Laboratory, it was held that neither of the accused could be eliminated as the source of the DNA found on the knife with which the deceased had been stabbed. DNA testing of genetic material found on the trousers worn by accused 2 on the date of the murder revealed that the deceased could not be eliminated as the source of that DNA. This result of the DNA profiling was used by the forensic expert of the prosecution to estimate the statistical frequency of achieving such result in a reference population. Generally the purpose of statistical estimates is to provide meaning to DNA test results by showing the likelihood that an unrelated person in the reference population would match by chance. To illustrate how the result obtained by DNA testing was expressed as certain statistical values, the honourable judge cited the example of the genetic material from the “deceased” found on accused 2’s trousers, which based on the black population, translated into a frequency of 1 in every 16549 persons, having a genotype combination such as that of accused 2. Van Oosten J then continues to say that based on this result, “the possibility that the deceased deposited the genetic material on accused’s trousers could not be ruled out”.

**The Judgment**

The main thrust of the judgment conveys the role of expert witnesses and the procedures that should be followed in the process of scientific analyses. Van Oosten J reiterates the particular responsibility borne by expert witness towards the court and emphasises this duty especially in circumstances where the court does not possess the expertise and facilities to draw appropriate inferences.

During the course of the judgment the shortcomings of the DNA evidence *in casu* were enunciated as follows:

1. **(a)** The State requested to prove the reliability of the databases used for the statistical calculation.
2. **(b)** The methodology of the statistical calculation was also not proved by the prosecution.
(c) The other deficiencies relating to the DNA evidence were based on points highlighted by the expert witness for the defence:

(i) the control samples taken from each of the two accused both indicated a match between the genotype at five of six loci;

(ii) the course of action followed by the expert of the Forensic Science Laboratory did not follow appropriate standard protocols;

(iii) certain control procedures prescribed by the manufacturer of the HLA polimaker test were not followed;

(iv) the colour dot result of the polimaker test with regard to one of the loci was no longer visible and therefore it was impossible to determine whether it had existed at all; and

(v) the prosecution expert neglected to run certain duplicate tests, which, according to the defence expert, made it impossible to determine the reliability of the test.

(d) The Forensic Science Laboratory is not an accredited laboratory.

In the light of the above the court held that where an accused’s guilt depends solely on the results of scientific analyses, it is of paramount importance that not only the testing of procedure, but also the controls applied, should be conducted and recorded with such care that it can be “verified” by an objective expert and ultimately the trial court.

Quality assurance of objective aspects of forensic science procedures can be achieved if South African laboratories were to subscribe to international quality control protocols and professional standards and methods. It is also recommended that laboratories should as far as possible retain portions of crime scene samples and extracts to allow for re-analysis.
The facts in *S v Maqhina* serve to illustrate the problems that could arise in the presentation and interpretation of DNA evidence. This in turn emphasises the need for quality control and assurance, laboratory accreditation, proficiency and confirmatory testing.

### 3.7 GENERAL REMARKS

The challenging of DNA evidence in South African courts has started, despite the relative novelty of the technique in forensic identification. Given that crucial legal judgment is passed in response to the results of such evidence, it is in the interest of justice that a consistent, reliable method of analysis be adopted. Standards for the use of DNA typing evidence in South Africa remain to be established. It is imperative that scientific, forensic and legal representatives develop and enforce standards governing all aspects of the forensic procedure, from sample collection and laboratory analysis to statistical protection. The increasing use of DNA evidence in South African courts required that both scientists and lawyers remain conversant with both the fundamental principles and the new development in forensic DNA technology.

### 3.8 CONCLUSION

A final caveat is required, highlighting the speed with which DNA technology and the refinement of technique are progressing. In reality lawyers who are expected to cross-examine experts are often at a disadvantage in that they do not possess sufficient in-depth knowledge of the specific field of expertise to enable them to cross-examine the witness. The strategies for cross-examining expert witness will be discussed in the next chapter.

It is trite law that a court is not bound by expert evidence. The discussion illustrated that the significance or implications of a matter between two DNA samples cannot be evaluated in a vacuum. While the DNA evidence must be evaluated in the context of the evidence, the statistics relate to specific claims or hypotheses about the origin of the DNA samples.
CHAPTER 4
THE GENERAL PRINCIPLES OF CROSS-EXAMINATION AND
GUIDELINES FOR LEGAL PRACTITIONERS DEALING WITH THE
EXPERT WITNESSES

4.1 INTRODUCTION

After the examination in chief the witness is cross-examined by all the parties to the
proceedings other than the party who called the witness and they have this right regardless of
whether the witness’s evidence in chief was favourable or adverse to their cause. If the
witness is called or recalled by the court, he can be cross-examined only by leave of the court.
Every person sworn in as a witness is subject to cross-examination, including a witness who
was only called to produce and identify a document and a witness who, for some or other
reason, was not examined in chief.92 Cross-examination differs from examination in chief in
that leading questions may be put to the witness. The questions need not bear only upon
issues raised in the examination in chief. They do not necessarily be directly relevant to the
issues, but may be relevant only to credibility.93

The court should prevent “fishing expeditions” and aimless questioning intended only to tire,
humiliate or anger the witness in the hope that he may make a damaging statement.94

The cross-examiner is not required to indicate in advance the relevance of his questions.
Repetitive questioning is permissible, within reasonable bounds, because it is a means of
testing consistency. It is also permissible to put to the witness a statement that has been made
or will be made by another witness, or an inconsistent statement that he himself has made.95

Cross-examination is a fundamental procedural right. It is one of the essential components of
the accusatorial or adversary trial and a natural and integral part of our trial system where

92 R v Zawels 1937 AD 342-349, 359; R v Ndawo 1961 (1) SA 161 (N) and S v Langa 1963 (4) SA 941 (N)
at 950-951.
93 LAWSA Vol 9 par 573; Miller v Proos 1935 OPD 183-188 and R v Ntshangela 1961 (4) SA 592 (A)
598G.
94 Bangly v Cole Ltd 1915 CPD 776; R v Sacks 1931 TPD 188; S v Booí 1964 (1) SA 224 (E) at 227H; S v
Cele 1965 (1) SA 82 (A) 91H; S v Azov 1974 (1) SA 808 (T).
95 Carroll v Carroll 1947 (4) SA 37 (D).
emphasis is placed upon morality. Cross-examination is the name given to the questioning of an opponent’s witness.\textsuperscript{96}

The purpose of cross-examination is first, to elicit evidence which supports the cross-examiner’s case, and second, to cast doubt upon the evidence given for the opposing party. Cross-examination may therefore be directed either to facts relevant to the issue, or facts relevant to the witness’s credibility. Questions which are not relevant either to the issue or to credibility are not allowed.

The objects of cross-examination are threefold:

1. To weaken the strength of the other party’s cause by eliciting evidence adverse to his case.

2. To elicit something in one’s own favour and thereby establish one’s own case.

3. To destroy or weaken the value of the witness’s evidence by showing that he is unworthy of belief.\textsuperscript{97}

The right to cross-examine arises as soon as a witness has been sworn and has given any evidence relevant to the case, even if his evidence consisted only of the identification of a document.\textsuperscript{98}

As a general rule, cross-examination takes place immediately after the conclusion of the examination in chief.

According to O’Dowd\textsuperscript{99} cross-examination has two main objects:

\textsuperscript{96} Van der Merwe, Morkel, Paizes and Skeen Evidence (1983) 290.
\textsuperscript{97} Scoble The Law of Evidence in South Africa (1952) 3\textsuperscript{rd} ed 356; Wrottesley Cross-examination of Witnesses (1961) 2\textsuperscript{nd} ed 109; Phipson 467 and Mews Digest (6) 950.
\textsuperscript{98} Morgan v Bridges; Stark 314; 171 ER 657; Waterhouse v Shields 1924 CPD 155 at 157.
Firstly, to elicit any facts not mentioned in the examination-in-chief and relevant to the cross-examiner’s case, and secondly, to elicit any facts reflecting upon the credibility of the witness which the cross-examiner may wish to place before the court.

The scope allowed to cross-examining counsel is in two important respects wider than that allowed in the examination-in-chief. Firstly, the rule against leading questions has no application to cross-examination. Secondly, certain matters relevant only to credibility may be canvassed in cross-examination.

As a rule a party should put to each of his opponent’s witnesses in turn so much of his own case as concerns that particular witness, or in which he had a share. If he asks no questions, he will generally be taken to accept the witness’s account and will not be permitted to attack it in his final speech, nor will he be allowed in that speech to put forward explanations where he has failed to cross-examine relevant witnesses on the point.100 Just as a party must in cross-examination challenge evidence of fact given in chief by a lay witness which is not accepted, so the opinions of an expert must be challenged if they are to be disputed.101

In common law jurisdictions cross-examination is seen as the most effective device for testing the veracity of witnesses. Great faith is placed in the capacity of the skilful cross-examiner to expose the dishonest, mistaken or unreliable witness and to uncover inconsistencies and inaccuracies in oral testimony. The objectives of cross-examination are to elicit information that is favourable to the cross-examiner and to cast doubt on the accuracy of the evidence given by the witness being cross-examined.102

4.2 THE ART OF CROSS-EXAMINATION

If all witnesses had the honesty and intelligence to come forward and scrupulously follow the latter as well as the spirit of the oath, to tell the truth, the whole truth, and nothing but the truth, and if all advocates on either side had the necessary intelligence and were similarly sworn to develop the whole truth and nothing but the truth, of course there would be no occasion for cross-examination. But as yet no substitute has been found for cross-

100 Phipson 253.
101 Hodgkinson 112.
examination as a means of separating truth from falsehood, and of reducing exaggerated
statements to their true dimensions.\textsuperscript{103}

It is generally accepted that cross-examination proves to be the most hazardous branch of a
prosecutor’s multifarious duties. It can elevate a prosecutor of otherwise mediocre grade to
the class of brilliance, or reduce a genius to a meddling.

To obtain proficiency in this art requires personal experience and the emulation of others who
possess this genius.

According to Wellman cross-examination requires the following elements:

- the greatest ingenuity;
- a habit of logical thought;
- clearness of perception in general;
- infinite patience and self-control;
- power to reach men’s intuitively: to judge of their characters by their faces;
- to appreciate their motives: ability to act with force and precision;
- a masterful knowledge of the subject matter itself;
- an extreme caution; and, above all,
- the instinct to discover the weak point in the witness under examination.\textsuperscript{104}

Wigmore called it “the greatest legal engine ever invented for the discovery of truth”,\textsuperscript{105} but
he probably never saw the engine in action in a case in which the witness speaks Afrikaans,
counsel English, and the accused understands nothing but Xhosa.

**4.3 THE OBJECT OF CROSS-EXAMINATION**

Questions which are not relevant either to the issue or to credibility are not allowed.\textsuperscript{106}

\textsuperscript{103} Engelbrecht \textit{Art of Cross-examination} (1975) Vol 10 1.
\textsuperscript{104} \textit{Ibid}.
\textsuperscript{105} Hoffmann and Zeffertt (1986) 352.
\textsuperscript{106} Hoffmann and Zeffertt 354.
Wrottesly defines the object of cross-examination as follows:

“The objects of cross-examination are three in number. The first is to elicit something in your favour; the second is to weaken the force of what the witness has said against you; and the third is to show that from his present demeanour or from his past life he is unworthy of belief; and this weaken or destroy the force of his testimony.”¹⁰⁷

Morris offers the following as to the objects of cross-examination:

(i) To elicit facts favourable to one’s case;
(ii) To elicit facts which may be used to cross-examine other witnesses;
(iii) To show that adverse evidence is unacceptable;
(iv) To show that the witness himself is not worthy of credence;
(v) To put your case to the witness so that it may be known and commended upon.¹⁰⁸

The purpose of cross-examination is to elicit facts favourable to the cross-examiner’s case and to challenge the truth or accuracy of the witness’s version of the disputed events.¹⁰⁹

According to Scoble the objects of cross-examination are threefold.¹¹⁰

1. To weaken the strength of the other party’s cause by eliciting evidence adverse to his case;

2. To elicit something in one’s own favour and thereby establish one’s own case;

3. To destroy or weaken the value of the witness’s evidence by showing that he is unworthy of belief.

According to O’Dowd¹¹¹ cross-examination has two objects. Firstly, to elicit any facts not mentioned in the examination in chief and relevant to the cross-examiner’s case, and secondly, to elicit any facts reflecting upon the credibility of the witness which the cross-

¹⁰⁷ Wrottesley 78.
¹⁰⁹ Van der Merwe *et al* 290 and *Carroll v Carroll* supra.
¹¹⁰ Scoble 356.
¹¹¹ At 156.
examiner may wish to place before the court. A variety of methods may be adopted in cross-
examination to test the memory, powers of observation and general reliability of a witness.
This will bring the author to briefly discuss cross-examination relating to the credibility of the
witness before further in-depth discussion of cross-examination of expert witnesses.

4.4 CROSS-EXAMINATION AS TO CREDIBILITY

Relevance to credibility is a very elastic concept. A witness’s credibility means not only his
honesty, but also his powers of perception, his memory and his accuracy of narration. Judges
have frequently emphasised that the parties and their representatives should be allowed a wide
latitude in asking questions which may be relevant to any of these matters. Thus Trollip JA in
Shatz Investments (Pty) Ltd v Kalovynas,\textsuperscript{112} in commenting on the fact that there had been an
inordinately long cross-examination that appeared to be irrelevant, remarked that “one should
bear in mind that usually a wide latitude should be afforded a defendant in presenting his
defence; especially when he is confronted with a substantial claim for damages”. The cross-
examiner should be allowed as far as possible to question the witness without interruption
from the court.

In \textit{S v Mngogula}\textsuperscript{113} it was held that a magistrate had committed an irregularity when he
prevented an accused from asking two state witnesses to repeat something they had said in
examination in chief – repetitive cross-examination is permissible within reasonable bounds
because it is a means of testing consistency. The court has a discretion to stop tedious cross-
examination which can have no purpose except to exhaust the witness. Questions which are
merely oppressive and cannot be relevant either to the issue or to credit may be disallowed.\textsuperscript{114}

Cross-examination should be conducted with restraint and dignity and it is, to say the least,
unbecoming for a prosecutor or counsel to be gratuitously offensive to witnesses.

The credibility of a witness may also be attacked by proving his bad character, by proving
that he has made previous inconsistent statements, or by proving that he is biased in favour of
the party calling him. For the purpose of showing bias a witness may be asked about any

\textsuperscript{112} 1976 (2) SA 545 (A) at 560.
\textsuperscript{113} 1979 (1) SA 925 (T). See also \textit{S v Green} 1962 (3) SA 886 (A) at 888.
\textsuperscript{114} \textit{R v De Bruyn} 1997 (4) SA 408 (C) at 412.
statements made by him in which he revealed bias, or about any fact from which bias would result.\textsuperscript{115} An expert witness may, like any lay witness, be cross-examined as to credit.\textsuperscript{116} In the \textit{Irish Law Times} 1974 appears the following: “Witnesses are just as necessary for the administration of justice as judges or jurymen and are entitled to be treated with the same consideration, and their affairs and private lives ought to be as sacred from the gaze of the public as those of the judges or the jurymen.” It appears that this quote serves as a guide to the inexperienced, be of assistance to the experienced, and serves to promote the interest of justice generally.

### 4.5 CROSS-EXAMINATION OF EXPERTS

At the outset it should be mentioned that there is a distinction between matters of scientific fact and mere matters of opinion. On matters of scientific facts experts seldom differ, but in the province of opinion one will find differences. In common law jurisdictions cross-examination is seen as the most effective device for testing the veracity of witnesses. Great faith is placed in the capacity of the skilful cross-examiner to expose the dishonest, mistaken or unreliable witnesses and to uncover inconsistencies and inaccuracies in oral testimony. Although the concept of skilful cross-examination conjures up the image of the cross-examiner destroying the expert witness in the witness box, total demolition of expert evidence in court occurs only rarely.

In reality, lawyers who are expected to cross-examine experts are often at a disadvantage in that they do not possess sufficient in-depth knowledge of the specific field of expertise to enable them to cross-examine the witness. A necessary prerequisite of cross-examination is always that the cross-examiner should have reached a clear understanding of the issues involved in the trial.

Wellman says that as a general practice, it is unwise for the cross-examiner to attempt to cope with a specialist in his own field of enquiry. Lengthy cross-examination along the lines of the expert’s theory is usually disastrous and should rarely be attempted. Should circumstances

\textsuperscript{115} O’Dowd 157-158.
\textsuperscript{116} Hodgkinson 113.
warrant such an attack, there is only one possible approach: the cross-examiner must know more about the topic than does the witness.\textsuperscript{117}

Morris suggests the following approach: The cross-examiner must direct his cross-examination on the line of pure logic or scientific analysis. He must ascertain what factors the witness took into account in arriving at his opinion. If an error is established, the next enquiry is how far that error bears on the result. The cross-examiner should always have his authorities with him in court so as to confront the expert with them. No question should be put to an expert which is in any way so broad as to give the expert an opportunity to explain his own views.\textsuperscript{118}

However, where battle is to be done, lawyers should before they are overawed by the opposing expert and submit in deference to him, consider the following: those who profess expert knowledge do not always possess it and those who possess it, are not always right.

4.6 STRATEGIES FOR CROSS-EXAMINING EXPERTS

Challenge expert qualifications: An expert must be qualified. This means that he must satisfy the court that he possesses sufficient skill, training or experience to assist it. It is not generally a \textit{sine qua non} that an expert must have had theoretical training or practical experience: his qualifications must be measured against the evidence he has to give in order to determine whether they are sufficient to enable him to give relevant evidence.\textsuperscript{119}

Expert evidence can be attacked by showing that the expert does not possess the expertise to give an opinion on a particular point or is going beyond the boundaries of his expertise. The limits of an expert’s right to give opinion evidence are competently explained by Breman J in the Australian case of \textit{R v Murphy}:\textsuperscript{120}

“The object is to be sure that the question to the witness will be answered by a person who is fitted to answer it. His fitness, then, is a fitness to answer on that point. He may be fitted to answer about countless other matters, but that does not justify accepting his views on the matter

\textsuperscript{117} Engelbrecht 8.
\textsuperscript{118} Morris 166.
\textsuperscript{119} LAWSA Vol 9 par 507; Schmidt 438; \textit{Menday v Protea Assurance Co Ltd} supra at 579; \textit{Mohamed v Schaik} supra.
\textsuperscript{120} (1989) 167 CLR 9.
in hand … Since experiential capacity is always relative to the matter in hand; the witness may from question to question; enter or leave the class of persons fitted to answer; and the distinction depends on the kind of subject primarily, not on the kind of person. The fact that an expert has credentials in one area, does not qualify him for giving evidence in other, though related, areas. On hearing that the great Sir Bernard Spilburg had been cross-examined about the injuries sustained by a rape victim, Alex Bourney a distinguished obstetrician, is reported to have said: I have the greatest respect for Sir Bernard when he speak as a pathologist, but when he dares to give an opinion about the treatment of living woman, I would regard it with contempt. A scientist qualified to run DNA tests is not by the same token on expert statistics or population geneticist. A witness may be vulnerable to a challenge based on expertise even if that witness has a relevant academic degree. The cross-examiner can show that the academic qualification may not be relevant to the current testimony or that the witness did not follow courses relevant to the topic of testimony. The cross-examiner can also indicate that even though the opposing expert has the relevant qualifications, he lacks experience and therefore less weight should be placed on his opinion.

4.7 THE CONTEST OF THE BASIS OF OPINIONS

The opinion of an expert may be given on facts within his personal knowledge or on hypothetical facts. It is essential for the court to know what facts have been relied on as the basis of the opinion. It follows that the court should be made aware of the expert’s assumed premises and the facts within his personal knowledge on which he is relying.

Opinion evidence that is not linked to the facts is mere abstract theory. An expert cannot base his opinion on documents that are not before the court.

A cross-examiner needs to subject the basis of the expert’s opinion to rigorous scrutiny.

An expert opinion can be based upon data, facts, tests, observations or truth generally accepted to be within the expert’s milieu. A cross-examiner needs to prove the validity of these bases. An expert can be cross-examined about the basis of his opinion, regardless of whether those bases were canvassed under direct examination. The expert can also be asked to explain the significance of each step of the procedure followed.

The reasoning process of the expert is usually predicted on one or more premises. A competent cross-examiner may also be able to indicate that the expert’s logic in proceeding

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121  Meintjes-Van der Walt “Cross-examination of an Expert Witness” 23.
122  LAWSA Vol 9 par 509 and S v Mngomezulu supra.
123  R v Vilbro supra.
124  S v Bertrand supra.
from the data to a particular inference may be fundamentally fallacious. The available data may not be able to sustain the expert’s opinion, or the expert’s conclusive opinion may be at loggerheads with the equivocal nature of the data available. Cross-examiners should prove the sense of the expert’s conclusion.

Where an expert witness makes unqualified generalised statements, pertinently probing questions are likely to elicit other theories and generalisations on which the opinion is dependent for its validity. A cross-examining lawyer can, in these circumstances, gain a concession that the generalisation is only one probability. It may also be that further probing into the conditions in which the observations were made, could expose inadequate grounds as a basis for the expert’s inductive reasoning.

4.8 SECURING ADVANTAGEOUS CONCESSIONS

A cross-examiner of an expert need not engage in destructive cross-examination in order to achieve his goal. It is advisable for counsel rather to seek to use the opposing expert to strengthen his case. This approach is probably the best to be adopted especially if the cross-examiner does not have his own expert witness with him in court.

This can be accomplished by inducing the other side’s expert to agree with one’s interpretation of the facts as “possible” or “feasible”. Control can be exerted by the cross-examiner by insisting on yes/no answers. A cross-examiner can get a witness to concede to the uncertainty of his testimony. However, given the nature of science and the acknowledged inherent uncertainty in most fields of expertise, the question may be asked whether a cross-examiner achieves much by eliciting a concession of uncertainty. Some measure of certainty is required in order to justify proof beyond reasonable doubt.

An expert may also be confronted with textbooks within his specific field of expertise. If the expert agrees that the textbook is an acknowledged work, he may be asked whether he agrees with a specific passage. However, no reliance may be placed on other sections of the work that had not been put to the witnesses.125

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125 R v Mofekeng 1928 AD 132 at 136; S v Harris 1965 (2) SA 340 (A); S v De Leeuw 1990 (2) SACR 165 (NC).
The lawyer’s own expert should help prepare him for cross-examination, for instance by reviewing the report of the opposing expert in order to analyse both his methodology and conclusions.

4.9 EXPOSURE OF BIAS

It has long been recognised by the courts that bias is not the preserve of lay witnesses, and that experts may display it in their evidence. Indeed, in many respects the incentive for experts to favour one party contrary to their actual belief as substantial. First, expert witnesses are paid for their evidence. Secondly, they may be retained on a regular basis by a particular client or group of clients in different cases. Thirdly, the expert may hope to gain favour with a client generally, perhaps because he hopes that non-legal professional engagements may be forthcoming or continue.

Lord Campbell noted that the temptation to bias was strong, even for “respectable witnesses”, and took the view that scientific witnesses should not in general be accorded much weight.126

Bias or the inclination in favour of the party by whom the witness is employed, has through the ages been the most frequent judicial criticism levelled against expert witnesses. Expert witnesses have for long been described as “hired guns” or “intellectual prostitutes” and the tending of experts to become partisan has recently, in Abbey National Mortgages (Pty) Ltd v Key Surveyors Nationwide Ltd127 been described by Bingham MR as follows:

“[F]or whatever reason, and whether consciously or unconsciously; the fact is that expert witnesses instructed on behalf of parties to litigation often tend … to espouse the cause of those instructing them to a greater or lesser extent, on occasions becoming more partisan than the parties.”

In many instances expert evidence is based on tests which require a considerable degree of interpretative skill. The case information passed on to forensic scientists when they are instructed may taint or subtly influence their conclusions. Witnesses who are honest are not necessarily objective. Freckelton enumerates a number of indicia of bias:

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126 Davidson v Davidson (1860) 22 S.C. 749 at 751-752 and Hodgkinson 213.
127 Supra 23.
1. over-enthusiastic participation in the trial;
2. refusal to acknowledge alternatives;
3. overstatements and exaggeration;
4. evasive and aggressive demeanour as witnesses; and
5. prior or current financial interest.

Cross-examiners can, therefore, profitably probe whether the same procedures and equipment have been used to test both the control and the trace.128

**4.10 FLAWED PROCEDURES**

When a scientific practice, test or experiment is firmly established as reliable, more emphasis can be placed on the experimenter and possible procedural anomalies than on the technique. Where the practice or technique is not firmly established among core scientists in that particular field, its very scientific nature or relevance may be challenged through cross-examination by good cross-examiners. Where the data on which the experts bases his opinion are in turn the results of tests conducted on samples or traces found at the scene of the crime, the cross-examiner can indicate whether the chain of custody is broken or flawed. Even where the chain of custody remains intact, the skilful cross-examiner can expose the potential for contamination of the exhibit, unreliability of the particular equipment or any solutions or preparations and incorrect temperatures or conditions associated with the text.129

Despite the expert nature of the evidence, it is better for the cross-examiner that the basics of cross-examination should not be abandoned when dealing with experts. The effectiveness of cross-examination is enhanced by keeping the number of questions to a minimum, opening and concluding with good strong points.

The risk of contamination is greater where the scene of the crime is discovered fortuitously and exhibits are collected by relatively inexperienced policemen as it was the case in the matter of *S v R and Others*.130 Thorough scrutiny of laboratory procedures may reveal inadequacies in this regard. With the assistance of his own expert, a cross-examiner may

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129 *S v R and Others* 2000 (1) SACR 33 (N) and *S v Maqhina supra*.
130 *Supra.*
launch a series of questions aimed at exposing errors or omissions in the counterpart of working procedures. This relates to the matter of *S v Maqhina*\(^{131}\) where the defence counsel’s expert clearly assisted in pointing out the flaws and lack of reliability of the database.

The right of every accused person to a fair trial has long been “a cherished value in democratic societies”. The criminal justice process has the potential to intrude upon the dignity, liberty and property of the person; the right to a fair trial recognises that procedural fairness is required prior to State limitation of any of these core rights. In South Africa the right to a fair trial has been enshrined in section 35(3) of the South African Constitution.\(^{132}\) These rights include the right to challenge evidence, the right to facilities to prepare a defence and the right to be informed of the charge with sufficient detail to answer it. The accused’s right to challenge expert evidence will depend on the financial means of the accused, the availability of the experts and facilities as well as defence access to information and defence counsel’s forensic skills. Cross-examination is seen as the most important aspect of the right to confrontation in the common law procedural system; the efficacy and applicability of this “greatest legal engine in pursuit of truth” is scrutinised in the context of expert evidence.\(^{133}\)

The right of the defence to challenge evidence is found in section 35(3) of the Constitution of the Republic of South Africa. In South Africa, according to the common law tradition, cross-examination is seen as an important component of the right to challenge evidence. Section 166 of the Criminal Procedure Act specifically makes provision for cross-examination of witnesses irrespective of whether they are called by the prosecution, the defence or at the instance of the court:

“(1) An accused may cross-examine any witness called on behalf of the prosecution of Criminal Proceedings or any co-accused who testifies at criminal proceedings; and the prosecution may cross-examine any witness including an accused … called on behalf of the defence at criminal proceedings, and a witness called at such proceedings on behalf of the prosecution may be re-examined by the prosecutor on any matter raised during the cross-examination of that witness, and a witness called on behalf of the defence at such proceedings may likewise be re-examined by the accused.

(2) The prosecutor and the accused may, with leave of the court, examine or cross-examine any witness called by the court at criminal proceedings.”

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\(^{131}\) *Supra.*

\(^{132}\) *S v Coetzee* 1997 (4) BCLR 437 (CC) and South African Constitution s 35(3) Act 108 of 1996.

Expert evidence is specialised evidence “going beyond the knowledge of the trier of fact”, and therefore, also possibly beyond the knowledge of lawyers involved in the litigation. Therefore, no matter how competent a lawyer is and how acute his forensic skills, navigation the seas of expertise, may prove to be an endeavour he is not qualified for. Expert evidence is based on highly complex processes, which only a trained expert can fully understand. Without such insight, defence counsel would not be able to prepare properly for trial and understand appropriate avenues to question results or argue convincingly. A clear need for expert assistance to the defence emerges. The defence expert can advise the defence about the strength and merits of prosecution evidence, suggest alternative ways for scientific investigations or alternative interpretations of the prosecution data and results. Experts for the defence can explain available expertise to defence lawyers and scrutinise the procedures followed by the prosecution, assisting the defence in reaching a decision whether to contest prosecution testimony or not. Defence expert assistance is essential to any line of defence incorporating a direct challenge to the prosecution’s expert evidence.

The ability to challenge expert evidence and have access to defence experts is inseparably linked to establishing equality of arms.

In South Africa, while the right to a fair trial includes the right to legal representation at State expense “if substantial injustice would otherwise result”, the right to have adequate time and facilities to prepare a defence and also the right to adduce and challenge evidence, there is no specific mention of resource allocation for the purpose of expert assistance. Where the issue of the appointment of a ballistics expert to a indigent accused was raised in S v Huma, Claasen J held that the court had the power to appoint such an expert should justice so require. Failure to appoint expert assistance would in fact impact so negatively on the accused’s right to facilities to prepare a defence and challenge evidence, that it would in turn negate his right to a fair trial.

The accused’s right to confrontation in the Netherlands and England/Wales is governed by article 6 of the European Convention on Human Rights. In the Netherlands experts appear as

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134 Supra.
a general rule at the behest of the court and are not party based. This is the case because the Netherlands have an inquisitorial, rather than an accusatorial system of criminal procedure.

In an Australian survey, over a quarter of the Australian judges reported that they encountered bias in expert evidence often while two thirds stated that they occasionally encountered bias on the part of experts.

4.11 CONCLUSION

The general rule is that any witness who has been called and sworn is liable to be cross-examined, whether or not he has given any evidence in chief. Failure to allow cross-examination is a serious irregularity which will almost invariably prejudice a party, since there is no knowing what favourable evidence he might have been able to elicit. Cross-examination of a witness who has been called by the court may be controlled by the judge. The cross-examination of a witness who has been called by the court may be controlled by the court, but the court must exercise this direction judicially and not prohibit cross-examination when this might prejudice one of the parties. The purpose of cross-examination is, first, to elicit evidence which supports the cross-examiner’s case, and second, to cast doubt upon the evidence given for the opposing party. Cross-examination may therefore be directed either to facts relevant to the issue, or facts relevant to the witness’s credibility. Questions which are not relevant either to the issue or to credibility are not allowed. In the next chapter the evaluation and assessment of an expert’s evidence will be discussed.

135 Meintjes-Van der Walt Expert Evidence and the Right to a Fair Trial: A Comparative Respective Expert Evidence in the Criminal Justice Process 175.
137 R v Paul (1920) 2 KB 183; R v Zawels 1937 AD 342 at 349; S v Langa 1963 (4) SA 941 (N) and S v Naidoo 1974 (3) SA 706 (A).
CHAPTER 5
DECISION-MAKERS’ DILEMMA IN EVALUATING
EXPERT EVIDENCE

5.1 INTRODUCTION

The opinion of an expert is admissible if it is relevant. It will be relevant if the witness’s skill, training or experience enables him materially to assist the court on matters in which the court itself does not usually have the necessary knowledge to decide. Where the topic is one in which the ordinary judicial officer could be expected to be able, unassisted, to draw on inference, expert evidence is superogatory. Where the witness does not have the necessary qualification to draw an inference, his inference has no probative value and is, therefore, irrelevant and inadmissible.\(^{138}\)

Expert witnesses are by reason of their special knowledge and acquired skill, better qualified than the court to draw proper inferences.\(^{139}\)

It should be born in mind that expert opinion evidence is admissible when the expert can furnish the court with scientific information falling outside the knowledge and experience of any reasonable court.\(^{140}\)

The ascertainment of facts, based on proof, is not unique to the legal process. While finding facts in law involves the same logic as scientific fact finding, the difference between legal fact finding and law-constructing procedures is justified by the law’s response to the social and normative order rather than the natural order.\(^{141}\)

Proof in both science and law is a quantum and qualification of evidence or data sufficient to support a conclusion. Fact-finders, in the context of expert evidence, are not only faced with the task of determining which elements of experts evidence must be disregarded as irrelevant

\(^{138}\) LAWSA Vol para 506; State v Mjekula 1967 (3) SA 352 (C) at 354-355 and S v Jamasic 1980 (2) SA 598 (C).

\(^{139}\) Hoffmann and Zeffertt 83.

\(^{140}\) Van der Merwe et al 99.

or unimportant, but must also find means of determining the significance or weight that should be attached to expert evidence in any given case.

The philosopher Coady reflects on the dilemma that confronts legal decision-makers faced with expert evidence. The legal tribunal must decide at least three questions:

(a) whether the witness is indeed an expert in the field;

(b) whether the field is a genuine area of science;

(c) whether, given a positive answer to (a) and (b), his particular depositions are credible.

All three of these questions pose difficulty for a legal tribunal since they seem to be questions that only an expert can answer.\textsuperscript{142}

The ratio for the introduction of expert evidence is the possibility that it could assist the trier of fact in evaluating this very evidence which has been introduced to assist it.

The dilemma of conflicting expert opinions has in South Africa resulted in courts being unable to rely on expert evidence.\textsuperscript{143} This problem is overcome in some inquisitorial systems (like the Netherlands) where experts are expected to solve disagreements among themselves, culminating in a joint report presented to the court. The traditional approaches to weighing up evidence, witness credibility, demeanour, and so on may flounder in the sea of expertise as these factors are inadequate to fathom the reliability and validity of specialised forensic evidence.\textsuperscript{144}

5.2 PROOF, PROBABILITIES AND PROBLEMS

The burden of proof is the obligation imposed by the law of evidence on a party seeking to prove a fact. The party must adduce sufficient evidence to discharge the burden and have the fact found proven beyond reasonable doubt. It is contended by Nijboer that the evidential

\textsuperscript{142} Coady Testimony: Philosophical Study (1997) 277.

\textsuperscript{143} S v Calitz 1990 (1) SACR 119 (A).

\textsuperscript{144} Meintjes-Van der Walt “Decision-makers’ Dilemma: Evaluating Expert Evidence” 319-343.
standard in inquisitorial systems is equivalent to the Anglo-American accusatorial standard of beyond reasonable doubt.

Hoffmann and Zeffertt contend that no explanation is necessary, because for judges and magistrates the standard of proof is a matter of experience and intuition rather than any analysis.145

Proof beyond reasonable doubt does not mean proof beyond all doubt whatsoever, or proof to an absolute certainty. The evaluation of evidence implies that the tribunal of fact infers from the proven facts relevant to the issue (fact probation) that the ultimate proposition (the factum probandum) has been proved.

The court should first determine the factual basis of the case before pronouncing on the right, duties and liabilities of the parties engaged in the dispute. The factual basis is determined by evaluating all probative material admitted during the course of the trial. The difficult task of finally analysing and assessing the weight or cogency of probative material arises after all the parties have closed their respective cases and delivered their arguments. The presiding judge or magistrate - and assessors where they have been used – must then assess the weight of the probative material in order to determine whether the party carrying the burden of proof has proved its allegations in accordance with the applicable standard of proof.146

In the evaluation of evidence there are a few legal rules – largely stemming from case law – which can assist the court and which can act as a check.

The difficult mental task of sifting truth from falsehood, of determining credibility, of relying on probabilities, and of inferring unknown facts from the known is by and large a matter of common sense, logic and experience. The absence of extensive legal rules governing the evaluation of probative material must be understood in the light of the following statement by Van den Heever J:

146 Schwikkard et al 369-370.
“In the process of adjudication two factors are constant; namely what must be proved and to what degree of persuasion, but the third factor, namely the quantum and quality of the probative material required so to persuade the court, is subject to great variety.\textsuperscript{147}

The purpose of this discussion is to identify some of the main principles and rules which govern the determination of the quantum and quality of probative material.

It has repeatedly been said that one always has to bear in mind the distinction between the admissibility and the probative value of an expert’s opinion. Whilst most of the problems surrounding admissibility have been eliminated through the imposition of certain requirements and criteria, the same cannot be said of the determination of probative value.\textsuperscript{148}

The following dictum by Schreiner JA in \textit{Nksatlala}\textsuperscript{149} shows how expert opinion evidence should be approached:

“\textit{A court should not blindly accept and act upon the evidence of an expert witness, even of a fingerprint expert, but must decide for itself whether it can safely accept the expert’s opinion. But once it satisfied that it can so accept it, the court gives effect to that conclusion even if its own observation does not positively confirm it. The best ideal is to have expert evidence evaluated by experts.}”

In the context of forensic science evidence experts routinely attest to “matches”. When evaluating such “match” evidence, Koehler\textsuperscript{150} observes that many lawyers and researchers assume that the evidence given by an expert is conclusive proof of “a match between the suspect and crime sample”.

Expert evidence presents peculiar difficulties in the assessment of its probative value. The court does not usually have any means by which it can verify the witnesses’ reputations and experience. A court which relies upon an expert’s opinion is therefore, to a greater or lesser extent, taking a step in the dark – something which should be done only with considerable caution.\textsuperscript{151}

\begin{footnotesize}
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\item \textsuperscript{147} S v Van Wyk 1977 (1) SA 412 (NC) 414E-F.
\item \textsuperscript{148} \textit{Motor Vehicle Assurance Fund v Kenny} 1984 (4) SA 432 (E) and \textit{S v Mashile} 1993 (2) SACR 67 (A).
\item \textsuperscript{149} 1960 (3) SA 543 (A) 546.
\item \textsuperscript{150} “On Conveying the Probative Value of DNA Evidence: Frequencies, Likelihood Ratios and Error Rates” 1996 67 \textit{University of Colorado Law Review} 859.
\item \textsuperscript{151} Hoffmann and Zeffertt 86.
\end{itemize}
\end{footnotesize}
As science and technology advance, the growing sophistication of scientific methodology challenges lawyers and well as scientists to make effective use of this knowledge in legal decision-making. Within this challenge lies the paradoxes and dilemmas encountered when science meets the law in the courtroom. Some problems are associated with structural differences between the system of criminal justice followed in particular jurisdictions, while others arise from the very nature of the evidence itself.

The perception that science has the capacity to give universally accepted, clear-cut authoritative resolutions is a major attraction for the law. The use of scientific knowledge in the resolution of criminal justice disputes gives rise to what is called the “certainty” paradox. The legal process seeks scientific evidence in order to inject certainty into the legal decision-making process, yet at the same time there is a growing awareness that there are no certainties in science. Expert evidence is usually sought because the expert by definition possesses knowledge, skill or expertise that the trier of fact lacks. The function of the expert is not to decide the matter in issue, but to assist the tribunal in deciding on issues that are beyond the knowledge of the tribunal. The court is in a weak position to evaluate whether the expert evidence is genuine, valid or helpful. In the instance of adversarial systems this problem is further compounded by the fact that the court may have to choose between conflicting and contradictory expert evidence. The assessment of expert evidence by means of traditional decision-making processes has been called into question. Conventional methods of evaluating evidence may fail to meet the challenges posed by scientific evidence.

5.3 GUIDELINES FOR ASSESSING EXPERT EVIDENCE BY COURTS

Fact-finders are confronted with the problem of determining the quality, reliability and overall validity of expert evidence. The process of fact-finding is a notoriously difficult one. Certain kinds of evidence are so complex that they pose extreme problems to decision-makers. The ultimate finder of fact is, in the context of expert evidence, often in uncharted waters filled with uncertainties and probabilities. Shaviro contends that: “if one conclusion about the existing, or any, trial system is certain, it is that the system will err in finding facts”. It must be acknowledged that there is a need for guidelines for fact-finders who deal with expert evidence in order to reduce the occurrence of error and to enhance accuracy. This discussion

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is concerned with putting forward certain guidelines which can assist judges, magistrates and assessors in the process of assessing expert evidence and ascribing weight to such evidence. It is argued that the admissibility test for expert scientific evidence as put forward by the Supreme Court of the United State in *Daubert v Merrell Dow Pharmaceuticals Inc*\textsuperscript{153} should not significantly influence South African courts on the issue of the admissibility of expert evidence. However, it is contended that these criteria should be borne in mind when the fact-finder evaluates the specialist evidence and can serve as justification in the judgment.

In the discussion to follow an attempt will be made to indicate how the guidelines of the *Daubert* decision can in addition to other factors be utilised by the fact-finding tribunal in assessing and evaluating expert evidence in criminal matters. Certain of the criteria put forward in the *Daubert* case as significant factors in the determination of the admissibility of expert evidence may be used with equal success in evaluating the significance of expert evidence. Four criteria have been specified in *Daubert* to guide the determination of evidentiary reliability:

\( (a) \) Whether the theory can be or has been tested – is it falsifiable, refutable or testable?

\( (b) \) Whether the theory or technique has gained general acceptance within the scientific community.

\( (c) \) Whether the technique or theory has been subjected to peer review and publication as a means of increasing the likelihood that substantive flaws in methodology will be detected.

\( (d) \) The known or potential error rate and the existence and maintenance of standards controlling the techniques operation.

These criteria are considered next.

\textsuperscript{153} Supra.
They do not purport to constitute, by themselves, an adequate basis for resolving the challenge of adjudicating scientific evidence. This in turn can inform legal decision-makers in the process of evaluating the probative value of such scientific evidence.

5.3.1 TESTABILITY

In *Daubert* the majority held that before judges can consider whether a scientific proposition is valid or reliable, the question should be whether the evidence has been presented in a form that scientists can address.

It must be borne in mind that the concept of falsifiability or testability is separate from the question of when a scientific theory can be corroborated or falsified by observations. Those disciplines that make assertions that are more difficult to falsify if wrong, are consequently potentially less reliable. To the fact-finder the key issue should be whether the theories and techniques testified to by the expert have been subjected to enough testing to establish their reliability. South African courts have traditionally also placed a value on the court’s ability to independently “test” an expert’s opinion as was stated by Ramsbottom J in *R v Jacobs*.154 It is of the greatest importance that the value of the opinion should be capable of being tested and unless the expert states the grounds upon which he bases his opinion, it is not possible to test its correctness so as to form a proper judgment upon it.155

Where the court is not in a position to “test” the expert’s testimony from its own observation, the greater the imperative that if any reliance on that evidence is to be sought, the proposition should have been subjected to appropriate testing and controls during the pre-trial stage. Where fact-finders are in no position to assess for themselves the validity of claims made by an expert, the fact that the expert’s claims have been subjected to testing can at least serve as some guarantee of reliability, independent of the claim of reliability by the expert himself.

154 1940 TPD 142.
155 *S v Mkhabela* 1984 (1) SA 556 (A); *S v Mala* 1965 (4) SA 360 (A); *S v Blom* 1992 (1) SA 649 (EC) and *S v Mkhize* 1999 (1) SACR 256 (W).
5.3.2 RELIABILITY

Reliability is an attribute that is central to both science and law. Scientists take extreme care to ensure that their methodology of data collection, experimentation, replication and analysis is one that is recognised and approved in its field, because reliability gives scientific finding internal validity. The analysis of the *Daubert* majority opinion reveals that the United States Supreme Court expects expert testimony to be “reliable”. This reinforces the first criteria of testability or falsification.

A reliable test would therefore be one that can be repeated under identical circumstances and yield the same results. Reliable results, therefore, might not be trustworthy.156

According to Foster and Hubert the overall reliability of any observation is co-determined by two independent factors:

(a) the reliability of observational tools and skills used by the expert; and
(b) the underlying probability of the observation.157

Whether experts have complied with standards and established protocols should be taken into consideration in assessing the value of expert evidence before court. The competency and education of the expert are also factors that could play a role in this regard.

In order to determine the underlying probability of the observation, a court may appoint its own expert or rely on a neutral court assessor or look towards what is “generally accepted” among other experts in the field.158

The recognition and acceptance of a scientific technique or claim by the scientific community is an important indicator of its reliability. The general acceptance standard as set forth in *Frye*

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can be of assistance in this regard.\textsuperscript{159}

The \textit{Frye} test requires a two-step analysis: first identifying the field in which the underlying principle falls, and second determining whether that principle has been generally accepted by members of the identified field. Another way of determining whether a technique has satisfied the general acceptance standard should be to have regard to whether the process or technique is frequently cited in scientific publication. However, as the court in \textit{Daubert}\textsuperscript{160} remarked: A technique that is well known, but not widely recognised “may properly be viewed with scepticism”. General acceptance can only be a touch stone for reliability if the technique is actually used by many scientists and it is the kind of technique the flaw of which would be revealed by widespread use.

\textbf{5.3.3 VALIDITY}

While the technique used by the expert may be generally accepted, the expert’s application of that technique and the epistemic foundation for the conclusion he has drawn may be lacking, which could affect the validity of the technique.

The validity requirement put forward by the majority in the \textit{Daubert} opinion is aptly summarised in Chief Justice Rehnquist’s dissent: “testimony, we are told, must be supported by appropriate validation. Indeed … the court decides that a case involving scientific evidence, evidentiary reliability will be based upon scientific validity”.

Validity can be defined as the quality of being well-founded on fact, of established on sound principles, and thoroughly applicable to the case or circumstances, soundness and strength. Legal decision-makers need to distinguish between a valid method and the valid use of that method \textit{in casu}.

According to Popper, evaluating the soundness of a scientific theory is not a simple, one-step process, but a process of repeated testing. Popper enumerates different ways in which a theory can be judged:

\textsuperscript{159} \textit{Supra.}
\textsuperscript{160} \textit{Supra.}
by comparing the conclusions that can be deduced from the theory among themselves to see whether they are internally consistent;

by investigating the logical form of the theory or whether it is, for example, tautological;

by comparing the theory with other theories, with the aim of determining whether the theory would constitute a scientific advance should it survive our various tests;

by testing of the theory by way of empirical applications of the conclusion which can be derived from it.161

5.4 EVALUATION OF EXPERT EVIDENCE

It is for the court ultimately to decide whether an expert’s opinion is to be relied on or not and to determine what weight has to be given to it. The court must not blindly accept expert testimony. It is obliged, even where expert evidence is so technical that the average judicial officer would not be able properly to reach an unassisted conclusion, still to decide whether it would be safe to accept the opinion or not.162

If an expert on foreign law refers to a foreign statute, the court is entitled to interpret it and reach its own conclusion. Certain kinds of expert evidence are regarded with more circumspection than others. There has been some reluctance to convict an accused solely on the uncorroborated evidence of an expert; but there is no rule that a court cannot make a finding solely on the evidence of an expert.163

The duty of expert is to furnish the judge or jury with the necessary scientific criteria for testing the accuracy of their conclusions, so as to enable the judge or jury to form their own independent judgment by the application of these criteria to the fact proved in evidence. It has been held that it is wrong to tell a jury that they may disregard scientific evidence when

162 R v Jacobs 1940 TPD 142; Annamma v Chetty 1946 AD 142-145; R v Mbongwe 1954 (3) SA 1016 (T) at 1019; R v Sibonala 1963 (4) SA 182 (SR) 190; S v Gouws 1967 (4) SA 527 (C); S v Du Preez 1972 (2) SA 519 (SWA) and LAWSA Vol 9 para 510.
163 R v Chidotta 1966 (3) SA 428 (RAD) and R v Morela 1947 (3) SA 147 (A).
the only such evidence which has been given to them on a particular question dictates one answer, and only a scientist would be qualified to answer that question.

A similar result was reached in *R v Bailey*\(^{164}\) where, on a charge of murder, expert evidence was called on behalf of the accused to prove diminished responsibility. No evidence in rebuttal was called by the prosecution. The jury convicted the accused of murder, but the conviction was quashed on appeal, on the ground that while juries are not bound to accept the evidence of an expert, they are bound to act on evidence and not on their own intuitions.\(^{165}\)

A court of appeal or review is in some instances in as good a position as the trial court to assess the credibility and test the reasoning of an expert witness. It may be possible to accept direct credible evidence even though it might be in conflict with probabilities arising from expert opinion evidence.\(^{166}\)

In *S v Williams*\(^{167}\) Aaron AJ remarked that the failure of an expert to furnish reasons for his opinion affected only the weight and not the admissibility of his evidence. While this is so, since it is clear that the courts frequently receive the opinion of an expert that is not supported by reasons, it respectfully submitted that Zefferit is correct in suggesting that it is conceivable that a failure to give reasons may detract the value of the evidence as to leave it without any weight, in which case it has no probative value; therefore irrelevant and hence inadmissible.\(^{168}\) In practice a court will rarely accept a bold statement of opinion on the very fact it has to decide.\(^{169}\)

The matter is well put by Milne JP in *S v Ramgobin & Others*.\(^{170}\) When an expert gives evidence in court, it is obviously insufficient if he simply describes in general terms the nature of his investigation and his conclusions therefrom. Perhaps that might be a reasonable way to approach the matter if there is no challenge, or no serious challenge of his conclusions in a particular case. It is quite apparent, however, that where there is a very serious challenge to

\(^{165}\) Phipson 967.
\(^{166}\) Van der Merwe et al 105; *Stock v Stock* 1981 (3) SA 1280 (A).
\(^{167}\) 1985 (1) SA 750 (C) at 753G.
\(^{168}\) (1985) *Annual Survey* 489.
\(^{169}\) *S v Mkhize & Others* 1998 (2) SACR 478 (W) at 486-7; *S v Mokgiba* 1999 (1) SACR 534 (O) at 548 and *S v Mkhize & Others supra* at 264.
\(^{170}\) 1986 (4) SA 117 (N) at 146D-G.
the conclusions, the expert must be in a position to give detailed reasons for his conclusions, and an accurate account of the investigation that he carried out for the purpose of arriving at this conclusion. He does not, of course, have to put them in the form of a written report although it is quite usual for experts to do so. Not infrequently, experts are permitted to refresh their memories from reports and notes, and the reports and notes are put in as exhibits. They are not, however, the evidence. The evidence is the oral evidence given by the expert, and the notes are merely an aide memoire. However, if the expert does not keep notes, he must be in a position to describe with exactness all his investigations and the reasons which led him to his conclusion, if those are challenged in cross-examination.

It was said in S v Nyathe\textsuperscript{171} that opinion evidence can, depending on the circumstances, be both admissible and sufficient without any exposition of the grounds upon which the particular opinion is based.

It was held in Maqhina\textsuperscript{172} that where proof of guilt depends on the results of scientific analyses, the resting process, including the control measures applied, have to be executed and recorded with such care that it can be verified at any time later by any objective scientist as well as eventually the trial court.\textsuperscript{173}

Ideally, the evaluation of expert evidence is a matter for experts and for this reason there are various statutory provisions which enable a judge or magistrate to summon persons who have skill in any matter which may have to be considered in the trial to sit with him as assessors.\textsuperscript{174}

An expert should as far as possible explain the grounds for his opinion and may always be cross-examined on the ground for it. The extent to which the court should go behind the expert’s opinion and form an opinion of its own will depend on the subject involved and the extent to which the court, having had its attention drawn to the relevant considerations, is in a position to judge for itself. A court is never bound by an expert opinion and should never accept it blindly, but in certain fields it must of necessity lean more heavily upon the expert than in others. It has been held that in cases of identity of handwriting, the court can and should judge for itself whether the points of similarity indicated by an expert are sufficiently

\textsuperscript{171} 1988 (2) SA 211 (O) at 2151.
\textsuperscript{172} Supra.
\textsuperscript{173} Hoffmann and Zeffertt 86.
\textsuperscript{174} S 34 of the Magistrates’ Court Act 32 of 1944 and s 145 of the Criminal Procedure Act 55 of 1977.
conclusive, but that this cannot normally be expected in a case of identity of fingerprints. If an expert of foreign law refers to a code of statute, the court may reach its own conclusion on the proper interpretation thereof.

An expert may refer to experiments conducted by himself, or to similar cases in his own experience. Where experiments have been conducted in similar cases observed by other experts, the witness is strictly speaking not competent to prove the facts of such experiments or cases and therefore cannot refer to them. If the result of certain experiments has become part of the generally accepted body of scientific knowledge, it is submitted that they may be referred to, but an expert should not be allowed to rely purely on the assertion of some individual colleague that certain things happened in a particular way.

Scientific observation made in the remote past and recorded in some generally accepted form may be admissible as matters of history.\textsuperscript{175}

It has been shown that even where a serious question arises as to whether expert evidence, or the evidence of a particular proposed expert witness, should be admitted, the evidence is often heard by the court in any event. First, it is often difficult to decide whether extensive proposed evidence is admissible without hearing the bulk of it, though as almost universally, reports are now prepared and disclosed, this problem looms less large. Secondly, however, even with the existence of a report, which could be drafted by a legal adviser, it is difficult to judge the competence of a witness to give expert evidence without hearing the substance of his oral evidence. Thirdly, the doubtful admissibility of expert evidence can usually be effectively resolved by according to it little or no weight at the adjudication state.\textsuperscript{176}

It is trite law that a court is not bound by expert evidence. It is the court that ultimately assesses the cogency of the expert’s evidence in the contextual matrix of the case with which he is seized.\textsuperscript{177}

In South African case law there does not appear to be a hard and fast rule with regard to the cogency of the expert evidence that is presented. Whether the evidence has been challenged

\textsuperscript{175} O’Dowd 101-102.
\textsuperscript{176} Hodgkinson 205.
\textsuperscript{177} S v M 1991 (1) SACR 91 (T).
seems, however, to be an important factor, and absence of a challenge by the defence could cause *prima facie* proof to become conclusive proof. In trials where expert evidence has been introduced, judicial fact-finders are challenged to find means of assessing the inferential force or weight of all the evidence before it. Judicial decision-makers often use a story-based approach to organise and interpret evidence during the course of the trial. However, it must be borne in mind that facts and opinions testified to by expert witnesses do not speak for themselves. It is lawyers and experts who can make the evidence speak by giving it a normative structure based on certain shared assumptions of logic. Fact-finders, whether persuaded by the normative or not, will in turn order the facts or opinions testified to according to their own normative structure. In the adversarial context, each side will endeavour to build a narrative which incorporates or can accommodate elements of the scientific evidence. Expert evidence is invariably incorporated into trial narratives as a buttress to their plausibility.

Expert evidence can contribute to the narrative as a whole, whether by supplementing lay or circumstantial evidence or by deconstructing or attacking the evidence of lay and or expert witnesses for the opposition. In the construction of a particular legal narrative the integration of expert evidence into a particular case is often represented as a neutral support for that particular account, making the potential value of such evidence even greater. This powerful mythical image of science is dispelled by Edmond:

“Rather than understand scientific evidence as some kind of objective or independent knowledge added to legal narratives and carefully tailored and responsive to legal requirements, the interweaving into a narrative of entire process of investigation, testing and development of opinions should be understood to transpire in the shadow of litigation and the procedures and rules of the legal system. This is especially conspicuous for professions which are effectively law science hybrids where the actual occupation is structured toward producing knowledge which is acceptable for addressing uncertainty, usually proving guilt or innocence, in legal settings.”\(^{178}\)

In the case of certain psychological and psychiatric evidence the opinion of the expert witness will largely be informed by facts related to him by the subject of the evaluation. This weakness of psychiatric evidence was alluded to in *Singh v Parkfield Group Plc*:\(^{179}\)


\(^{179}\)
“It is common sense and both the psychiatrists before me agree, that particularly in matters of psychiatry the accuracy and honestly of the patient is all important.

Clearly in this case, my own assessment of the plaintiff is, therefore, crucial.”

Where the subject is discredited, the testimony of the expert witnesses who have relied on what the subject had told them, would be of no value.\textsuperscript{180}

Judicial decision-makers may find it difficult to use stories to compare the credibility of the case to a DNA statistic. In the realm of probabilistic evidence expressed in numerical terms, fact-finders may need to look towards other strategies to assist them.

5.5 COMBINING PROBABILITIES

It has been suggested that the Bayes’ theorem might provide the most appropriate means of interpreting and dealing with scientific evidence in the courtroom. This idea was developed by Robertson and Vignaux, who suggest that fact-finders can find guidance from the mathematical formula known as the Bayes’ theorem in the process of combining different probabilities. This theorem is used as a tool for hypothesis comparison. Its value depends upon its ability to discriminate between one hypotheses and another. This theorem is a formula for calculating conditional probabilities and the weight of evidence is usually in terms of likelihood ratios.\textsuperscript{181}

Fact-finders should, however, be alerted to the fact that this likelihood ratio grades the probative value of the evidence in terms of the hypothesis considered and does not reflect whether the accused committed the murder or not.

Redmayne\textsuperscript{182} points out that the blood analysis testimony only tells the court about the probability of the finding of the blood given that the accused committed the murder.\textsuperscript{183} The fact-finder, however, needs to determine the probability that the accused murdered the victim given that the blood was found.

\textsuperscript{180} \textit{S v Shivute} 1991 (1) SACR 656 (Nm).
\textsuperscript{183} Meintjes-Van der Walt “Decision-makers’ Dilemma: Evaluating Expert Evidence” 340.
5.6 THE PROSECUTOR’S FALLACY

Confusing the two determinations lead to commission of what has become known as the “prosecutor’s fallacy”. This error was committed by the expert in R v Deen\textsuperscript{184} where the expert after stating that the likelihood of there being only other man than is one in 3 million, concluded by saying: “My conclusion is that the semen originated from the accused.” The expert’s error was committed by confusing two questions, namely:

\begin{itemize}
  \item[(i)] What is the probability of finding the evidence, given that the accused is innocent?
  \item[(ii)] What is the probability that the accused is innocent, given the evidence?
\end{itemize}

Although it is possible for a forensic scientist to make this error in presenting his testimony and thus misrepresent its probative value, fact-finders can also inadvertently commit this error in the course of reasoning with probabilities.\textsuperscript{185}

5.7 THE DEFENCE ATTORNEY’S FALLACY

In addition to the prosecutor’s fallacy, there are other errors which can occur in the reasoning of evidence involving probabilities. The defence attorney’s fallacy consists of ignoring identification evidence involving a trait on the grounds that a large number of individuals share the trait. The likelihood ratio provided by the evidence should be considered in conjunction with prior odds in favour of the accused’s guilt. Courts should not be persuaded to consider such evidence in isolation from the remainder of the case.\textsuperscript{186}

Expert evidence presents peculiar difficulties in the assessment of its probative value. In R v Jacobs\textsuperscript{187} Ramsbottom J remarked, that “expert witnesses are not the judges of fact in relation to which they express an opinion” and judicial officers “should be careful, therefore, not to allow the opinion of witnesses to take the place of their own finding of fact”. The court does not usually have any means by which it can verify the witness’s conclusions, and if there is a conflict of expert testimony in some matters where the rationale for the opinion is utterly

\textsuperscript{184} The Times 10 January 1994.
\textsuperscript{186} Meintjes-Van der Walt “Decision-makers’ Dilemma: Evaluating Expert Evidence” 342.
\textsuperscript{187} 1940 TPD 142.
beyond the group of usual trier of fact, it may be thrown back upon doubtful factors such as the rival witnesses’ reputation and experience.\textsuperscript{188}

In Keeton v R\textsuperscript{189} a conviction for the theft of ostrich feathers was set aside because the magistrate had relied upon the evidence of certain farmers and feather buyers who claimed to be able to identify the feathers by certain features which only they as experts could recognise. There was contrary evidence which cast doubt upon the existence of such features, and the Appeal Court considered that the identification could not be safely relied upon. A good deal will depend upon the general repute of the witness’s profession. It is generally recognised that the identity of fingerprints can be accurately established by expert inspection even though the points of identity may not be apparent to an untrained person, and a court may therefore decide that it is safe to accept an expert’s opinion on the matter despite being unable to satisfy itself that the prints are identical. It has been held that direct and credible evidence of what happened in a collision is generally of greater weight than the opinion of an expert, however experienced he or she may be, of what probably occurred. An elaborate exposition of the way in which opinion evidence must be handled in a civil case when there are mutually destructive accounts about how a motor accident happened, is to be found in Abdo NO v Senator Insurance Co Ltd & Another.\textsuperscript{190}

The court, it was said, must first look at the direct evidence; if that is unacceptable, the court must decide what opinion is preferable and base its decision on it, but, where one version is more probable than the other, the court should make provisional finding about its acceptability. Then the court must consider whether the expert evidence affects the provisional conclusion, and this process then turns, when the onus is on the plaintiff, on whether the direct evidence favours the plaintiff or the defendant.

The fact that an expert is partisan affects his credibility. But credibility will not always be determinative. A most useful guide to the proper way to approach the evidence of experts is to be found in Michael and Another v Linksfield Park Clinic (Pty) Ltd and Another\textsuperscript{191} which involved a delictual claim for damages based on negligence. To evaluate such evidence the

\textsuperscript{188} S v Malindi 1983 (4) SA 99 (T).
\textsuperscript{189} 1906 EDC 56.
\textsuperscript{190} 1983 (4) SA 721 (E) and Van Eck v Sanlam Insurance Co Ltd 1996 (4) SA 1226 (C).
\textsuperscript{191} 2001 (3) SA 1184 (SCA).
court has “to determine whether and to what extent their opinion advanced are founded on logical reasoning”\textsuperscript{192}.

Ideally, the evaluation of expert evidence is a matter for experts, and for this reason there are various statutory provisions which enable a judge or magistrate to summon persons who have skill in any matter which may have to considered in the trial to sit with him or her as assessors.

Although our Appellate Division decided in \textit{R v Smit}\textsuperscript{193} that the evidence of a fingerprint expert is admissible even though a comparison chart was not presented to the court, there is still, after so many years, a difference of opinion among our provincial divisions. It is recommended that each case be judged in accordance with the recognised and accepted evidential principles. Until such time as the Appellate Division expresses itself on this matter, our lower courts will be bound by the particular judgments of their respective provincial divisions.\textsuperscript{194}

According to the decision of \textit{Morela}\textsuperscript{195} as well as Schmidt\textsuperscript{196} the procedure to be followed is such: It must first be established whether a witness qualifies as an expert, and secondly whether he is credible.

With this approach every presiding officer must, in view of the facts of each case, determine whether these two aspects are present. It may happen that in order to determine the witness’s credibility or expertise, the court may require a card of comparison. But to say that the card comparison is a requisite is somewhat formalistic. The court in \textit{Smit}\textsuperscript{197} correctly rejected the claim that such a card is in fact a requisite. Finally, it has to be emphasized that the general rule is that a court should never substitute its own opinion with that of a witness. The only exception to this rule is where the evidence is of such a technical nature that the court is incapable of making an inference itself and has to rely totally on the opinion of an expert. Judges and magistrates must remember not to confuse admissibility with probative value.

\textsuperscript{192} Hoffmann and Zeffertt 306.
\textsuperscript{193} 1952 (3) SA 447 (A).
\textsuperscript{194} Zeffertt \textit{et al} 309.
\textsuperscript{195} 1947 (3) SA (A) 147 at 153.
\textsuperscript{196} At 440.
\textsuperscript{197} \textit{Supra}. 59
Evidence may be admissible, although it may turn out to have very little probative value.

5.8 FOREIGN LAW

Statutory provisions enable a court to take cognisance of foreign law. The relevant statute, section 1(1) of the Law of Evidence Amendment Act\textsuperscript{198} provides as follows:

“(1) Any court may take judicial notice of the law of a foreign state of indigenous law insofar as such law can be ascertain readily and with sufficient certainty: Provided that indigenous law shall not be opposed to the principles of public policy and natural justice: Provided further that it shall not be lawful for any court to declare that the custom of Lobola or Bogadi or other similar is repugnant to such principles.

(2) The provisions of subsection (1) shall not preclude any party from adducing evidence of the substance of a legal rule contemplated in that subsection which is in issue at the proceedings concerned.”

Persons not trained in the foreign law and its practice are unable properly to assess the context in which foreign decision were made, nor can they be expected to know the nuances, subtleties and intricacies of a foreign system. It is for that reason that the guidance of experts is so crucial in this context, and, in applying section 1(1), a court should be mindful of the reason why, at common law, foreign law had to be proved by an expert. The provisions of the statute do no preclude any party from adducing evidence of the substance of any foreign legal rule, which is in issue. Where the remedial provisions of the statute do not apply, the common law still applies, as it would where a party still wishes to adduce evidence about a foreign law. At common law the witness must be proved to be either a professional lawyer or the holder of an office which requires legal knowledge or at any rate gives him or her special opportunities to become acquainted with the law.\textsuperscript{199}

In Levy v Levy\textsuperscript{200} the court rejected the certificate of the German Counsel-General in Cape Town to prove the formal requirements for marriage in German Law. Kotze JP said: “We are ignorant as to the means or opportunities which he possesses of being acquainted with the laws of the German Empire … so as to enable him to give special evidence as an expert on

\textsuperscript{198} 45 of 1988.

\textsuperscript{199} Hoffmann and Zeffertt 311-312. Gumede v Attorney-General Transvaal 1995 (1) SA 608 (T); Inbela v Minister van Wet en Orde 1995 (3) SA 147 (T); Hlope v Malilalela & Another 1995 (1) SA 449 (T); Haman v Haman 1995 (2) SA 589 (D) and Mthembu v Letsela & Another 1998 (2) SA 675 (T).

\textsuperscript{200} (1904) 18 EDC 164.
the subject. The mere fact that he is a German is not enough.” In *Atlantic Harvesters of Namibia (Pty) Ltd v Unterweser Reederei GMBH of Bremen*\(^{201}\) Van Heerden J said that in South Africa, experts who give their opinion, on matters of foreign law must be lawyers practising in the courts of the country whose law our courts want to ascertain.

Where the 1988 Act does not apply, the content and effect of foreign law must, as a question of fact, be proved by a properly qualified expert and if it relates to a foreign statute, the statute should be laid before the court, generally speaking, to allow the court to determine its meaning and effect.

It will still be necessary to consider a number of decisions that constitute authority for the proposition that, in the absence of proof that foreign law differs from South African law, there is a presumption that the foreign law is the same as South African law. The South African courts have adopted different approaches but the correct approach is the one which holds that failure to prove the foreign law will cause the plaintiff relying on it to lose his or her action or the defendant relying on it to fail in his or her defence.

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\(^{201}\) 1986 (4) SA 865 (C).
As complex scientific evidence continues to increase and evolve, courts will be faced with some of the problem alluded to above.

The judicial system must ensure that the decision-makers can be assisted by the evidence presented by the litigants. If decision-makers cannot understand complex scientific evidence, it may render decisions based solely on superficial criteria rather than on substantive evaluation of the evidence. This research has sought to show that legal decision-makers can be informed by scientific method and the ways in which scientists go about determining reliability and validity in order to evaluate expert evidence in court. The broad guidance rendered is not exhaustive, but can have bearing on the determination of the probative value of expert evidence.

Firstly, scientific knowledge is knowledge that may be tested. Secondly, the theory or technique used must be reliable and capable of being assessed to a particular degree of acceptance within the relevant scientific community. Thirdly, because a component of good science is scrutinised by the scientific community, submissions of the theory or technique in question to a peer reviewed journal or publication is a factor to be considered in determining its validity. Finally, the known or potential error rate, as well as the standards controlling the operation of the technique, should also be taken into account. Judges and magistrates could be educated about proposed areas of expertise. Continuing education will help judges and magistrates to develop new and better criteria for assessing the reliability and probative value of different types of expert testimony.

Reference to the Bayes’ model is not meant to suggest that fact-finders should approach expert evidence according to a rigid mathematical model. It merely serves to illustrate a logical approach of how scientific evidence could be presented and assessed. It is submitted that the Bayesian analysis can assist in overcoming the dilemma of a court which has heard expert evidence on an issue which is beyond the knowledge and experience of the tribunal and which must choose between two conflicting experts. This approach suggests that these
requirements be applied to analyse and evaluate expert evidence placed on the scales of justice.

This treatise constitutes an attempt at integrating the worlds of science and law in the court room in the interests of efficient and fair judicial decision-making.
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