# The Role of the Expert in Environmental Litigation

# Le rôle des témoins-experts dans les causes de nature environnementale

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Une version française non identique, couvrant certains points saillants, suit à la fin du texte anglais. N. de l'Éd. Pour alléger la lecture du texte, le masculin est utilisé, étant entendu que l'expert et le juge peuvent être du sexe féminin comme l'auteure en faisait état.

It is not possible to discuss proof of causation in environmental cases without analyzing the role of the expert witness before the courts. My presentation will focus on this aspect, after outlining in more general terms the role of experts in a court of law.

The role of the expert witness before the courts has evolved over time, but the direction of this evolution is not always clearly discernible. Experts have been both extolled and vilified by judges. The apparent cycles in the treatment of expert evidence by courts are understandable. Courts are unwilling to relinquish their decision-making power to science. It is after all quite feasible to determine cause and effect without a full understanding of all the physical, chemical and bio-chemical processes involved. That is, so long as one's goal is not to achieve scientific certainty, but merely to arrive at the "more probable than not" truth.

Expert evidence and lay evidence often clash. When they do, courts will tend to favour the lay evidence. An early example is the case of *Gareau* v. *The Montreal Street Railway Company*,[1] in which the Supreme Court of Canada simply dismissed the expert evidence, as it was not reconcilable with the version of events given by eye witnesses.

Perhaps Madam Justice McLachlin's comments in *Moge* v. *Moge* best illustrate the reticences of our courts to let experts invade all spheres of litigation:

> [Although] *evidence of the spouses' respective contributions and gains from the marriage is necessary under section 17(7)(a)* [of the Act], [the evidence need not] *be detailed, in the sense of a year-by-year chronology of sacrifices and gains.* [...] *In most cases it will suffice if the parties tell the judge in a general way what each did. That will allow the judge very quickly to get* an accurate picture of the sacrifices, contributions and advantages relevant to determining compensation under section 17(7)(a), making detailed quantification and expert evidence unnecessary.[2]

## I. THE NATURE OF EXPERT EVIDENCE

It bears mentioning that the admission of expert evidence operates as an exception to the common law "opinion rule" which requires that a witness testify only to those facts gained by his senses, but not offer opinions or conclusions drawn from events. As noted by Sir Rupert Cross,[3] "the treatment of evidence opinion by English law is based on the assumption that it is possible to draw a sharp distinction between inferences and the facts on which they are based." The drawing of inferences is said to be the function of the judge or jury, while it is the business of the witness to state facts. Traditionally,[4] the duty of expert witnesses 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 facts proved in evidence.

But the law recognizes that, so far as matters calling for special knowledge or skill are concerned, judges and jurors are not necessarily properly equipped to draw the right inferences from facts stated by witnesses. A witness is therefore allowed to state her/his opinion with regard to such matters provided s/he is an expert in them.

In environmental matters, issues are complex. In nature, everything is connected to everything else. Is there not a danger that courts will be intimidated by all the scientific data before them and allow the exception, that is, expert evidence, to become the rule, prefering it to lay evidence which the experts will tend to dismiss as "anecdotal"?

What brings the role of experts as "enlighteners" of courts into some disrepute is of course the phenomenom of multiple contradictory expertise. At times, one might even be tempted to believe that at least some experts will engage in disinformation on behalf of whoever has retained their services, a misguided application no doubt of the maxim: "He who pays the piper feels a right to call the tune."[5]

The irony of contradictory scientific evidence has been noted by Mr. Justice Rivard in roughly the following words:

(Author's translation):

> *The jurors had before them contradictory scientific evidence.* [...] *The examination of this evidence underscores the illogical* [...] *aspects of our procedure. It is only by exception to normal evidentiary rules that the expert is allowed to enter an opinion into the record. He is so permitted in order to enlighten the judge or jury on scientific data or techniques which the judge or jury are ill equipped to appreciate. When scientific theories are opposed, as in the present case, who will be charged with chosing the more correct one? The judge or jury, who needed enlightenment because of their ignorance.*[6]

## II. THE QUALIFICATIONS OF THE EXPERT

Who is considered an expert and what criteria are of use in determining proper expertise? In *R.* v. *Prairie Schooner News Ltd.*,[7] Justice Dickson defined an expert as "one, who by study or experience has become specially skilled and competent to express an opinion on a scientific subject."

In addition, environmental cases are apt to give rise to some very peculiar disputes as to who is better qualified to give an opinion in the case at hand.

Lawyer Daniel Bellemare characterizes experts as persons who have acquired a specialized knowledge in a given field. It is this special knowledge which allows them to enlighten the jury or the judge on particular questions relating to their area of specialisation.[8]

Of course, the recognition of one's expertise can be influenced by the times. John Lukacs[9] points out that near the end of the Middle Ages:

> *a few theologians* (the "scientists" of that time) *persuaded a king of France to give them permission for an experiment that had been forbidden by the Roman Catholic Church. They were allowed to weigh the soul of a criminal by measuring him both before and after his hanging. As usually happens with academics, they came up with a definite result: the soul weighed about an ounce and a half.*

Today, if the same question were brought before a court, the first order of the day would be to decide which expert is properly qualified to testify on the weight of the soul: the theologian or the medical doctor?[10] An enormous amount of a judge's time can be taken up by such objections as: "he is a building envelope expert - he is not qualified to speak on the release of formaldehyde from insulation" - or, "he is a pediatrician - he is not qualified to give an opinion as an epidemiologist", and so on.

It is up to the court to rule that the witness is qualified as an expert witness after hearing evidence for and against qualification, including of course the cross-examination of the would-be expert. Cross observed that it is for the judge to determine whether the witness has undergone such a course of special study or experience as will render him/her expert in a particular subject, and it is not necessary for the expertise to have been acquired academically.[11] Specialisation can be a matter of experience. It is also often a matter of degree.

In some instances, the courts have taken a flexible attitude as to whether or not a person could be considered an expert, as in the case of *R.* v. *Morgentaler,*[12] where the Quebec Court of Appeal held that a doctor who had not practised medicine for ten years prior to the trial was

nevertheless qualified to testify as an expert because, during that time, she had continued to conduct research and to lecture on the topic of interest.

At other times, the courts have adopted a more rigid stance with regard to the qualification of experts. Thus in *Brownlee* v. *Hand Firework Co. Ltd.*,[13] the Court refused to hear a university professor of engineering because he did not have any experience with either the manufacture or setting off of fireworks displays, the real heart of the case.

Generally, it can be said that courts appear to adopt a flexible attitude with respect to the admissibility of expert evidence; as observed by Judge Tyrwitt-Drake in *R.* v. *Bunnis*s, "so long as a witness satisfies the Court that he is skilled, the way in which he acquired his skill is immaterial."[14]

The expert must also possess, as a rule, a certain degree of objectivity and independence. The expert employee will be allowed to testify, but the fact that s/he is an employee of one of the parties will have a bearing on the weight to be given to her/his testimony.

## III. THE EMERGENCE OF THE EXPERT WITNESSES BEFORE THE COURTS AND THE HISTORICAL PERCEPTION OF THEIR ROLE

There appears to have been very little discussion of expert evidence prior to the late 19th century, when in the increasingly complex world of the industrial revolution, the assistance of experts was offered to the courts, who responded with cautious suspicion. From very ancient times it was the practice of the court to be assisted by skilled witnesses, such as surgeons, but as Wigmore points out, their role was closer to that of assessors, rather than being actual presenters of evidence.[15] Now, faced with the general exclusionary opinion rule prohibiting testimony not based upon first-hand knowledge, later authorities treated the admission of expert testimony as an exception to the opinion rule in order to provide the trier of fact with the necessary technical or scientific base upon which the court may properly assess the evidence presented.

Clearly, both judges and theorists posited that experts would prove an unwelcome intrusion in a judicial process in which, as Coke observed, "the judge is to give an absolute sentence," reigning alone. Judges cannot delegate decision-making to experts, no matter how good they are in their given field of endeavour. This view was made clear rather forcefully in Taylor's 1906 *Treatise on the Law of Evidence,*[16] wherein he stated that the testimony of skilled witnesses is perhaps that which deserves the least credit with a jury. Taylor commented that while skilled witnesses do not wilfully misrepresent what they think:

> *their judgments have often become so warped by regarding the subject in one point of view that, even when conscientiously disposed, they are incapable of forming an independent opinion. Being zealous partisans, their Belief becomes synonymous with Faith as defined by the Apostle (a) and it too often is but "the substance of things* hoped for, *the evidence of things* not *seen."*

Taylor quoted Lord Campbell's assertion that "skilled witnesses come with such a bias on their minds to support the cause in which they are embarked, that hardly any weight should be given to their evidence."[17]

In her address to the Canadian Trial Lawyers' Association on March 10, 1989, Madam Justice Beverly McLachlin, Chief Justice of the British Columbia Supreme Court as she then was, demonstrated that the traditional caution of the courts with respect to expert evidence was reflected in the strict limits which judges have laid down on the use of opinion evidence.[18]

First, the view was taken that expert evidence could be admitted only on matters where the judge or jury could not draw the proper conclusions or understand what was at stake without expert assistance. As Beven[19] confirmed, the subject matter of the inquiry must be such that ordinary people are unlikely to form a correct judgment about it if unassisted by persons with special knowledge.

When the subject is one upon which the judge or jury is as capable of forming an opinion as the witness, the reason for the admission of such evidence fails. Similarly, if the opinion of an expert will afford no material assistance, it will be rejected. Thus, when the subject under inquiry did not call for specialized knowledge, and the witnesses' statement of opinion could not be of any help to the court, the evidence was considered superfluous because it could only inform the court of that of which it was already aware. This perspective more recently echoed in the Supreme Court case of *R.* v. *Abbey*,[20] where the Court held that if, on the proven facts, a judge or jury can form their own conclusions without help, then the opinion of the expert is unnecessary. As noted by Madam Justice McLachlin, the net result of such practices was to limit the reception of expert evidence to truly technical or esoteric subjects.[21]

A second limit on expert evidence, as observed by Madam Justice McLachlin, involved the notion that experts can only testify on matters of opinion, drawing inferences which a lay person could not. Phipson stated that experts could give opinions on the facts which are either admitted or proven at the trial, as well as hypotheses based thereon, but this opinion is not in general admissible upon materials which are not before the judges or jury, or which have merely been reported to the expert by hearsay.[22]

This traditional position was reaffirmed by Dickson J.A. in *Prairie Schooner News*[23] where he stated that while a judge is required to consider any expert testimony tendered and determine the weight to be given to it, if having conscientiously done so and having concluded that he cannot predicate any finding on the basis of that evidence, he is at liberty to reject the evidence in its entirety. The final decision in these matters must rest with the court, not with the experts.

This view has been tempered by subsequent caselaw, particularly the far-reaching decision in *R.* v. *Lavallée*,[24] where the Supreme Court of Canada held that all of the facts underlying expert opinion need not be proven as long as the opinion is supported by some admissible evidence. Thus, the judge is obliged to warn a jury that the more the expert relied on facts not proven in evidence, the less weight the jury should give to the opinion.

Lastly, Madam Justice McLachlin noted a third limit on expert evidence laid down in the early cases. For a time, experts were precluded from testifying as to the conclusions falling within the purview of the judge or jury - the problematic "ultimate issue rule." The classic formulation of the rule is well set out in Cross, who states that insofar as it is possible to do so, the courts set themselves against receiving evidence from any witness as to the very matter which the judge or jury has to decide. This is because "litigants are entitled to have their disputes settled by a judge, with or without a jury, and not by the statement of witnesses."[25] To use Madam Justice McLachlin's example, if the issue in the case was whether the defendant was negligent, the expert was forbidden to say that he was negligent, and remained confined to technical matters of fact.

Sopinka and Lederman, in their study on evidence, reiterated Wigmore's view, according to which the justification for this prohibition was largely the fear that speculative inferences from facts would "invade the province" or "usurp the function" of the jury.[26] Wigmore has nevertheless commented on the fallacy of the reasoning: juries are perfectly free to accept or reject expert evidence. They are not bound in any way to accept the expert's opinion on a given point as conclusive.[27]

In recent years, many of the previous constraints associated with the traditional use of expert evidence have been eliminated. For example, the historical reluctance to allow ultimate issue testimony has now been largely eroded. The Supreme Court, in *Graat* v. *R.*[28] allowed the admission of evidence on the ultimate issue on the basis that the witness was an expert and his expertise was required by judge and jury, reasoning that in the final analysis, even with the expert's evidence, it was the jury that was left with the final determination of the case.

## IV. THE MODERN CONCEPTION OF EXPERT WITNESSES

The looser standard, espoused by Aylesworth J.A. in *R.* v. *Fischer,*[29] according to which expert evidence will be admitted where it will be helpful to the jury in their deliberations and

excluded only where the jury can easily draw the necessary inferences without it, helped promote its expansion and use. Experts would no longer be confined to first hand facts and technical inference, they could now summarize evidence, and dispense with the hypothetical question.

Perhaps most unconventional was the new willingness of the courts to allow reception of inadmissible (second-hand) facts through experts, particularly in the area of psychiatric evidence which is often based on hearsay. In *Wilbrand* v. *R.*[30] the Supreme Court of Canada accepted such evidence, provided it was founded on recognized psychiatric procedures, a progression further sanctioned in *R.* v. *Lupien*.[31] If the opinion was based on second-hand information which would otherwise have been inadmissible, judges were obliged to explain to the jury that its weight had to be adjusted as the expert opinion could not be more conclusive than the facts on which it was based.

Indeed, as noted by the Ontario Court of Appeal in the 1987 case of *R.* v. *Zundel*[32] "while an expert may take into account the statements made by others in forming his opinion, where the facts upon which he relies for the formation of his opinion are not proved, the opinion is of no weight."

It is worth taking some time to consider a recent case which demonstrates just how far thinking has evolved in this area. The case is far removed from environmental concerns, but constitutes a landmark decision in terms of removing traditional barriers to the admissibility of expert evidence. I refer to the Supreme Court's acceptance of expert testimony on battered women's syndrome, which resulted in an expansion of the concept of self-defence in *R.* v. *Lavallée*.[33]

As narrated by Regina Schuller in her comment on this case,[34] the accused, at the time of the killing, had a reasonable apprehension of death or grievous bodily harm from the victim, and believed that the force she used to repel this danger was necessary and reasonable. However, battered women have traditionally been unable to access this defence because in deciding what is

reasonable, the law has typically looked at what an "ordinary man" would do under the circumstances. The direct attack standard, usually depicted using a bar-room brawl analogy, fails to describe the situation battered women face. Any counter-attack is far more likely to occur during a period of "relative calm" preceeding the next attack on the victim.

Lyn Lavallée shot the man who had been abusing her for three years, in the back, as he was walking out the bedroom door after threatening to kill her. Thus, while the jury had to be convinced that her actions were committed under a reasonable apprehension of death or grievous bodily harm, the defence also had to convince the jury that the accused believed the force she used to protect herself from this harm was reasonable, an onerous task given the public's erroneous beliefs about male battering of women, and stereotypes about the causes of male violence.

Madam Justice Wilson, in her reasons, explicitly recognized the necessity of expert testimony in light of the prejudicial nature and subjective biases present in the case. According to Wilson J., a woman who comes before a judge or jury with the claim that she has been battered, and suggests that this may be a relevant factor in evaluating her subsequent actions, faces the prospect of being condemned by popular mythology about domestic violence: that she has not been beaten as badly as she claims or she would have left the man long ago. Wilson J. recognized that the battering relationship is subject to misconceptions understanding, for example, the heightened sensitivity of a battered woman to her partner's acts. The battered woman, Wilson J. believed,

> [is thus] *entitled to have the jury consider her actions in the light of her own perceptions of the situation.* [...] *To fail to do so is to deny the right of the individual woman involved to trial by the same rules which are applicable to male defendants.*[35]

However, because battered wife syndrome is "beyond the ken of the average juror",[36] it proved suitable for explanations through expert testimony. Noted Wilson,

> [the] *fairness and the integrity of the trial process demand that the jury have the opportunity to hear* [that opinion].[37]

What makes this case remarkable is the fact that the accused herself never testified and was acquitted entirely on the expert testimony of two psychologists, who were able to frame her actions within a context that took into account her perspective and circumstances. Not only did the Supreme Court reject the argument that the expert evidence on battered women's syndrome was "unnecessary and superfluous" for the jurors, but the expert in *Lavallée* formed his opinion on the basis of information that was both independently supported at trial (the accused's statement to the police, hospital records) as with information that was not supported at trial (direct interviews with the accused and her mother).[38]

Since neither the accused nor her mother testified, the expert testimony was riddled with hearsay. The initial acquittal was thus struck down by the Manitoba Court of Appeal, which cited *Abbey* for the proposition that every fact relied upon by the expert must be independently proven and admitted into evidence before the entire opinion can be given any weight.[39] Overturning this lower appellate decision, the Supreme Court held that as long as there is some admissible evidence to establish the foundation for the expert's opinion, the trial judge cannot subsequently instruct the jury to completely ignore the testimony. He or she is required to "warn the jury that the more the expert relies on facts not proved in evidence, the less weight the jury may attribute to the opinion."[40]

There can be little doubt that the allowance of expert testimony proved pivotal in deciding the outcome of this trial. However, a note of caution: *Lavallée* was a criminal case where it is easier to raise a reasonable doubt through the use of expert evidence than to tip the scale for or against a party on a balance of probabilities.

In Quebec, in any event, courts have tended to allow expert evidence based on facts not yet adduced in evidence, but with a clear warning that such facts should eventually be proven:

*I have no difficulty in accepting the relevance of expert evidence the purpose of which is to establish that urea formaldehyde foam may have toxic or harmful effects on children.* [...] *Under our trial system, the manner of presenting evidence and the order of witnesses is largely in the hands of counsel for the parties. It is not the function of the trial judge to direct the parties in how their cases must be presented.* [...] *[I]f the evidence of Dr. Lacroix was relevant, as I believe it was, then I can see no basis for excluding it at this stage. To the extent that any of the relevant underlying facts are not ultimately proved by legally admissible evidence, this may well affect the weight to be attached to the opinion evidence, but it does not affect its present admissibility.*[41]

## V. PROOF OF CAUSATION THROUGH EXPERTS IN ENVIRONMENTAL CASES

Science and the law are two different intellectual processes. Maybe it is time to revisit the topic of what is the proper role of expert witnesses before a court of law in relation to proof of causation in highly technical matters such as environmental cases.

One pitfall to be avoided is to change the burden of proof in civil matters through the indue influence of scientific certainty of causation, which requires a high degree of statistical probability. An expert will often be extremely cautious in reaching a conclusion in a matter which does not give rise to statistical reliability. The reservations of the expert must not become those of the judge. Opinion evidence is only one aspect of the case. There are other indices which will guide courts to the truth, even in environmental cases.

Environmental hazards rarely cause a specific effect. Mesothelioma, for instance, is a form of cancer associated solely with exposure to asbestos fibres (although its frequency will be increased in persons exposed to asbestos fibers who also are smokers). But instances of a specific malignancy or other specific deleterious health effects are unusual. That is, a deleterious health effect caused only by the substance of interest.

In addition, the toxic mechanisms of numerous substances are not fully understood. That too makes proof of causation difficult. For instance, there is a statistically elevated incidence of

brain cancers among pathologists because of their exposure, through their profession, to formaldehyde although the mode of transport of inhaled gazeous formaldehyde to the brain cells, if such a pathway exists, is unknown. Will a statistical excess of cases be sufficient to find a causal relationship between the cancer of a given pathologist and his exposure to formaldehyde in a poorly ventilated lab? Is it not possible to determine the existence of a cause and effect relationship even though all underlying mechanisms are not fully understood by science? Those are the types of causality problems often encountered in environmental cases.

Another difficulty stems from the fact that the more serious consequences of exposure to a dangerous substance do not usually appear overnight. Cancers result from long-term exposure. Even were a single exposure to cause sufficient damage to DNA, latency periods will typically be decades and, 20 or 30 years after the fact is usually too late to gather precise data on the exposure.

If, on the other hand, a substance produces an immediate effect, irritation for instance, most people will instinctively reduce exposure to an acceptable level, but will not necessarily be conscious that any exposure to the substance may pose a long-term danger.

As well, as a rule, there are no pure exposures, that is, exposures to a single substance. That is why the synergistic effects of various substances are likely to cloud causality issues. Pollutants "come together in a kind of chemical soup, but our laws are designed to address individual pollutants."[42]

At times, the alleged victim will not only be exposed to more than one chemical substance, s/he will also be exposed to "natural" pathogens also present in the environment at the time of exposure to the impugned chemical. Consider for instance the case of those Vietnam veterans and members of their families who attributed various health problems to the veterans' exposure to Agent Orange, a herbicide:

> *Both Doctors Singer and Epstein attribute plaintiffs' lymphatic difficulties to Agent Orange exposure. Neither considers the possibility that these plaintiffs suffer from filariasis, a*

> *disease affecting the lymphatic system which is caused by tropical worms prevalent in Vietnam. Lawsuits have recently been brought in this Court seeking to hold the government liable for the failure to treat this disease in Vietnam veterans* [...].[43]

For good measure, the Court then went on to wonder whether the various liver diseases complained of by plaintiffs might not be attributed to heavy alcohol consumption.

The discussion about plaintiffs' personal medical histories and personal habits (the traditional "clinical" approach) is endemic to any defendant's attack on the evidence of a causal link. However, many experts find that such an approach is flawed. Let us use a simple example: a substance is a known irritant. The exposed individual, a contact lens wearer, complains of redness in the eyes after the onset of exposure. It is true that wearing contact lenses in itself may cause irritation. Many toxicologists would, in such a case, accept that a causal link has been established, arguing that there is no reason to believe that a contact lense wearer would be protected from the irritant effects of the substance of interest. Therefore if the contact lenses caused no irritation until exposure to the chemical, they would not be considered a confounding factor by these experts. That is the so-called toxicological approach, which assumes that a toxic substance will likely be toxic, unless protective mechanisms are at work. This in effect shifts the burden of proof to defendants once proof of exposure and of the appearance of symptoms subsequent to exposure has been adduced.

It is not surprising, therefore, that there have been calls for changes to the rules that govern proof of causation in cases involving toxicity. It has been suggested that the burden of proof should be reversed: it would be up to the manufacturer, or seller or user of a toxic chemical, to demonstrate that it is innocuous under the conditions of use.

In the United States, courts have attributed liability on the basis of market share, where it was impossible to demonstrate cause and effect in relation to the product of a specific

manufacturer.[44] In Canada, there was an attempt by some courts to indemnify heightened or increased risk ("loss of chance"). The Supreme Court, however, has dashed those efforts.[45]

## VI. A FEW PRACTICAL NOTES

### A. Accessible prose

The language of experts has been characterized, unflatteringly, as "baffle gab." One important point to remember is that the expert has to make his or her message understood by a person who does not necessarily possess the idiom (some say jargon) commonly used by those in his/her field, so it is highly advisable for the expert to use simple English. An effectively delivered conclusion could be phrased as follows:

Q. What conclusion did you reach?

A. The Hi-Rise scaffolding was an accident waiting to happen.[46]

Like everyone else, the expert needs to be understood to be convincing. In a mild understatement, I would venture to say that evidence at trial tends to be contradictory. Kenneth P. Nolan, a lawyer practicing in New York, presents the need for understandable expert testimony in the following words:

> *Everyone can produce experts whose credentials are so impressive (sounding) that a jury cannot distiguish who is real from who could not find a subway in New York City. You put on seven experts, the defense has eight. Yours were educated at Harvard, hers at Yale. An expert standoff is almost a certainty.*[47]

With such an abundance of expert opinions before courts, the better expert will often be the better teacher.

### B. New areas of expertise

Every once in a while, the *Frye* test is raised in canadian courts. First formulated in 1923,[48] this so called test, or evidentiary rule, holds that an expert's methodology must meet a "general acceptance" standard before his report or testimony can be allowed in the evidence. The so called *Frye* test goes to admissibility, not to weight.

The U.S. Supreme Court, in the case of *Daubert* v. *Merrell Dow Pharmaceuticals Inc.*, dealing with the admissibility of evidence purporting to show that the anti-nausea drug Bendectin prescribed to pregnant women causes birth defects, has now ruled that the *Frye* test has been superseded by the adoption of the Federal Rules of Evidence.[49]

One can easily understand how an evidentiary test, such as the *Frye* test, can complicate life for litigants, particularly on the plaintiff's side, whenever a new product or drug is put on the market.

In Canada, courts have shown reluctance in excluding expert evidence because of its novelty or, for that matter, on other grounds:

> *It is dangerous to exclude an expert proof a priori, unless it is evident that it contains no probative value. However, this is generally determined after the inquiry has been closed and the proof is before the Court.* [Translation]

This very reluctance was again shown by the B.C. Supreme Court in *Datta* v. *Rowan*.[50] The case involved a new diagnostic method for assessing organic brain damage, called "brain mapping". The Court held that the method, "while not widely known or used in B.C., was beyond the experimental phase."[51] And indeed it was used in over 500 U.S. hospitals at the time.

Ms. Datta complained of a series of non specific symptoms which are typically difficult to attribute to a given cause. She had been involved in an automobile accident and suffered pain, numbness, weakness and confusion (unclear thinking). She also exhibited behavioural changes. She saw her doctor more than 60 times, was examined by numerous specialists, underwent a CT

scan which showed no abnormality. The brain mapping test, however, did show damage. This evidence enabled the presiding judge to find that the plaintiff had sustained a mild concussion which impaired her higher cognitive functioning.

**CONCLUSION**

In an increasingly complex and technical world, courts are increasingly called upon to rule on questions of staggering technical difficulty. From environmental litigation to personal injury cases, patents to construction law, today judges can expect to confront diverse issues which will require drawing upon knowledge from the physical, social, medical and computer sciences. As noted by Madam Justice McLachlin, there can be no decision without understanding. But how is one to acquire the proper understanding?

We have seen how the role of expert witnesses has metamorphosed over the years in response to changing demands. Today, the testimony of experts is commonplace in Canadian courtrooms. We have come a long way from the early scepticism surrounding such evidence.[52]

As noted by Mr. Justice Dickson in *R.* v. *Abbey*:

> *With respect to matters calling for special knowledge, an expert in the field may draw inferences and state his opinion. An expert's function is* [...] *to provide the judge and jury with a ready-made inference which the judge and jury, due to the technical nature of the facts, are unable to formulate.*[53]

In *R.* v. *McMillan*,[54] Martin J., of the Ontario Court of Appeal, appeared to provide even broader general criteria for the admissibility of expert evidence:

1. the evidence is relevant to some issue in the case;
2. the evidence is not excluded by a policy rule;
3. the evidence falls within the proper sphere of expert evidence.[55]

Regardless of the understanding of the judge and jury, expert witnesses now testify on virtually all subjects. Their testimony stretches far beyond the traditional opinion: they summarize complicated, ambiguous facts. They assess damages. And, most importantly, in criminal matters at least, expert witnesses since the *Lavallée* decision can base their conclusions on evidence not otherwise in the record, subject to the relatively moderate requirement of proper instructions being given to the jury regarding the "weight" of this evidence. The scope of narrowly defined legal categories has been expanded in order to achieve fundamental justice.

Thus, expert witnesses, properly instructed, can prove invaluable in helping to clarify particular points of information and can add richness to the judge and jury's decision-making processes. But, courts ought to be aware of the danger of unwittingly abdicating their decision-making power by espousing the scientific criteria advanced by experts, instead of the traditional "more probable than not" burden of proof. It is of paramount importance that judges not relinquish decision-making to experts, who possess neither the independence nor the neutrality of a judge.

## LE RÔLE DES TÉMOINS-EXPERTS DANS LES CAUSES DE NATURE ENVIRONNEMENTALE

Il est impossible de discuter de la preuve de la causalité dans des causes de nature environnementale sans s'arrêter sur le rôle de l'expert devant les tribunaux. C'est cet aspect que vise cette présentation.

Le rôle de l'expert devant les tribunaux a connu certaines tribulations. D'une part, ceux-ci ne veulent pas abandonner à la science la prise de décisions. Il est possible, après tout, de constater l'existence d'une relation de cause à effet sans pouvoir en expliquer tous les mécanismes scientifiques. D'autre part, il n'est pas rare que des experts fassent fi d'autres faits prouvés. Dans l'affaire *Gareau* c. *The Montreal Street Railway Company*,[56] la Cour suprême du Canada a écarté la preuve apportée par des experts à l'effet que:

> *they had failed to detect any vibration by means of their senses, or as the result of tests by means of extremely sensitive vibro-meters, and that the noise caused by the works was not of an extraordinary nature, but rather the contrary.*[57]

lui préférant la preuve de témoins oculaires qui avaient décrit comme suit les problèmes de vibrations causées par l'établissement de la défenderesse:

> *Doors would be banged, windows would rattle, stoves required to have their legs fastened to the floor; glasses would be shaken off sideboards and tables; tinware would jump around; the pans on stoves would clatter; the oil and the flame of lamps would be perceptibly agitated; plaster was shaken down; and the usual small articles of house furniture would be either broken or shaken into tormenting makers of noise. There was also almost constant trembling and jarring underfoot attended with shocks trying to the nervous system. The dwellings became uninhabitable and were gradually deserted on account of the smoke from the powerhouse, the noise and the vibrations of the ground and of the houses.*[58]

Il ne s'agissait ni de la première, ni de la dernière affaire où les tribunaux se sont montrés désenchantés des experts. On en veut pour preuve l'opinion de Madame la juge McLachlin dans l'affaire *Moge* c. *Moge*:

> *Bien que la preuve des contributions respectives des conjoints dans le mariage et des gains respectifs tirés de celui-ci soit nécessaire aux termes de* [...] *la loi, la preuve n'a pas à être détaillée.* [...] *Dans la plupart des cas, il suffira que les parties disent au juge d'une manière générale ce que chacune a fait. Ainsi, le juge aura très rapidement une image exacte des sacrifices, contributions et avantages pertinents pour déterminer l'indemnisation,* [...] *ce qui rendra inutiles les calculs détaillés et les témoignages d'experts.*[59]

## I. LA NATURE DU TÉMOIGNAGE DE L'EXPERT

L'utilisation d'un expert fait exception à la règle qui exclut les témoignages d'opinion (*the opinion rule*). En principe un témoin doit témoigner uniquement des faits dont il a connaissance, sans offrir ni son opinion ni les conclusions qu'il a tirées des événements dont il a été témoin. La règle présume qu'il est possible de distinguer clairement entre les déductions tirées des faits et les faits qui sous-tendent ces déductions. Il appartient en effet au juge ou au jury, et à eux seuls, de tirer des conclusions. Le témoin doit se contenter de dire ce qu'il a vu ou entendu.

La vision traditionnelle du rôle de l'expert le limite à fournir au juge ou au jury les connaissances ou critères scientifiques de base nécessaires pour apprécier la preuve des faits pertinents et pour tirer eux-mêmes des conclusions exactes à partir de ces derniers. Le juge doit parvenir à une opinion indépendante de celle de l'expert, n'utilisant l'éclairage de ce dernier que pour mieux comprendre la preuve.

Le fait que l'opinion soit admise en preuve, si elle provient d'un expert, indique que la loi reconnaît, dans les matières qui font appel à des connaissances ou aptitudes spéciales, que le juge ou le jury ne dispose pas nécessairement d'un bagage de connaissances suffisant pour lui permettre de tirer les bonnes conclusions à partir des faits mis en preuve.

Pour reprendre les propos de monsieur le juge Lamont: «*the object of expert evidence is to explain the effect of facts of which otherwise no coherent rendering can be given.*»[60]

Cette logique serait incontournable n'était-ce la réalité constante des expertises contradictoires. Monsieur le juge Rivard faisait remarquer dans l'affaire *Létourneau* c. *R.*:

> *Les jurés avaient devant eux une preuve scientifique contradictoire* [...]. *L'examen de cette preuve souligne de nouveau l'illogisme, sinon le ridicule de notre procédure. C'est par exception que le témoin expert peut exprimer une opinion. On le lui permet pour qu'il éclaire le jury ou le juge sur des données scientifiques ou techniques que le jury ou le juge n'est pas censé connaître. Lorsque des théories scientifiques s'affrontent, se contredisent comme dans l'espèce, quel est celui qui dira la vérité scientifique, le bien-fondé de l'une des deux théories médicales contradictoires: le jury qu'on voulait éclairer parce qu'il n'en connaissait rien*![61]

## II. LES QUALIFICATIONS DE L'EXPERT

Qui est expert? Quels sont les critères qui en font un expert? Le diplôme n'importe pas nécessairement. L'expert est celui qui, par sa formation ou son expérience, possède la compétence requise pour exprimer une opinion sur le sujet.[62] Cette vision rejoint celle de monsieur le juge Lagarde, exprimée dans *Droit pénal canadien:*

> *Un expert est celui qui, en raison de ses études spécialisées ou de son expérience, est versé dans une question d'art, de science, ou de métier. Pour être expert, il n'est pas besoin d'être reconnu comme tel par ses confrères ou ses concurrents.*[63]

Il appartient au tribunal de décider si un témoin se qualifie comme expert, après un genre de voir-dire sur le sujet, qui suppose le contre-interrogatoire de l'expert présumé.

La spécialisation est question de degré. Les tribunaux tendent à faire preuve de flexibilité lorsqu'il s'agit de décider de l'expertise du témoin présenté. Ainsi, dans *R.* c. *Morgentaler*[64] le

tribunal accepta l'opinion d'un médecin qui ne pratiquait plus depuis dix ans mais qui avait, dans l'intervalle, poursuivi des recherches et enseigné sur le sujet d'intérêt.

Parfois, les tribunaux se montrent plus rigides sur la qualification de l'expert. Dans *Brownlee* c. *Hand Firework Co. Ltd.*,[65] le tribunal refusa d'admettre en preuve le témoignage d'un professeur d'université qui ne possédait d'expérience ni dans la fabrication, ni dans l'allumage de feux d'artifice, questions qui étaient au coeur du litige. En général, cependant, les cours se montrent ouvertes quant à l'admissibilité: l'expert est celui qui sait de quoi il parle, peu importe comment il a acquis ses connaissances.[66]

L'expert ne peut témoigner que sur des questions relevant directement de sa spécialité. Le but de son témoignage est en effet de permettre au tribunal de faire le lien entre certains faits qui, à cause d'une incompréhension de questions très spécialisées, pourraient être mal interprétés. L'expert est une «personne ressource» pour le tribunal. La réception de son témoignage d'opinion est permise parce que le tribunal, pour se former une opinion sur l'objet du litige, a besoin d'obtenir de l'expert une information adéquate dans son domaine d'expertise. De là la nécessité que les témoins-experts, par leur attitude autant que par leurs aptitudes (l'intégrité, l'honnêteté intellectuelle, le désir manifeste de renseigner la cour) puissent être capables d'assumer vis-à-vis la cour une fonction d'enseignement et de formation. Si l'expert se dérobe, s'il évite les questions, s'il omet de se renseigner sur des aspects pertinents de la cause, il ne possède pas l'honnêteté intellectuelle, ni les aptitudes, ni même la compétence pour servir de véritable personne ressource, c'est-à-dire de personne ressource de qualité aux yeux de la cour.

## III. L'APPARITION DU TÉMOIN-EXPERT DEVANT LES TRIBUNAUX ET L'ÉVOLUTION DE LA PERCEPTION DE SON RÔLE

Avant la fin du siècle dernier, on s'interrogeait peu sur le rôle de l'expert devant les tribunaux. Dans l'ère complexe issue de la révolution industrielle, on offrit l'aide des experts aux tribunaux et ces derniers l'accueillirent d'abord avec circonspection. En pratique, les tribunaux

avaient, depuis toujours, recu l'assistance d'experts, tels des chirurgiens. Ils étaient cependant perçus plus comme des assesseurs que comme des témoins dont l'opinion serait en preuve.[67] C'est pourquoi, tel que remarqué par Phipson,[68] le témoignage d'opinion en vint à être considéré comme une exception à la règle des témoignages limités aux faits, justifiée par la nécessité de fournir à la cour la base technique ou scientifique nécessaire pour évaluer le reste de la preuve.

On ne dira jamais assez que le juge doit évaluer l'ensemble de la preuve. Que des témoignages d'experts se contredisent, cela semble au départ inévitable. Cela ne pose pas de problème puisque que c'est le juge, et non l'expert, qui a le fardeau de trancher le litige. M[e] Daniel Jutras remarque avec à-propos: «la science et le droit sont deux activités intellectuelles distinctes».[69]

En ce sens, les experts risquent de représenter une intrusion malvenue dans le processus judiciaire où le juge règne en maître. Taylor observait en 1848 que le témoignage d'experts est celui qui mérite le moins de poids auprès du jury. Même s'ils n'ont pas l'intention d'induire en erreur, disait-il:

> *their judgments have often become so warped by regarding the subject from one point of view, that they are, in truth, not capable of forming an independent opinion even when they would conscientiously desire to do so. Being zealous partisans, their belief becomes synonymous with the apostle's definition of Faith, «the substance of things hoped for, the evidence of things not seen.»*[70]

Lord Campbell affirmait pour sa part que «skilled witnesses come with such a bias on their minds to support the cause in which they are embarked, that hardly any weight should be given to their evidence.»[71] Il est sûr que l'expert qui visiblement épouse de trop près la cause de son client mérite peu de crédibilité.

Au début de l'apparition des experts, les tribunaux n'admettaient leur témoignage que si le juge ou le jury était incapable de pleinement comprendre le litige sans leur apport.[72] Cette

réticence s'explique sans doute en raison du fait que le scientifique n'affirme rien avant de posséder une certitude scientifique, fondée sur des calculs de probabilité statistiques. Les juges, ayant la tâche souvent peu enviable de trancher le litige, quel que soit l'état d'avancement de la science, se contentent d'un fardeau de preuve axé sur la balance des probabilités.

C'est pourquoi le juge n'est pas lié par la preuve scientifique. En d'autres termes, la preuve scientifique ne décide pas du litige. Celle-ci n'aura de poids que si elle cadre bien avec le reste de la preuve et, faut-il le dire, avec le bon sens. La preuve scientifique qui ne fait que confirmer ce qui tombe sous le sens sera écartée comme superflue.[73] L'admissibilité de la preuve par experts est donc restreinte aux seuls sujets techniques.

Une autre restriction à la preuve d'experts tient au fait qu'un expert ne devrait témoigner que sur des questions d'opinion, dont il tire des conclusions que le profane ne pourrait tirer. Il ne peut attester des faits, ces derniers devant être soit prouvés par d'autres, soit admis. Les faits sur lesquels repose son hypothèse doivent être mis en preuve par des témoins factuels. Après avoir consciencieusement réfléchi à la preuve d'expert, le juge peut la rejeter dans son entier. «En d'autres termes, la conclusion scientifique que le lien de causalité ne peut pas être établi selon la balance des probabilités n'empêche pas le juge de décider que la causalité au sens juridique a été prouvée.»[74]

## IV. LA CONCEPTION MODERNE DU RÔLE DE L'EXPERT

Récemment, nos tribunaux ont abandonné certaines de leurs réticences face au témoignage d'experts. Songeons à une restriction significative au rôle de l'expert, appellée «the ultimate issue rule», en vertu de laquelle l'expert était autrefois forclos d'émettre une opinion sur la question à trancher. La formulation classique de cette règle est fort bien énoncée par Cross: dans toute la mesure du possible, les tribunaux doivent s'abstenir de considérer une preuve portant sur «the very matter which the judge or jury has to decide», et ce parce que les justiciables sont en droit de voir leur litige adjugé par un juge, «and not by the statement of witnesses.»[75]

Ainsi, si la question déterminante porte sur la négligence du défendeur, l'expert ne peut exprimer une opinion à l'effet qu'il s'est montré négligent. Il doit se confiner à des questions techniques. Cette limite se justifiait autrefois par la crainte que les témoins-experts pourraient ainsi usurper les fonctions du juge ou du jury. La jurisprudence moderne reconnaît cependant le droit de demander à l'expert son opinion sur la question même que le juge est appelé à trancher. Le juge est complètement libre d'accepter ou de rejeter le témoignage de l'expert en vertu des critères habituels d'évaluation des témoignages et des autres faits prouvés. L'expert ne peut se prononcer sur la sincérité d'un témoin ni sur la crédibilité d'un témoignage. L'appréciation du poids et de la crédibilité à accorder à l'opinion de l'expert, est laissée à l'entière discrétion du tribunal.

La Cour suprême a admis une opinion sur la question déterminante («ultimate issue») dans *Graat* c. *R.*,[76] parce qu'en dernière analyse, c'est le juge ou le jury qui détermine le sort du litige. C'est pourquoi, de nos jours, la preuve d'expert pourra être admise pour offrir un résumé de la preuve factuelle; l'expert pourra même être autorisé à émettre son opinion sans la fameuse question hypothétique.[77]

En matière criminelle la Cour suprême, dans l'affaire *R.* c. *Lavallée*,[78] a dilué la règle à l'effet que les circonstances sur lesquelles repose l'opinion de l'expert doivent être prouvées par une preuve directe.[79] Soulignons toutefois qu'il est plus facile, par une preuve d'expert, de soulever un doute raisonnable sur la culpabilité d'un accusé que de prouver, par balance de probabilités, le bien-fondé d'une poursuite ou d'une défense.

## V. LE RÔLE DES EXPERTS DANS LA PREUVE DE LA CAUSALITÉ EN MATIÈRE ENVIRONNEMENTALE

Les règles générales étant posées, penchons-nous sur l'importance des experts dans les cas relatifs à l'environnement.

Le premier écueil à éviter, c'est la transformation du fardeau de preuve en matière civile en un fardeau de preuve scientifique possédant un degré de certitude élevé; or l'expert refusera généralement d'émettre une opinion ferme sans cette certitude scientifique. Les réserves du scientifique ne doivent pas devenir celles du tribunal. La preuve experte n'est qu'un indice parmi d'autres qui permettra à une cour de chercher la vérité.

Rares sont les atteintes spécifiques à l'intégrité physique dues à un facteur environnemental. On peut songer au mésothéliome provoqué exclusivement par l'exposition à l'amiante. Sa fréquence est cependant aggravée par l'exposition à d'autres polluants, notamment la fumée de cigarette. D'autres exemples ne viennent pas facilement à l'esprit.

La toxicité d'une foule de substances est mal comprise. Songeons au formaldéhyde et au cancer du cerveau, statistiquement élevée, chez les pathologistes qui subissent une exposition au formaldéhyde en examinant des tissus conservés dans ce produit. Le mode de transport vers le cerveau du formaldéhyde inhalé à l'état gazeux, s'il existe, est inconnu. Est-il dès lors suffisant de se baser sur l'excès statistique de cas pour attribuer le cancer d'un pathologiste à l'exposition subie dans un laboratoire mal ventilé?

Une autre difficulté vient du fait que les conséquences graves d'une exposition sont en général plus sournoises. On nous dira par exemple que le cancer est provoqué par un effet cumulatif à long terme. Dans le cas d'une seule exposition à un agent cancérigène attaquant l'ADN, les délais de latence seront tels que le dommage n'apparaîtra que plusieurs années plus tard. Il est alors souvent impossible de recueillir des données d'exposition précises. S'il s'agit d'un effet immédiat bénin, par exemple un effet d'irritation, la plupart des gens auront le réflexe de réduire l'exposition à un niveau acceptable, sans réaliser qu'il peut être opportun de cesser toute exposition.

Enfin, nul n'est exposé qu'à une seule substance. Vient donc se greffer la question des effets synergiques des expositions. La preuve de la causalité se compliquera alors davantage. En

pareilles situations, que doit faire un tribunal? Il est peu probable que les experts se mettent d'accord et les phénomènes en jeu sont complexes.

Cette situation en a mené certains à soutenir que le fardeau de preuve devrait être allégé en matière environnementale.

## VI. QUELQUES ASPECTS PRATIQUES

### A. Les rapports d'expert

Traitons brièvement de la rédaction d'un rapport d'expert. Idéalement, il devrait comporter deux parties: une discussion rédigée en termes accessibles aux profanes et une section plus technique où l'expert justifie, par analyse détaillée et par calculs, sa position pour le bénéfice des experts de la partie adverse. Rappelons que l'expert doit s'exprimer dans un langage accessible aux profanes. L'utilisation d'un jargon technique garantit presque l'exclusion des explications, faute de compréhension. L'utilisation de tableaux et graphiques facilite souvent la compréhension du sujet, sous réserve d'éviter l'excès contraire. En effet, plusieurs non-initiés sont rébutés par un graphique complexe et préfèrent lire un texte explicatif.

Ayant émis une opinion, l'expert doit évidemment être prêt à la défendre lors du contre-interrogatoire, qui peut se révéler brutal. L'expert aura avantage à se montrer perfectionniste, tant au niveau de la rigueur de son analyse que dans sa gestion de questions d'éthique telles que mandats passés, opinions contraires émises dans le passé, etc.

Appelé par la partie défenderesse, l'expert doit se montrer sensible à l'atteinte subie par la partie demanderesse. Plus l'expert démontre qu'il réalise pleinement les conséquences humaines du cas, plus il est susceptible de convaincre le tribunal de la justesse de son opinion.

### B. Le nombre d'experts de part et d'autres

Un tribunal ne peut se laisser influencer par le nombre d'experts qui lui font valoir la même opinion. Dans l'affaire *Shawinigan Engineering Company* c. *Naud*,[80] monsieur le juge Rinfret s'exprimait ainsi:

> *Il faut reconnaître le grand embarras où les tribunaux se trouvent parfois placés par le manque d'accord entre les professionnels qui expriment des vues différentes en matière scientifique; et, comme il est arrivé en particulier dans l'espèce actuelle, en matière médicale. Mais* [...] *la loi ne fait aucune distinction entre les professionnels et les autres témoins. Leurs témoignages doivent être appréciés comme les autres, et le tribunal est tenu de les examiner et de les peser comme toute autre preuve faite dans la cause* [...]. *Nous croyons donc respectueusement que le savant juge de première instance a fait erreur en posant comme «règle ordinaire d'appréciation de la preuve» que la théorie de la défense devait l'emporter parce qu'elle était défendue par un plus grand nombre de médecins.*

> *En outre, lorsque, comme ici, tout un ensemble de faits et de circonstances qui ont précédé, accompagné ou suivi l'accident a été mis en preuve, il est essentiel que le juge leur accorde toute la considération nécessaire. Sans doute, il doit les envisager à la lumière de la preuve médicale; mais il ne saurait en abandonner exclusivement l'appréciation aux médecins, et c'est à lui qu'il incombe de les contrôler souverainement et de se prononcer en dernier ressort.*

La participation d'un expert à un procès n'enlève pas au juge sa responsabilité de se former une opinion qui tienne compte de l'ensemble de la preuve.

### C. Les techniques nouvelles

Les plaideurs soulèvent parfois une jurisprudence selon laquelle les tribunaux devraient exclure une preuve par expert basée sur des techniques ou méthodologies nouvelles dont l'acceptation ne fait pas l'unanimité dans le monde scientifique. Il s'agit du fameux *Frye «test»* , décrit dans la partie anglaise de ce texte. Retenons qu'au Canada, les cours ont considéré, jusqu'à maintenant, que la nouveauté pouvait être un facteur d'appréciation de la preuve, mais ne pouvait être un facteur d'exclusion ou d'inadmissibilité. L'arrêt *Frye*, au contraire, faisait de la nouveauté d'une technique un motif d'inadmissibilité de la preuve. Notons que la Cour suprême des États-

Unis a décidé, en juin 1993,[81] que l'arrêt *Frye*[82] ne s'applique plus depuis l'adoption des *Federal Rules of Evidence.*

**CONCLUSION**

Les litiges techniques se multiplient. Qu'il s'agisse de responsabilité professionnelle, du syndrome de la femme battue, de contamination environnementale, le juge d'aujourd'hui est confronté à de nombreuses questions qui exigent l'apport des experts techniques, en sciences physiques, sociales, médicales et en informatique. Comme le soulignait madame la juge McLachlin, il ne peut y avoir de décision sans compréhension. Les experts sont là pour contribuer à la compréhension du juge. Leur apport est reconnu et apprécié, débarassé du scepticisme prononcé d'autrefois.

Les tribunaux semblent enclins à reconnaître une certaine expansion aux champs du témoignage d'expert. Dans *R.* c. *McMillan*,[83] la Cour d'appel d'Ontario pose les jalons suivants, destinés à évaluer l'admissibilité de la preuve d'experts:

1. la preuve doit être pertinente à un aspect de la cause;
2. la preuve n'est pas exclue pour des raisons d'intérêt de la justice;
3. la preuve se situe dans la sphère de la preuve d'opinion.

Les experts, de nos jours, témoignent sur des sujets variés. Leur rôle est de distiller, de maîtriser la complexité des questions soumises, de les ramener à l'essentiel. Simplifier est l'art le plus difficile et le plus important pour un expert. La simplicité est la marque du maître de son art. Pascal ne s'excusait-il pas d'avoir écrit longuement à son interlocuteur, faute de temps pour être plus bref?

Le témoin-expert, judicieusement recruté, respectueux des règles déontologique (la crédibilité se palpe), et bien renseigné sur son rôle d'information vis-à-vis du tribunal, peut se

révéler fort utile en tant que vulgarisateur de la science. Il sera d'autant plus efficace qu'il comprend ce rôle clairement. Le tribunal ne doit pas abdiquer son pouvoir décisionnel en faveur de l'expert. Ce dernier n'a ni l'indépendance, ni la neutralité du juge.

**FOOTNOTE**

1. *Gareau* v. *The Montreal Street Railway Company* (1901), 31 S.C.R. 463 at 468.

2. *Moge* v. *Moge,* [1992] 3 S.C.R. 813 at 882-883.

3. Sir R. Cross, *Cross on Evidence*, 7th ed. (London: Butterworths, 1990) at 489.

4. See for instance Lord President Cooper's judgment in *Davie* v. *Edinburgh Magistrates*, [1953] S.C. 34 (Scotland).

5. *Anon.*

6. *Létourneau* v. *R.*, [1965] Q.B. 77 at 78.

7. *R.* v. *Prairie Schooner News Ltd.* (1970), 75 W.W.R. 585 at 600 (Man C.A.) [hereinafter *Prairie Schooner News*]. Leave to appeal refused [1970] S.C.R. x.

8. D.A. Bellemare, "L'homme de science devant les tribunaux" (1977) 37 R. du B. 465 at 472.

9. Author of *The End of the Twentieth Century and the End of the Modern Age* (New York: Ticknor & Fields, 1993) as well as of an article entitled "The Super Nonsense of a Supercollider" which appeared both in *The New York Times* and *The Globe and Mail*.

10. Indeed, it may surprise some to learn that some of today's scientists are still keen to get to the bottom of that particular problem. Swedish doctor Nils-Olof Jacobson recently placed the beds of terminal patients on scales and concluded, on the basis of the average weight drop at the moment of death, that the human soul weighs 21 grams. (Reported in "Facts & Arguments" *The Globe and Mail* (27 September 1993) A20.

11. *Supra* note 3 at 496.

12. *R.* v. *Morgentaler* (1974), 14 C.C.C. (2d) 450 (Que. C.A.).

13. *Brownlee* v. *Hand Firework Co. Ltd.* (1930), 65 O.L.R. 646 (C.A.) at 653.

14. *R.* v. *Bunniss,* [1965] 3 C.C.C. 236 at 239 in J. Sopinka, S.N. Lederman & A.W. Bryant, *The Law of Evidence in Canada* (Toronto: Butterworths, 1992) at 537.

15. *Wigmore on Evidence* (1917) in J. Sopinka & S.N. Lederman, *The Law of Evidence in Civil Cases* (Toronto: Butterworths, 1974) at 307-308.

16. P. Taylor, *A Treatise on the Law of Evidence*, 12th ed. (London: Sweet & Maxwell, 1931) at para. 58.

17. *Ibid.*

18. Madam Justice McLachlin, (address to the Canadian Trial Lawyers' Association, 10 March 1989).

19. T. Beven, *Negligence in Law*, 4th ed. (London: Sweet & Maxwell, 1928) at 141.

20. *R.* v. *Abbey,* [1982] 2 S.C.R. 24 [hereinafter *Abbey*].

21. *Supra* note 18.

22. J.H. Buzzard, R. May & M.N. Howard, *Phipson on Evidence*, 13th ed. (London: Sweet & Maxwell, 1982) at 556.

23. *Supra* note 7.

24. *Infra* note 33.

25. *Supra* note 3 at 489.

26. Sopinka & Lederman, supra note 15 at 328.

27. Sopinka *et al., supra* note 14 at 523.

28. *Graat* v. *R.* (1982), 144 D.L.R. (3d) 267 (S.C.C.).

29. *R.* v. *Fischer*, [1968] 1 O.R. 67 (C.A.).

30. *Wilbrand* v. *R.*, [1967] S.C.R. 14 at 21.

31. *R.* v. *Lupien*, [1970] S.C.R. 263 at 269.

32. *R.* v. *Zundel* (1987), 58 O.R. (2d) 129 at 175.

33. *R.* v. *Lavallée*, [1990] 1 S.C.R. 852 [hereinafter *Lavallée*].

34. R.A. Schuller, "The Impact of Battered Woman Syndrome Testimony on Jury Decision-Making: *Lavallée* v. *R.* Considered" (1990) 10 Windsor Yearbook Access Just 105.

35. *State* v. *Wanrow,* 559 P.2d 548 (1977) at 559 in *Lavallée, supra* note 33 at 874.

36. The Court cited *State* v. *Kelly*, 478 A.2d 364 at 378 (1984) for this proposition. *Ibid*. at 873.

37. *Ibid*. at 891.

38. *Supra* note 33.

39. *R.* v. *Lavallée* (1988), 52 Man R. (2d) 274 at 279 (C.A.).

40. *Supra* note 33 at 896.

41. Mr. Justice Rothman in *Paillé* v. *Lorcon Inc.*, [1985] C.A. 528 at 532-533.

42. H. Babcock, visiting professor at Georgetown Law Center, in V. Quade, "Justice Delayed: Civil Rights in the 1990s" (1993) 20 Human Rights (ABA) 20.

43. *In re "Agent Orange" Product Liability Litigation*, 611 F.Supp.1223 at 1251 (D.C.N.Y. 1985).

44. See, *inter alia, Sindell* v. *Abbott Laboratories,* 26 Cal.3d 588 (S.C. 1980).

45. *Laferrière* v. *Lawson,* [1991] 1 S.C.R. 541.

46. M.L.D. Wawro, "Effective Presentation of Experts" (1993) 19 (No.3) Litigation 31 at 33.

47. K P. Nolan, "Direct Examination - For Real" (1993) 19 (No. 3) Litigation 48.

48. *Frye* v. *United States*, 293 F. 1013 (D.C. Cir. 1923).

49. *Daubert* v. *Merrell Dow Pharmaceuticals Inc.*, 125 L.Ed.2d 469 (US 1993).

50. *Datta* v. *Rowan* (July 22, 1993), Doc. Vanc. B902310, B902313, unreported B.C.S.C. Commented upon in Mark Zapf, "Brain

Mapping's Results Revealed Mild Injury to BC Plaintiff" *The Lawyer's Weekly* (10 September 1993) (vol. 13 no. 17) 10.

51. *Ibid*.

52. Sopinka *et al., supra* note 14 at 42.

53. *Supra* note 20 at 42.

54. *R.* v. *McMillan* (1975), 7 O.R. (2d) 750 (C.A.).

55. *Ibid.* at 763.

56. *Gareau* c. *The Montreal Street Railway Company* (1901), 31 R.C.S. 463.

57. *Ibid.* aux pp. 464 et 465.

58. *Ibid*. à la p. 464.

59. *Moge* c. *Moge*, [1992] 3 R.C.S. 813 (sommaire de l'arrêtiste).

60. *Kelliher (Village of)* c. *Smith* [1931], R.C.S. 672 à la p. 684.

61. *Létourneau* c. *R.*, [1965] B.R. 77 aux pp. 77 et 78.

62. Voir à ce sujet les remarques de Monsieur le juge Dickson dans *R.* c. *Prairie Schooner News Ltd.* (1970), 75 W.W.R. 585 (Man. C.A.).

63. I. Lagarde, *Droit pénal canadien,* Montréal, Wilson et Lafleur, 1962 à la p. 1333.

64. *R.* c. *Morgentaler* (1974), 14 C.C.C. (2$^{e}$) 450 (C.A. Qué.).

65. *Brownlee* c. *Hand Firework Co. Ltd*. (1930), 65 O.L.R. 646 à la p. 653 (C.A.).

66. Voir à ce sujet la décision de Monsieur le juge Tyrwhitt-Drake dans *R.* c. *Bunniss*, [1965] 3 C.C.C. 236 à la p. 239.

67. *Wigmore On Evidence* (1917), cité dans J. Sopinka et S.N. Lederman, *The Law of Evidence in Civil Cases*, Toronto, Butterworths, 1974, aux pp. 307 et 308.

68. J.H. Buzzard, R. May et M.N. Howard, *Phipson on Evidence*, 13e éd., Londres, Sweet & Maxwell, 1982 à la p. 556.

69. D. Jutras «Expertise scientifique et causalité» dans *Barreau du Québec Congrès* (1992, Québec: Québec), Montréal, Service de la formation permanente, Barreau du Québec, 1992, 897 à la p. 903.

70. P. Taylor, *A Treatise on the Law of Evidence*, 12e éd., Londres, Sweet & Maxwell, 1931 au no 58.

71. *Ibid.*

72. T. Beven, *Negligence in Law*, 4e éd., Londres, Sweet & Maxwell, 1928 à la p. 141.

73. *R.* c. *Abbey*, [1982] 2 R.C.S. 24.

74. *Supra* note 69 à la p. 907.

75. Sir R. Cross et C. Tapper, *Cross on Evidence*, 6e éd., Londres, Butterworths, 1985 à la p. 437.

76. *Graat* c. *R.* (1982), 144 D.L.R. (3e) 267 (C.S.C.).

77. *R.* c. *Ficher*, [1968] 1 O.R. 67 (C.A.).

78. *R.* c. *Lavallée*, [1990] 1 R.S.C. 852.

79. Pour une analyse plus poussée de cette décision, veuillez vous référer à la version anglaise de ce texte.

80. *Shawinigan Engineering Company* c. *Naud*, [1929] R.C.S. 341 à la p. 343.

81. *Daubert* c. *Merrell Dow Pharmaticals Inc.,* 125 L.Ed.2d 469 (US 1993).

82. *Frye* c. *United States*, 293 F. 1013 (D.C. Cir. 1923) [ci-après cité: «Frye»)

83. *R.* c. *McMillan* (1975), 7 O.R. (2e) 750 à la p. 763 (C.A.).