

October 2011

CFS Bulletin

UCL JDI Centre for the Forensic Sciences

Latest news...

Research Seminar Series to begin in October 2011

We have moved! (See page 4)

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The 5th International Crime Science Conference

Over 150 delegates attended the 5th International Crime Science conference on 13th July, run by the Department for Security and Crime Science and held at the British Library.

We ran a morning session entitled “Hi-tech forensics” chaired by the Centre Director, Dr Ruth Morgan. The two speakers—Dr Paul Yates (Intelligent Fingerprinting) and

Professor Ton Broeders (University of Leiden and Maastricht University, The Netherlands)—gave very different but equally interesting talks in their chosen fields, and stimulated lively debate among the delegates.

Inside, two of our PhD students give us their take on the seminars and on the PhD posters displayed during the course of the day.

Professor Broeders has also kindly given us a summary of the talk he gave on “The Bayesian approach to expressing evaluative opinions—scientific correctness at a price?”



Delegates at the 5th International Crime Science Conference

Coming soon: Research Seminar series

We are hosting two research seminars this autumn. Each will start at 4pm and be followed by a drinks reception. Please contact us for more information.

19th October 2011: Professor Cheryl Thomas (UCL Judicial Institute) will give a seminar on: *Myths, Misunderstandings and Mistakes of Jury Research*

14th December 2011: Professor David Balding (UCL Genetics Institute) will talk about his research into the interpretation of DNA profile evidence.

Intelligent
Fingerprinting
website: 

“These metabolites are even detectable only minutes after a suspect has washed their hands.”

Intelligent Fingerprinting

James French

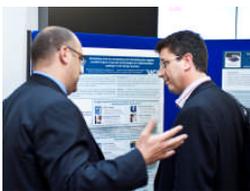
Dr Paul Yates delivered an engaging account of ‘intelligent fingerprinting’. He briefly outlined the technique: a latent print is exposed to antibody nanoparticle conjugates to generate a high definition fingerprint and simultaneously detect metabolites which leave the body via sweat pores. The technique offers an accurate, non-destructive, fast and cost-effective method for developing prints, while also providing the potential to reveal information regarding the lifestyle of an individual. At present, the process provides a positive or negative result in around ten minutes, but with a hand-held device being

developed, analysis could take place at the scene. In the opinion of fingerprint experts, the prints generated are sufficient for comparison to a database or an individual. Dr Yates demonstrated that when magnified, the prints could reveal not only details such as bifurcations and ridge endings but even so-called third level details such as pore structure and ridge shape: details which are not routinely revealed using conventional enhancement methods. The technique, therefore, represents a good print enhancement technique in its own right. Meanwhile, the technique can successfully detect metabolites of methadone,

cannabis, cocaine and heroin, even in nanogram quantities. He explained that the technique overcomes problems of secondary transfer by directly linking the metabolites to the owner of the fingerprint via the visualisation of sweat pore structure. These metabolites are detectable only minutes after a suspect has washed their hands. In a law enforcement context the technique could be employed in roadside testing or in the investigation of drug facilitated assault. Other useful applications could include drug testing in the military, at borders or in the workplace.

PhD forensic poster session

Helen Brayley



As part of the conference programme, 2nd year students from the Doctoral Training Centre were invited to present their proposed PhD projects during a poster session. Three students have forensically related projects, covering blood spatter analysis, transference of gunshot

residue, and body fluid evidence in child sex crimes. The session proved to be both informative and challenging as delegates from academia and industry engaged with the students to find out more about their work. Questions on the application of mathematical techniques as well as experimental design

were common. Some more conceptual questions were also raised such as should real blood be used or would a proxy suffice? And what are the ethical issues around DNA profiling? The session proved invaluable for the students to test their knowledge and get some useful advice from those in the field.

Scientific correctness at a price?

Prof Ton Broeders

In the UK and elsewhere, forensic experts are increasingly using a logical approach with evidence evaluation, also referred to as “the Bayesian approach”. One of the virtues of this approach is its strict separation of the type of question that belongs to the domain of the expert as opposed to that of the trier of fact. The recent judgment by the Court of Appeal in *R v T* strikes at the heart of this approach, stating that “the practice of using a Bayesian approach and likelihood ratios to formulate opinions placed before a jury without that process being disclosed and debated in court is contrary to principles of open justice”. Recent research conducted in the Netherlands suggests that there is at least one other problem with the use of these “logically correct” conclusion formats. It appears that evaluative opinions expressed in the Bayesian format are likely to be misunderstood not only by defence lawyers and judges but by forensic experts themselves. Participants in the study were asked to indicate for a variety of statements

whether they were correct paraphrases of the Bayesian style conclusion that was used in the fictitious report. One such report involved a comparative examination of pieces of duct tape used to bind a victim with duct tape originating from a roll found at the suspect’s home. The study shows that a proper understanding of statements involving so-called likelihood ratios by jurists is alarmingly poor. Similarly, more than 80% of judges, defence lawyers and forensic experts in the study considered the statement: “*It is somewhat more likely that the pieces of duct tape used to bind the victim originate from the roll found at the suspect’s home than from another, randomly chosen roll*” to be a correct interpretation of the Bayesian style statement: “*The findings of the comparative examination are somewhat more likely if the pieces of tape used to bind the victim originate from the roll found at the suspect’s home than if they originate from another, randomly chosen roll*”. In fact, the former statement is not a correct paraphrase but illustrates a logical

error known as the “transposed conditional” or, in the context of criminal law, the “prosecutor’s fallacy.” In order to be able to compare actual versus supposed understanding, participants were asked to indicate how well they understood the Bayesian style conclusions of the reports on a scale from 1 (*I do not understand it at all*) to 7 (*I understand it perfectly*). The most worrying finding to emerge from the study is the fact that not only did judges, defence lawyers and forensic experts alike tend to interpret the conclusions of the submitted reports incorrectly but they combined their lack of understanding with a high degree of overestimation: they believed they understood the conclusions much better than they really did. The findings suggest that the continued use of Bayesian style conclusion formats or likelihood ratios requires a major educational effort if structural miscommunication between experts and triers of fact is to be avoided.

“...the Bayesian format [is] likely to be misunderstood not only by defence lawyers and judges but by forensic experts themselves.”

Further reading:

R v T [2010] EWCA Crim 2439

Jan de Keijser & Henk Elffers ‘Understanding of forensic expert reports by judges, defense lawyers and forensic professionals’ *Psychology, Crime & Law*, published online 13 October 2010

W. Thompson & E. Schumann (1987) ‘Interpretation of statistical evidence in criminal trials: the prosecutor’s fallacy and the defense attorney’s fallacy’, *Law and Human Behavior* 11, 167-187.

Coming up: Forensic outreach event

We are running our first outreach event for school students in June 2012. The event—being run in collaboration with Forensic Outreach—is aimed at gifted & talented students aged 14 to 18 who have an interest in studying science or law at university. Researchers from the Centre will give

a series of talks during the morning on various aspects of forensic science. Topics will include forensic anthropology (Roxana Ferllini, Institute of Archaeology) and the use of diatoms in forensic analysis (Dr Nigel Cameron, Environmental Change Research Centre).

In the afternoon the students will take part in practical sessions run by Forensic Outreach, and the day will be rounded off with a panel discussion. It promises to be a fascinating day for all attending!

Forensic Outreach website:



External news

The Silverman Report came out in June 2011 and is available to read on the Home Office website:



Future issues

We need your input for the next issue! We'd love to hear about your latest publications, conference presentations, research grant successes...

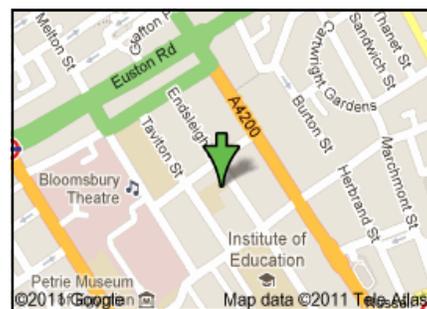
Please email jdi-forensic-sciences@ucl.ac.uk

We have moved!

On 15th August the Jill Dando Institute—home of the Centre for the Forensic Sciences—moved from 2-16 Torrington Place to 35 Tavistock Square.

A drinks reception was held in the new building on Thursday 8th

September, and members of the Centre for Forensic Sciences were in attendance.



Contact us

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