7/07/2009

Response to England and Wales Law Commission Consultation Paper 190:
The Admissibility of Expert Evidence in Criminal Proceedings in England and Wales:
A New Approach to the Determination of Evidentiary Reliability.

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1.0 Bona fides. I am a forensic speech scientist holding both English and Australian citizenship. I have been practising for over 18 years in Australia, working for both Crown and defence, and am Chair of the *Forensic Speech Science Committee* of the *Australasian Speech Science and Technology Association*[1]. I have written a book on forensic speaker comparison (*Forensic Speaker Identification*, Taylor & Francis *Forensic Science Series,* 2002), and also the reference text for Australian legal practitioners (*The Technical Comparison of Forensic Voice Samples*) in Freckelton and Selby's *Expert Evidence* series (Thompson Lawbook Co., 2003). I have also published widely on forensic speaker comparison.

My major contributions to forensic speech science have been firstly, to introduce the logically and legally correct way of evaluating forensic speech evidence, by means of likelihood ratios; and secondly, to show by means of testing that speech evidence can be properly evaluated in the same way as the gold standard of DNA (see e.g. Gonzalez-Rodriguez et al. **'Emulating DNA: Rigorous Quantification of Evidential Weight in Transparent and Testable Forensic Speaker Recognition.'** *IEEE Transactions on Audio Speech and Language Processing* 15/7 2008.)

2.0 Summary of paper This consultation paper is motivated by perceived problems associated with admissibility and understanding of expert evidence (EE) in criminal proceedings in the UK Crown Court. It solicits feedback on proposals to improve matters, in particular how best to determine evidentiary reliability. It makes two main proposals. The first is to introduce a validity-based *Daubert*-type test (as opposed to a deference-based *Frye*-type test) for admissibility of EE (a sub-category of which is scientific evidence). The second proposal is to put the onus on the tenderer to demonstrate to the court the applicability of the EE it wants to lead.

The proposed test is a three-stage one, with the evidence having to pass all three stages to be admitted. The first stage, which relates to the *basis* of the expert's approach, tests whether the EE is based on sound hypothesis, methodology and assumptions. This is done by addressing several criteria which are already familiar from *Daubert*, the most important of which are: *testing* (including adequacy of data-bases), *error rates, relevant specialised literature*, and *impartiality of expert*. The second stage relates to *application*, and tests whether the expert has applied the ideas correctly to arrive at their conclusions (and not for example made mistakes in calculations etc.). The last stage relates to *reasoning*, and tests whether the expert's conclusions follow logically from their method (and, presumably, results).

In addition, three other ideas are floated: (1) to have the possibility of an *independent assessor* appointed to help the judge evaluate admissibility in scientifically difficult

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[1] http://www.assta.org/commitees/forensic/

cases; (2) to have means of *educating* the relevant legal professionals in how to assess the scientific viability of expert evidence; and (3) *accreditation* of experts.

3.0 Comments Over about the last twenty years much attention has been given to the proper evaluation of forensic evidence, resulting in a call for a major paradigm shift in many areas of forensic identification science. This has been mainly the result of the increased incidence of statistical evidence associated with forensic DNA profiling, together with some spectacular miscarriages of justice due to incorrect statistical reasoning. Thus the call has now gone out (e.g. in Baldwin's *Weight of Evidence for Forensic DNA Profiles.* Wiley, 2005) for all areas of forensic identification science to emulate DNA:

… DNA profile evidence is now seen as setting a standard for rigorous quantification of evidential weight that forensic scientists using other evidence types should seek to emulate.

My research associate at the Australian National University Dr. Geoffrey Morrison has already sent you a set of detailed comments on the proposals, which has my full endorsement. I therefore do not rehearse any of his points pertaining on how to evaluate *reliability* of evidence (the key word in the proposal paper). I need state only that I am in full agreement with the proposals and the need for reform.

However, as Morrison points out, there is one glaring omission in the paper: *the logical framework for assessing the strength of the evidence*. This has been around for some time now in forensic statistics textbooks and is received in DNA profiling, and really should have been included. Moreover, the framework provides a way of assessing reliability of evidence and is therefore absolutely central to the topic of the paper. It really *should constitute the basis for determining admissibility in all cases involving identification-of-the-source evidence*. This clearly would be one of the things in which the judiciary could be "educated".

Basically, it's very simple and can be summarised in two principles, *both of which should be applied in the test for admissibility*. Firstly, the expert should be able to say how probable the evidence is under *both* prosecution and defence hypotheses. If they can only give the probability of the evidence under one of the competing hypotheses it's no use as evidence. Also, having to give the probability of the evidence under competing hypotheses guarantees impartiality (one of the sub-conditions of the proposed test). Secondly, the expert must refrain from estimating the probability of the hypothesis (prosecution or defence), given the evidence. They cannot do this, by Bayes' theorem, unless they know the prior odds; and the probability of the hypothesis, given the evidence, is the business of the court to determine, not the expert. Clearly any expert evidence containing a $p(\text{H}|\text{E})$ statement should be scrutinised to see if it indeed includes an estimate of the priors, for absent priors, such evidence violates logic.

A final, but extremely important point is that we do now know how to rigorously determine the reliability of the evidence, by means of likelihood ratio testing. Whereas we at the ANU have been concerned with testing and publishing the results in forensic speaker comparison (and applying it in real case-work), it needs to be emphasised that the approach applies irrespective of the medium of the evidence (voice acoustics, refractive indices of glass, earprints noseprints bitemarks, DNA etc.). Anyone seeking to evaluate the admissibility of scientific evidence should be

conversant with the approach, so that they can inquire of expert testimony whether it has indeed been tested in such a way.

4.0 Questions

- Should there be a statutory test for the admissibility of expert evidence in criminal proceedings as per 6.10?
  Yes, definitely.

- Should trial judges be provided with guidelines for determining the evidentiary reliability of scientific EE, as per 6.26
  Yes, definitely

- Guidelines for experience-based (non-scientific) EE as per para 6.35.
- Yes. It is in principle possible to express non-scientific evidence in quasi-LR terms.

- Should the party proposing EE have to demonstrate its sufficient reliability?
  Yes.

- Should the trial judge be able in exceptional cases to call upon an independent assessor to help them apply a test to determine the reliability of EE?
  Great idea.

Hope this is of use.

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