



# THE MEANING OF TRACES #14

## Forensic science in questions

### THE EXPERT'S IMPARTIALITY



**Deontology**



**Impartiality**



**Probity**

The Yvonne "Missy" Woods scandal has made quite a splash in the forensic world.

Indeed, this CBI expert (Colorado Bureau of Investigation) admitted to manipulating and omitting the results of genetic analyses in hundreds of criminal cases over a nearly 30 year period. 652 cases could thus have to be reviewed.

This series of grave violations of ethics and scientific rigour, which will no doubt provide work for the Innocence Project, illustrates the necessity to control experts and their work, quality control procedures alone having been proven insufficient.

## Expertise in forensic science, a crucial part in searching for the truth

A forensic science expert plays a crucial role in decision-making. Their intervention is a sign that the decision-maker needs an expert outside perspective to bring their reasoning to its conclusion. Taking control of the scene of the investigation, this expert collects traces, analyses them and interprets their results with transparency. Their report must clearly expose the question they have been asked, the methodology they used, the results they obtained and the conclusions they drew from said results. They must also expose precisely the limits and uses of their work, while striking a balance between making their statements readily understandable to their audience and not sacrificing their scientific rigour. In a nutshell, the expert's mission is to enlighten the person they answer to on complex points, while guaranteeing technical and scientific reliability.

Interpretation

Transparency

Uncertainty



## The expert report

In order to help experts present their results in the most suitable manner, ENFSI issued a guideline for evaluative reporting in forensic science, presenting a standard framework for presenting results as well as examples of such presentations (DNA, glass breakage, voice recognition, footprints, video, gunshot residue).

This incitative document (STEOFRAE) has two major benefits: it provides experts with a robust framework for presenting their results, and clearly defines the roles of the expert and the final decision-maker.



## 29 APR

On April 29, a working day was held on the model of investigative and evaluative artificial intelligence in forensic science. This event provided an opportunity to review the work carried out by the PJGN and the universities of Cergy (CY) Lausanne (UNIL) and Québec-Trois-Rivières (UQTR). 15 speakers presented their works on the AI needs of a forensic service, AI and biometrics, the use of LLMs and AI support in investigation. UQTR will be organizing in 2026 the next working day for members of the Francophone forensic agreement.



### Scientific news

**Challenges and Prospects for Evidence-Informed Policy in Criminology**, Blomberg, T. G., Copp, J. E., & Turanovic, J. J. (2024). *Annual Review of Criminology*, 7, 143-162.

**The utility of trace DNA within forensic science for investigative and intelligence purposes**, Hoffmann, R., Meakin, G. E., Morelato, M., & Roux, C. (2024). *Wiley Interdisciplinary Reviews: Forensic Science*, e1515.

**Towards another paradigm for forensic science?**, Crispino, F., Weyermann, C., Delémont, O., Roux, C., & Ribaux, O. (2022). *Wiley Interdisciplinary Reviews: Forensic Science*, 4(3), e1441

**Empreintes génétiques au service de la justice, Arx Tarpeia Capitoli Proxima ou l'incertitude de la science**, Pascal, O. (2019). *Cahiers Droit, Sciences & Technologies*, (9), 39-43.

**On forensic science expertise**, Van Ruth, E. M., & Smithuis, M. M. (2019). *Language Analysis for the Determination of Origin: Current Perspectives and New Directions*, 243-252.

**L'erreur judiciaire en matière pénale : Regards croisés sur ses contours et ses causes potentielles**, Dongois N. (2014). *Schulthess*.

**Traçologie: la trace, vecteur fondamental de la police scientifique**, Margot, P. (2014). *Revue internationale de criminologie et de police technique et scientifique*, 67(1), 72-97.

**Criminal expertise and hacking efficiency**, Moneva, A., Ruiter, S., & Meinsma, D. (2024). *Computers in Human Behavior*, 108180.

### Surprising



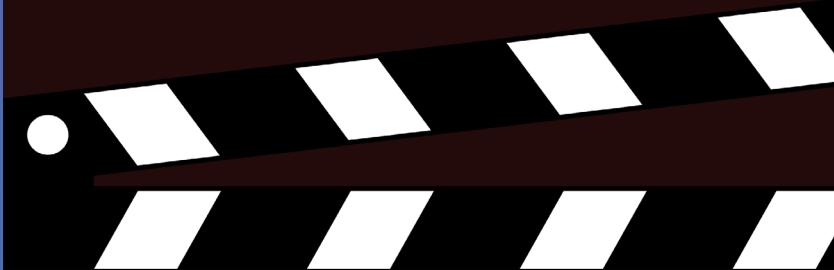
Between 1993 and 2009, a mysterious woman nicknamed the phantom of Heilbronn appeared to be involved in multiples crimes committed in Germany and Austria. Her DNA was detected on biological samples collected from numerous crime scenes, but her identity remained unknown. In 2009, the investigation concluded that this unexplained presence came from the contamination of collection swabs on the factory floor.



### Forensic science in fiction

In season one, episode eight of *Bones*, Doctor Temperance Brennan, a forensic anthropologist, takes the stand to present the results of her work on a corpse that had been discovered, and the conclusions she drew from it. However, while she thought her deposition "perfectly logical", it bores the jury, who understand neither the terms she uses, nor her reasoning and conclusions.

When she is called to the stand once again, she is successful in reaching the jury and making them understand the circumstances of the case.



### Forensic science in action



When an expert is called upon by a decision maker, it is because the latter needs a specialist to shine a light on a particular aspect of a matter that they cannot understand themselves, in order to make the best decision possible.

The expert must then make an effort and adapt their presentation to a person with less understanding of the matter than them, while still retaining their scientific rigour. They have to explain the hypotheses they adopted, how they interpreted the results they got, and most importantly the inferences they used throughout their work.

If they can thusly educate their audience, their intervention will provide the decision-maker the elements they were lacking. The latter will then have all they need at their disposal to make an informed decision.