Genes and Canadian Criminal Law

To the Editor:

It is indeed unfortunate that Marie Lussier in her recent article[1] chose to introduce her account of DNA typing evidence in the Canadian criminal justice system and the issues surrounding its admissibility with the passage from Brandeis J.'s dissenting judgment in *Olmstead* v. *U.S.*[2] that: "The greatest dangers to liberty lurk in insidious encroachment of men of zeal, well-meaning but without understanding." It is unfortunate because, intended or not, the suggestion is there that what has occurred to date[3] with forensic DNA typing is somewhat akin to children playing with matches: fascinated by the fire but blinded to the danger.

Having set the tone it was incumbent on the author to ensure that the reader was fully and accurately apprised of the extent of the use of and the depth of the challenge to forensic RFLP typing in North America. It would have been, at least, important for the reader to know that in the United States, as of March 2, 1992, DNA testing has been conducted in over ten thousand criminal cases and that it has been:[4]

> ... admitted in over 612 criminal trials. DNA evidence has been rejected in only five reported cases, and seven unreported cases. A few courts have allowed the evidence of a match to be introduced, but reduced or excluded altogether the statistics associated with a match.
>
> There have been 53 appellate decisions in the United States directly addressing the admissibility of forensic DNA test results. Every appellate court addressing the general acceptance or relevancy/reliability of the RFLP technology has ruled that the technology met the applicable standard. Two appellate decisions have remanded the cases back to the trial court for failure of the prosecution to lay an adequate foundation for the admission of the population statistics. Only one appellate court in Minnesota has excluded DNA evidence. In the Minnesota case, the court cited the laboratory's

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[1] Tailoring the Rules of Admissibility: Genes and Canadian Criminal Law (1992), 71 Can. Bar Rev. 319.

[2] *Ibid.*, at p. 320.

[3] According to the author, *ibid.*, at p. 319, the article was based on material available as of April 30, 1992.

[4] J.T. Sylvester, Recent Developments in DNA Admissibility, in the Proceedings of the 1992 International Symposium on Human Identification, Scottsdale, Arizona (in Press), p. 7 (footnotes omitted). These statistics have since been updated by Mr. Sylvester from March 2, 1992 for publication purposes (personal communication) but the revised statistics are not used here in keeping with the date of the article being addressed.

> failure to follow certain minimum guidelines it deemed necessary for the admission of DNA test results, as well as previous case precedent which restricted the use of population frequencies in criminal cases.

Likewise, in the Canadian context, it perhaps would also have been important for the reader to know that the admissibility hearing held in the so-called RCMP "test" case of *R.* v. *Legere*[5] extended over a period of approximately six weeks; that it involved the testimony of six experts drawn from within and from outside the forensic fields with backgrounds ranging from Bio-Chemistry and Molecular Biology to Human Population Genetics;[6] that some one hundred and fifty exhibits were filed consisting of scientific papers and related materials, that the evidence given consumes ten volumes of transcript and that all the DNA evidence, including match probabilities, was ruled admissible.

In any event, this perceived failure to inform adequately was compounded (and necessitated this reply) by the following statement made by the author in her article:[7]

> A recent report of the National Academy of Sciences has, however, raised serious concerns with respect to the use of DNA evidence. Although the Congressional Office of Technology Assessment initially granted its approval to DNA typing, *the April 1992 report of the National Academy of Sciences states that courts should not admit DNA evidence until a stronger scientific basic for the technique has been established.*

It is not surprising that no citation is provided to the place in the Report where this statement was allegedly made since it was not made.[8]

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[5] (August 29, 1991), Doc. Burton, Dickson J. (N.B.Q.B.) (unreported). An important subsequent decision in the DNA context is that of Langdon J. in *R.* v. *Johnston* (1992), 69 C.C.C. (3rd) 395 (Ont. Ct. Gen. Div.) wherein he undertakes an extensive review on the question of the appropriate admissibility test for novel scientific evidence and the applicable standard of proof, settling on the reasonable reliability inquiry of "relevancy/helpfulness" as expounded in the DNA case of *U.S.* v. *Jacobetz* (1990), 747 F. Supp. 250 (D. Vt.), affirmed (1991), 955 F. 2d 786 (2nd Cir.), and rejecting the notion of a requirement on such hearings of proof beyond a reasonable doubt.

[6] Specifically, for the Crown: Dr. John Waye, McMaster University (Molecular Genetics, DNA Technology, Forensic DNA Typing and Population Genetics as it pertains to Forensic Human DNA Polymorphisms); Dr. John Bowen, I/C Operations, DNA Section, RCMP Central Forensic Laboratory (Bio-Chemistry, DNA Technology and Forensic DNA Typing); Dr. Ronald Fourney, Head of DNA Research and Development, RCMP Central Forensic Laboratory (Bio-Chemistry and DNA Technology and Forensic DNA Typing); Dr. George Carmody, Carlton University (Population Genetics); Dr. Kenneth Kidd, Yale University School of Medicine (Molecular Genetics, DNA Technology and Testing Procedures and Human Population Genetics). For the Defence: Dr. William Shields, State University of New York (Molecular Genetics and Population Genetics).

[7] *Loc. cit.,* footnote 1, at p. 326. (Emphasis added).

[8] What is surprising is that the writer would attribute such a comment to the National Academy of Sciences when she had pointed out at the outset, at p. 319, that she had not had an opportunity to read the Report nor would its findings be discussed.

Why the writer, regrettably, chose to make such a comment and why it is so wrong is probably best explained by a formal statement of the National Research Council[9] which accompanied its press release introducing the Report:[10]

> *STATEMENT REGARDING APRIL 14, 1992 ARTICLE IN NEW YORK TIMES AND NEW YORK TIMES NEWS SERVICE*
>
> *Today the New York Times ran a front page story about a National Research Council Report on DNA Typing in Forensic Science, which was scheduled to be released Thursday. The major conclusion of the article is incorrect and the Research Council would like to state them correctly for the record.*
>
> *The article claims the report "says courts should cease to admit DNA evidence until laboratory standards have been tightened and the technique has been established on a stronger scientific basis." This is incorrect.*
>
> The committee concluded that DNA typing provides "*strong evidence*" of identity.
>
> The report does call for standardized lab standards and accreditation, but it says that "until accreditation programs are fully implemented, there will be a period during which some laboratories will not have completed the accreditation process. In the interim, courts should require forensic laboratories at least to demonstrate that they are effectively in compliance with the requirements for accreditation as outlined by TWGDAM (an existing group) and by this report; that would be taken as meeting generally accepted standards of practice."

In the press release itself, entitled Study Supports Use of DNA Typing in Forensic Science, under the heading "Courtroom Concerns", the Council comment that:[11]

> While most courts have ruled that DNA typing evidence is admissible, some have barred it on grounds that the techniques used must first be proven to be generally accepted within the scientific community.
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> The study committee recommended that courts accept the reliability of DNA typing and recognize that *current* laboratory techniques are fundamentally sound. However, in determining admissibility of evidence, courts must continue to consider on a case-by-case basis the reliability of specific techniques used to analyze samples.

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[9] The arm of the U.S. National Academy of Sciences responsible for the Report, which is entitled DNA Technology in Forensic Science (1992).

[10] (Emphasis added). It is interesting that Flanigan J. in *R.* v. *Claude Bourguignon,* unreported, January 14, 1991 (Ont. Ct. Gen. Div.) noted, at p. 16:

> Dr. Waye also, in his evidence, stated that the media have written and spoken more on the results of DNA testing than any scientist in North America. He also goes on to add, without any general benefit to anyone.

[11] (Emphasis added).

The Report is a lengthy, complex and serious document containing many recommendations[12] that are presently being studied by the various forensic labs and the academic world alike. What aspects will be adopted, rejected or modified by scientists and/or the courts only time will tell.[13] The NRC Report, however, will no doubt have some impact on the approach forensic labs and the courts take in relation to DNA typing in Canada.

But, even the critics recognize the reality of forensic DNA typing;[14]

> We would finally like to emphasize that this dispute is not about the use of DNA evidence in the courtroom. DNA typing is a very powerful procedure. We regard it as "possibly the most powerful innovation in forensics since the development of fingerprinting in the last part of the 19th century:" ... All we ask is a basic degree of candidness in reporting the statistical significance of a match.

One final comment. In undertaking the drafting of this reply the writer is mindful of the words of Benjamin Disraeli with respect to criticism: "It is much easier to be critical than to be correct."

Yours truly

John J. Walsh*

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[12] Some of which are contentious in themselves. For example, the recommended ceiling principle approach (see Chapter 3.1 of the Report) for the admission of statistical frequency calculations has been described by one scientist as "absurdly conservative" (N. Morton (1992), Genetic Structure of forensic populations, Proc. Nat. Acad. Sci., U.S.A. 89: at pp. 2556-2560, as quoted by B. Budowle and K. Monson, Perspectives on the Fixed Bin Method and The Floor Approach/Ceiling Principle, in the Proceedings of the 1992 International Symposium on Human Identification, *op. cit.,* footnote 4, p. 11), and by others, in comparison to the current fixed bin method, as having "no statistical support" (R. Chakroborty, M.R. Srinivasan and M. de Andrade, Effects of Population Subdivision and Allele Frequency Differences on Interpretation of DNA Typing Data for Human Identification, in the Proceedings of the 1992 International Symposium on Human Identification, *ibid.,* p. 12).

[13] It must be remembered that the Report not only addresses the present methods but also the emerging technologies such as PCR (Polymerase Chain Reaction) and is directed at the myriad of forensic labs, both private and public, existing (approximately 30—see *op. cit.,* footnote 4, p. 1) and sprouting up in the United States and the populations there.

[14] R. Lewontin and D. Hartl, Response to Letters to the Editor (1992), 255 Science 1054, at p. 1055 (footnotes omitted).

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Genes and Canadian Criminal Law

To the Editor:

If society as a whole is to benefit from DNA typing, the criminal justice system cannot afford to feel threatened by unbiased discussions of the complexity of this new technology and its potential incursions upon our civil liberties. In reply to Mr. Walsh's letter, I wish to emphasize that the purpose of my article, Tailoring the Rules of Admissibility: Genes and Canadian Criminal Law,[1] was not to discourage the introduction of DNA typing in the criminal context but, rather, to encourage reflection as to the implications of this revolutionary technology.

The United States National Academy of Sciences completed its study of DNA typing in April 1992.[2] At the time, the Canadian Bar Review had already printed the final proofs of my article. For the sake of completeness, I requested that two references to the report be added to my article. The first, following my acknowledgements, mentioned its release and stated clearly that I had not personally evaluated its conclusions. The second, to which Mr. Walsh refers, is in the body of the text and reads as follows:[3]

> A recent report of the National Academy of Sciences has, however, raised serious concerns with respect to the use of DNA evidence. Although the Congressional Office of Technology Assessment initially granted its approval to DNA typing, the April 1992 report of the National Academy of Sciences states that the courts should not admit DNA evidence until a stronger scientific basis for the technique has been established.

I failed to reference the source of this information, an article in the April 14, 1992 edition of the New York Times.[4] This article predated the release of the report, and the Times subsequently acknowledged that it may

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[1] M. Lussier, Tailoring the Rules of Admissibility: Genes and Canadian Criminal Law (1992), 71 Can. Bar Rev. 319.

[2] Committee on DNA Technology in Forensic Science, Board on Biology, Commission on Life Sciences, National Research Council, DNA Technology in Forensic Science (1992). The National Research Council is the principal operating agency of the National Academy of Sciences, a private, nonprofit society whose mandate is to advise the federal government on scientific and technical matters and to provide services to the public and the scientific community. In the preface of the report, V.A. McKusick writes that the DNA typing study was initiated in January 1990, in response to questions raised in connection with well-publicized criminal cases, and calls from the scientific and legal communities. Financial support for the study was provided by several federal agencies and one private foundation.

[3] *Loc. cit.*, footnote 1, at p. 326.

[4] G. Kolata, U.S. Panel Seeking Restriction on Use of DNA in Courts—Labs' Standard Faulted—Judges Are Asking to Bar Genetic "Fingerprinting" Until Basis in Science is Stronger, The New York Times (14 April, 1992) 1.

have misinterpreted its findings. The extent of its error, however, remains a matter of dispute.

In the opening pages of the United States National Academy of Sciences' report, the Committee on DNA Technology in Forensic Science states the following:[5]

> On April 14, 1992, The *New York Times* printed an article on this report. That article seriously misrepresented the findings of the committee; in an article on April 15, 1992, the *Times* corrected the misrepresentation. To avoid any potential confusion engendered by the April 14 article, the committee provides the following clarifying statement:
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> We recommend that the use of DNA analysis for forensic purposes, including the resolution of both criminal and civil cases, be continued while improvements and changes suggested in this report are being made. There is no need for a general moratorium on the use of the results of DNA typing either in investigation or in the courts.
>
> We regard the accreditation and proficiency testing of DNA typing laboratories as essential to the scientific accuracy, reliability, and acceptability of DNA typing evidence in the future. Laboratories involved in forensic DNA typing should move quickly to establish quality-assurance programs. After a sufficient time for implementation of quality-assurance programs has passed, courts should view quality control as necessary for general acceptance.

In its recommendations, the Committee discusses the admissibility of DNA typing evidence in the following words:[6]

> In view of the important public-policy goal that this powerful technology be practiced only at the highest standard, compliance with high standards must be mandatory. Two approaches should be used to accomplish this, as set forth below.
>
> First, courts should require that a proponent of DNA typing evidence have appropriate accreditation—including demonstration of external, blind proficiency testing ... for its evidence to be admissible. There is strong legal foundation for such a position. As a number of courts have correctly recognized, the admissibility of scientific evidence depends not just on a technology's being sound in principle, but on the testing laboratory's having applied it in the case at hand according to generally accepted standards. Courts should view the absence of appropriate accreditation as constituting a prima facie case that the laboratory has not complied with generally accepted standards. Until accreditation programs are fully implemented, there will be a period during which some laboratories will not have completed the accreditation process. In the interim, courts should require forensic laboratories at least to demonstrate that they are effectively in compliance with the requirements for accreditation as outlined by TWGDAM and by this report; that would be taken as meeting generally accepted standards of practice.

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[5] *Op. cit.*, footnote 2, p. x.

[6] *Ibid.*, pp. 106-107.

The Committee characterizes the April 15, 1992 New York Times article[7] as a correction of the April 14, 1992 misrepresentation. However, the April 15 article in fact highlights the lack of understanding between the legal and scientific communities, and amongst the Committee members themselves, with respect to the scope of the Committee's above quoted recommendation.

In its opening paragraphs, the April 15, 1992 article states the following:[8]

> The chairman of a National Academy of Sciences panel studying the forensic technique of DNA fingerprinting asserted yesterday that laboratories analyzing DNA should be held to higher standards. Contrary to a report in The New York Times, he said the panel was not calling for a moratorium on the technique while those standards were being put into effect.
>
> The Times' account yesterday emphasized a section of the panel's report that legal experts, and two panel members, say is tantamount to calling for DNA evidence not to be used in court until the recommended higher standards are attained.

Dr. Victor McKusick, chairman of the Committee and geneticist at Johns Hopkins University in Baltimore, is reported as saying that the Committee thought "that DNA evidence [could] be used in court without interruption".[9] Dr. Eric Lander, a molecular biologist at the Massachussets Institute of Technology and a Committee member, adds that "... if [the Committee] were going to say anything as strong as, 'You can't use it tomorrow in court,' we would have said that directly".[10]

However, Dr. Thomas Marr, a molecular geneticist at Cold Spring Harbour and also a member of the Committee, is quoted as saying that although the Committee had not intended to call for a moratorium, "no laboratory, including the F.B.I.'s, currently complied with the standards recommended by the committee and therefore ... an effective moratorium was implied".[11] On this point, Dr. Lander admits that "there was some confusion in the report's wording of a section about admissibility of DNA evidence and ... the committee might not have realized the implications of what it wrote".[12]

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[7] G. Kolata, Chief Says Panel Backs Courts' Use of a Genetic Test—Times Account in Error—Report Urges Strict Standards but No Moratorium on DNA Fingerprinting for Now (15 April 1992).

[8] *Ibid.*

[9] *Ibid.*

[10] *Ibid.*, at p. 23.

[11] *Ibid.*

[12] *Ibid.*

The April 15, 1992 article explains that several law professors and defense lawyers interpreted the report as meaning that unless the DNA typing laboratories meet standards presently not met by any forensic laboratory, the evidence should not be admitted in court. The article specifies that:[13]

> Several law professors who study science in the courtroom, including Paul Gianelli of Case Western Reserve University, Edward Imwinkelried of the University of California at Davis, and Randolph Jonakait of New York University said that in their view these recommendations were tantamount to saying that DNA evidence should not be admissible at this time.

In particular, Mr. Jonakait states that:[14]

> Here you have a disinterested scientific panel, in some sense the only people who have looked at this in a disinterested way, ... and they are saying that until quality control systems are in place you shouldn't be sending people to jail based on DNA evidence. Certainly, defense lawyers are going to argue that this should be standard.

The recommendations of the Academy calling for the standardisation of laboratory practices, though relevant to the development of admissibility standards in the Canadian context, are by no means determinative of the problem. The controversy surrounding the release of the Academy's report demonstrates the need for caution in introducing science into the legal context and the futility of "counting (scientific) noses"[15] in evaluating the admissibility of DNA typing evidence. On this point, Mr. Walsh's simplistic approach fails to address the important issue of reconciling the scientific method, and its approach to truth, with the role of the criminal process in determining guilt or innocence.

Amidst the politics and power struggles, we must not lose sight of the essential role of criminal law in shaping the society of the future. As Crown counsel, Mr. Walsh would surely agree that the interests of justice are best served by close scrutiny of novel scientific methods which have the potential to seriously infringe on the civil liberties of individuals. It is high time to stop posturing and to begin expending energy on the evaluation of the substantive consequences of this innovative technology. My position is not that DNA typing evidence should be excluded from Canadian courts

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[13] *Ibid.*

[14] *Ibid.*

[15] *U.S.* v. *Williams*, 583 F. 2d 1194, at p. 1198 (2d Cir., 1978), cert. denied, 439 U.S. 1117, 99 S. Ct. 1025, 59 L. Ed. 77 (1978), where Markey C.J., U.S. Court of Customs and Patent Appeals, in ruling on the admissibility of evidence in the form of spectrographic voice analysis, states that "[a] determination of reliability cannot rest solely on a process of 'counting (scientific) noses'". Markey C.J. had previously remarked: "We deal here with the admissibility or non-admissibility of a particular type of scientific evidence, *not with the truth or falsity of an alleged scientific "fact" or "truth"*; *ibid.* (Emphasis added). In *Williams*, the scientific evidence was admitted.

but, rather, that it should not be embraced until its implications for the criminal justice system as a whole have been more fully analysed. Mr. Walsh notes that it is easier to be critical than to be correct. He fails to recognise, however, thatuntil we have analysed an issue critically, we cannot know what answer is correct.

Yours truly

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