Expressing evaluative opinions: A position statement

Charles E.H. Berger, John Buckleton, Christophe Champod,
Ian W. Evett, Graham Jackson

The judgment of the Court of Appeal in R v T [1] raises several issues relating to the evaluation of scientific evidence that, we believe, require a response.

We, the undersigned, oppose any response to the judgment that would result in a movement away from the use of logical methods for evidence evaluation. A paper in this issue of the Journal [2] re-iterates logical principles of evidence interpretation that are accepted by a broad range of those who have an interest in forensic reasoning. The divergence between those principles of interpretation and the apparent implications of the R v T ruling are epitomised by the following issues that represent our collective position with regard to the evaluation of evidence within the context of a criminal trial.

1) The interpretation of scientific evidence invokes reasoning in the face of uncertainty. Probability theory provides the only coherent logical foundation for such reasoning.
2) To form an evaluative opinion from a set of observations, it is necessary for the forensic scientist to consider those observations in the light of propositions that represent the positions of the different participants in the legal process. In a criminal trial, the propositions will represent the positions of prosecution and defence, respectively.
3) It is necessary for the scientist to consider the probability of the observations given each of the stated propositions. Not only is it not appropriate for the scientist to consider the probability of the proposition given the observations, there is a danger that in doing so the jury will be misled.
4) The ratio of the probability of the observations given the prosecution proposition to the probability of the observations given the defence proposition, which is known as the likelihood ratio, provides the most appropriate foundation for

assisting the court in establishing the weight that should be assigned to those observations.

5) A verbal scale based on the notion of the likelihood ratio is the most appropriate basis for communication of an evaluative expert opinion to the court. It can be phrased in terms of support for one of a pair of clearly stated propositions.
6) Not only are phrases such as "could have come from" or "is consistent with" ineffective for communicating the scientist's opinion with regard to the weight that should be assigned to a set of observations, but there is also a danger that they may be misleading.
7) Probabilities should be informed by data, knowledge and experience. All data collections are imperfect and incomplete and it necessarily follows that different experts might legitimately assign different probabilities to the same set of observations.
8) The logical approach to evaluating evidence implicit in the foregoing points has come to be known as the "Bayesian approach". The ideas behind this approach are not novel. Indeed, they were first applied to resolving a serious miscarriage of justice in the Dreyfus case in 1908.
9) It is regrettable that the judgment confuses the Bayesian approach with the use of Bayes' Theorem. The Bayesian approach does not necessarily involve the use of Bayes' Theorem. 10) While we are fully in agreement with the principle of disclosure, candour and full disclosure in court can undermine comprehensibility when scientific evaluations involve technicalities. Pre-trial hearings should be used to explore the basis of expert opinions and to resolve if possible any differences between experts.

References

[1] R v T. [2010] EWCA Crim 2439.

[2] C. Berger, J. Buckleton, C. Champod, I.W. Evett and G. Jackson. Expressing evaluative opinions in criminal cases: a response to R v T. Science and Justice, in press.

Signatories

In alphabetical order of surname:

- Dr. Colin Aitken, Professor of Forensic Statistics, University of Edinburgh, United Kingdom.
- Dr. Charles E.H. Berger, Principal Scientist, Netherlands Forensic Institute, Netherlands.
- Dr. John S. Buckleton, Principal Scientist, Institute of Environmental Science and Research, New Zealand.
- Dr. Christophe Champod, Professor in Forensic Science, University of Lausanne, Switzerland.
- Dr. James Curran, Professor of Statistics, University of Auckland, New Zealand.
- Dr. A.P. Dawid, Professor of Statistics, University of Cambridge, United Kingdom.
- Dr. Ian W. Evett, Consultant Statistician, Forensic Science Service, United Kingdom.
- Dr. Peter Gill, Professor of Forensic Genetics, Institute of Legal Medicine, University of Oslo, Norway.
- Dr. Joaquin Gonzalez-Rodriguez, Assistant Professor, Research Institute for Forensic Science and Security (ICFS), Universidad Autonoma de Madrid, Spain.
- Mr. Graham Jackson, Professor in Forensic Science, University of Abertay Dundee, United Kingdom.
- Dr. Ate Kloosterman, Professor in Forensic Biology, University of Amsterdam, Netherlands.
- Dr. Tina Lovelock, Forensic Scientist, LGC Forensics, United Kingdom.
- Dr. David Lucy, Department of Mathematics and Statistics, Lancaster University.
- Dr. Pierre Margot, Professor in Forensic Science, University of Lausanne, Switzerland.
- Dr. Louise McKenna, Director of Science, Eolaíocht Fhóiréinseach Éireann (EFÉ, Forensic Science Ireland), Ireland.
- Dr. Didier Meuwly, Principal Scientist, Netherlands Forensic Institute, Netherlands.
- Dr. Cedric Neumann, Assistant Professor in Statistics, Forensic Science Program, Pennsylvania State University, United States of America.
- Dr. Niamh Nic Daeid, Reader in Forensic Science, Centre for Forensic Science, University of Strathclyde, Glasgow, Scotland: Editor in Chief, Science and Justice.
- Dr. Anders Nordgaard, Forensic Statistician, National Laboratory for Forensic Science (SKL), Sweden.
- Dr. Roberto Puch-Solis, Forensic Statistician, Forensic Science Service, Birmingham, United Kingdom.
- Dr. Birgitta Rasmusson, Director of Research, National Laboratory for Forensic Science (SKL), Sweden.
- Professor Mike Redmayne, Department of Law, London School of Economics, United Kingdom.
- Professor Paul Roberts, Professor of Criminal Jurisprudence, University of Nottingham School of Law, United Kingdom.
- Mr. Bernard Robertson, Editor, New Zealand Law Journal, New Zealand.
- Dr. Claude Roux, Professor of Forensic Science and Director, Centre for Forensic Science, University of Technology Sydney, Australia.

- Dr. Marjan J. Sjerps, Professor in Forensic Statistics, University of Amsterdam, Netherlands.
- Dr. Franco Taroni, Professor in Forensic Statistics, University of Lausanne, Switzerland.
- Dr. Tjark Tjin-A-Tsoi, General Director, Netherlands Forensic Institute, Netherlands.
- Dr. G.A. Vignaux, Emeritus Professor of Operations Research, Victoria University of Wellington, New Zealand.
- Dr. Sheila M. Willis, Director General, Eolaíocht Fhóiréinseach Éireann (EFÉ, Forensic Science Ireland), Ireland.
- Dr. Grzegorz Zadora, Senior Scientist, Forensic Chemist, Instytut Ekspertyz Sądowych (IES, Institute of Forensic Research), Poland.

The Board of the European Network of Forensic Science Institutes (ENFSI) also supports this position statement and engages itself to work towards a full implementation within the ENFSI laboratories (ENFSI has 58 member institutes in 33 countries).

Dr. Jan De Kinder, Chairman
Paweł Rybicki, Chairman designate
Tore Olsson, Member
Burhanettin Cihangiroğlu, Member
Dr. Torsten Ahlhorn, Member