


Dia 1



Forensic Science
Playing with fire??

Edirb u rgh 29 April 2006 D. Adrian Grace and George C. Giblin, Attorneys

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A history from the lawyer's view

- "...I know a man who'll know..."
- Experts offer certainty to fact finders struggling with doubts
- Experts lift the burden of judgement from judges
- Experts use consistent and repeatable techniques
- Even in mediaeval Europe...



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Experts Post Renaissance



- A conflict of Experts from 1522
- The Church –rifles are the work of The Devil and are illegal
- Herman Moritz –rifles are the only firearms that do not do the work of The Devil

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The Here and Now



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Determining Expertise

- Extensive qualifications in the field
 - Degree
 - Postgraduate qualifications

- Many years experience
 - Demonstration of many years in their field

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An Expert?

- Gives the court an appearance of an expert

- May have many previous qualifications and been working for many years



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An Expert?

- Gives the court an appearance of an expert
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The qualifications may be from many years ago and no longer relevant

You can do the same thing wrong for many years and get very good at getting it wrong!




A cartoon illustration of a scientist with wild grey hair, wearing a white lab coat and blue trousers. He is holding a green flask in his right hand and a test tube in his left hand.

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Professor Sir Roy Meadow

- Professor Sir Roy Meadow was highly qualified in the field of paediatrics
- He had many years of experience in the field and consider a leading expert
- He was well qualified in science but not in statistics and gave evidence, later criticised, leading to two miscarriages of justice





A black and white portrait of Professor Sir Roy Meadow, an older man with glasses, wearing a suit and tie.

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People v O. J. Simpson

- Many experts gave scientific evidence in the trial of O. J. Simpson
- The scientific testimony of many scientific 'experts' later criticised for lack of impartiality
- Much of the testimony was poor science and misleading to the jury



A small photograph of O. J. Simpson in a courtroom, looking towards the camera. Below it is a larger photograph showing a courtroom scene with several people, including a man in a suit who appears to be O. J. Simpson, standing and speaking.

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Competence

- Qualifications give an indication of an ability at that point in time
- Experience can be useful but not the best indicator of ability
- Competence can only be determined by assessing an expert against agreed standards
- Expert witnesses have to agree to be assessed on a regular basis

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Regulation

- If you attend a hospital you probably expect the person attending to you to be medical trained and to meet some standard in medicine
 - General Medical Council
- So why is there no such regulation for those purporting to be expert scientists
 - Addressed by the UK in 2001

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Council for the Registration of Forensic Practitioners

- First regulatory body to monitor the standard of expert witnesses (UK only currently)
- A open to all who write reports for the court and who may give evidence
- Practitioner based
- Registration indicates competence in a field
- Registration last 4 years only

www.crfp.org.uk

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International Lists of Experts

- Lists of approved experts exist
- Approved by whom and on what basis
- Open to the problems of a club
- Not an indication of competence and impartiality

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Science, Witchcraft or Art

- When is a scientific test acceptable to the court?
- In the US there are Frye & Daubert hearing to determine admissibility
 - Can means a delay in acceptance of evidence
 - Handwriting now an art not a science
- In the UK this is dependant upon the court
 - Once accepted then allowed in other courts of similar power
- Few acceptable standards exist

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Acceptance of DNA Profiling

- DNA 'Fingerprinting' first used in 1986 in a criminal case
- Accepted by an English court with little challenge
- Original technique led to a number of convictions
- There have been number of appeals on the technology (Kelly v HMA), or the evaluation of the evidence (Adam v R & Doherty v R)

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DNA has since been the subject of extensive validation and testing to be accepted in courts world wide. Questionable whether fingerprints would pass the same challenge

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Earprints – A New Test

- Our ears are thought to be unique
- Ear prints occur when a person presses their ear against a window etc
- Comparison is possible and has been used in a number of cases particularly in mainland Europe




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R v Dallagher

- In 1998 Mark Dallagher was convicted for the murder of 94 year old Dorothy Woods
- Ear print on a window crucial in the conviction
- Cornelis van der Lugt, an expert on ear prints from the Netherlands, stated he was 'absolutely convinced' an ear print from Dallagher matched that on the window




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R v Dallagher

- In 2002 DNA profiling was performed on the cells on the window
- The DNA profile did NOT match Dallagher
- Ear prints have not been used since in the UK and are unlikely to be allowed unless there is extensive research to support their reintroduction



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Probabilities & Opinions

- The expert is at court to give an opinion
- Comment upon the strength of the evidence
- The court would like the scientist to be definitive
 - This glass came from this window
 - This mark came from this shoe
- Most scientists are trained to give probabilistic reasoning
 - It is likely that this blood came from this person

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Some Evidence Types Considered to be Unique

- Fingerprints, toolmarks, bullet striations, & handwriting all thought to be unique
- Depends upon the amount of material available to examine and the number of points of comparison available
- Reported that no two fingerprints/bullets/sets of handwriting will make the same marks

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Consideration of the Evidence

Most evidence is considered using hypothesis testing

$$\text{Pr} = \frac{H_p}{H_d}$$

Where H_p is the probability of the evidence given the prosecution hypothesis compared to the probability of the evidence given the defence hypothesis (H_d)

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Applying Uniqueness to Evidence

If a fingerprint is unique then the chance that anyone other than the suspect left the fingerprint is 1 and therefore the defence hypothesis is 0.

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$$\text{Pr} = \frac{H_p}{H_d} = \frac{1}{0} = \infty$$

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DNA v Fingerprints

- Uniqueness not assumed for DNA
- The DNA scientist was not at the scene and did not see the event happen
- The DNA scientist must consider the possibility that the blood comes from someone other than the accused
- The chance that anyone else has my fingerprint pattern is not considered

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Role of the Expert Witness

The scientist should consider the source of any item and the activity associated with it. The Court considers the offence not the scientist

- Source (probability)
 - The blood on the shoes of the suspect came from the victim
- Activity (opinion)
 - The stain pattern on the shoe is that of kicking
- Offence (Court/judge/jury)
 - The accused kicked the victim

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Science in the Witness Box

- Expert testimony can have a major impact on a trial
 - The quality of the science needs to be assessed
 - The quality of the advocacy needs to be of a high standard
- There can be great benefit with high quality expert testimony
- There can be great problems with poor expert testimony

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Conclusion



The image block contains two side-by-side photographs. The left photograph shows a close-up of a fireplace with a bright, crackling fire burning in the hearth. The right photograph shows a house at night, illuminated by warm interior lights that glow through the windows, with some exterior lights visible.

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THANK YOU
Questions?
