

E17 Forensic Science in Austria: Insights on Working Processes and Result Communication Concerning DNA, Fingermarks, and Handwriting

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The goals of this presentation are: (1) to provide insight on working methodologies and processes used to communicate forensic results in Austria, particularly concerning DNA, fingermarks, and handwriting; and, (2) to promote practice-oriented measures regarding the general appraisal of traces in inquisitorial justice systems, mainly based on expert opinions collected through anonymous surveys.

This presentation will impact the forensic science community by proposing optimized working methodologies and communication processes concerning physical traces, particularly DNA, fingermarks, and handwriting, thus promoting a better use of the information obtained by the analysis of physical traces.

Forensic science is commonly defined as the use of scientific methods and techniques to search for, collect, analyze, and interpret traces left by criminal actions to understand crime and aid justice. This scientific endeavor is interdisciplinary by nature and forensic science is thus widely considered as a “patchwork” of different scientific disciplines. This concept, as well as the privatization of many laboratories, has led to a hyper-specialization and a “sectorization” of forensic science in different specialized fields (e.g., forensic chemistry and forensic biology).¹ Forensic scientists are mostly chemists or biologists who have received some form of additional training. This lack of proper identity has grown larger during the past decade and causes the model of forensic science to be scrutinized and challenged worldwide.²⁻⁴ Debated errors (for example, the controversial identification of Mayfield’s fingerprint in the train bombing assault in Madrid in 2004) also shook forensic science to its very foundations by prompting interrogations concerning its scientific nature and causing distrust in forensic methodologies.^{3,5-8} In summary, as perfectly expressed by Roux et al., “Forensic science is at the crossroads [and] its future largely depends on if and how a consensus can emerge about its own nature.”⁹

Numerous authors agree that research must be conducted worldwide on the (re)definition of forensic science.⁹⁻¹⁰ A solid research culture must be developed through the promotion of educational programs and training for forensic experts and their main partners (e.g., investigators and justice actors). The ability to communicate about the meaning of forensic results should be particularly considered. Communication is indeed an important topic in forensic science, most particularly the interpersonal communication among forensic experts and between forensic experts and their main partners.

This study is aimed at observing, analyzing, and understanding the current application of forensic science in Austria. Particular attention was given to the identification of strengths and weaknesses of the processes used to communicate on the value of DNA, fingermarks, and handwriting results, mainly based on the opinions of forensic experts. The choice to focus on Austria has been made because it is historically interesting to study the situation in this country more than a century after the work of Hans Gross, Austrian pioneer of the discipline. Furthermore, as a country working in an inquisitorial tradition, Austria can be used as an example for most European criminal justice systems. The decision to focus on the selected traces — DNA, fingermarks, and handwriting — was taken because these traces are often encountered on criminal cases and possess characteristics allowing interesting comparisons: they are usually processed by different experts in different institutions, appraised with various degrees of confidence, and evaluated and reported using different methodologies.

In order to identify the main experts of forensic science in Austria and to understand their working processes, the Austrian police and justice systems were studied based on literature and reports, particularly concerning the three selected traces. Surveys were then developed and submitted to the identified experts to further deepen the obtained knowledge and to collect the opinions of the tenants of the discipline relating to the following concepts: (1) examination and analysis of traces; (2) usability and registration of traces; (3) comparison traces — prints; (4) evaluation and interpretation of results; and, (5) communication of results.

This research is crucial and timely for the discipline, as it allowed obtaining interesting insights into the working processes of the Austrian forensic community, most particularly concerning DNA, fingermarks, and handwriting. The obtained results, mainly based on the opinions of the experts of the selected traces, helped to propose practice-oriented measures regarding the appraisal and communication of traces in Austria, and, as an extension, in any inquisitorial justice system. This research will be further developed to include surveys and interviews of other forensic experts as well as judiciary members. This will allow expanding the scope of the proposed measures and promoting a better forensic communication, which is necessary to rehabilitate forensic science as a proper scientific discipline.

Reference(s):

1. Ribaux O. Police scientifique: Le renseignement par la trace. *Collection sciences forensiques*. PPUR, Lausanne, CH (2014).
2. National Academy of Sciences (NAS). *Strengthening forensic science in the United States: A path forward*. Committee on Identifying the Needs of the Forensic Sciences Community, National Research Council of the National Academy of Sciences, Washington, DC (2009).
3. President’s Council of Advisors on Science and Technology (PCAST). Report to the President: Forensic Science in criminal courts - ensuring scientific validity of feature – comparison methods. Washington, DC (2016).
4. Association of Forensic Science Providers. Standards for the formulation of evaluative forensic science expert opinion. *Science and Justice*. 49 (2009): 161–164.
5. Office of the Inspector General. *A review of the FBI’s handling of the Brandon Mayfield case*. US Department of Justice, Washington, DC (2006).



6. Champod C. and Vuille J. Scientific evidence in Europe – Admissibility, evaluation and equality of arms”. *International Commentary on Evidence*. 9 (2011).
 7. Vuille J. Admissibility and appraisal of scientific evidence in continental European criminal justice systems: Past, present and future. *Australian Journal of Forensic Sciences*. 45 (2013): 389–397.
 8. Keon W.J. and Bowers C.M. *Forensic science reform – Protecting the innocent*. Elsevier – Academic Press, Amsterdam (2016).
 9. Roux C., Crispino F. and Ribaux O. From Forensics to Forensic Science. *Current Issues in Criminal Justice*. 24 (2012): 7-24.
 10. Margot P. Commentary on the need for a research culture in the forensic sciences. *UCLA Law Review*. 58 (2011): 795–801.
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