University of Basel
Faculty of Law

Rules on Expert Testimony – based on a Comparative Perspective on "Device Evidence"

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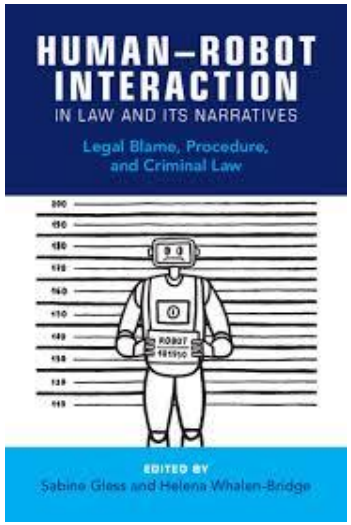
Outline

1	What do we want from an Expert (in the Digital Age)?
2	Terminology and Methodology
3	Judges as Gatekeepers regarding Relevance, Admissibility, Credibility
4	Experts as *Gate-openers* – when it comes to “AI”/“Device Evidence”?
5	Rules on Expert Testimony based on a Comparative Perspective on Device Evidence

1 What do we want from an Expert (in the Digital Age)?

Experts shall provide courts with the required specialist knowledge to enable the factfinder to apply it to the facts in issue, in order to arrive at their own opinion on those facts.

Criminal defendants have a right to a fact-finding that is epistemically competent;
where robots are “better” at fact-finding, we should leave it to them; but humans ought to stay in the loop, so that significant decisions affecting their liberty are not entirely automated.



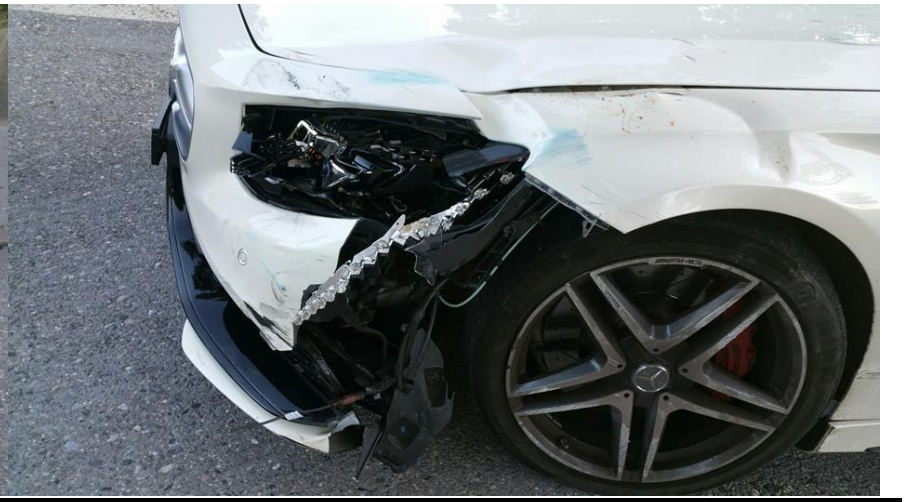
ANDREA ROTH, Robot Testimony? A Taxonomy and Standardized Approach to Evaluative Data in Criminal Proceedings, in: Gless/Whalen-Bridge (eds.), Human-Robot interaction, CUP 2024, 141-165 at 161
open access www.cambridge.org/core/books/humanrobot-interaction-in-law-and-its-narratives/8457E125C7EAEFAD91A8A4599DF871D3

1 What do we want from an Expert (in the Digital Age)?

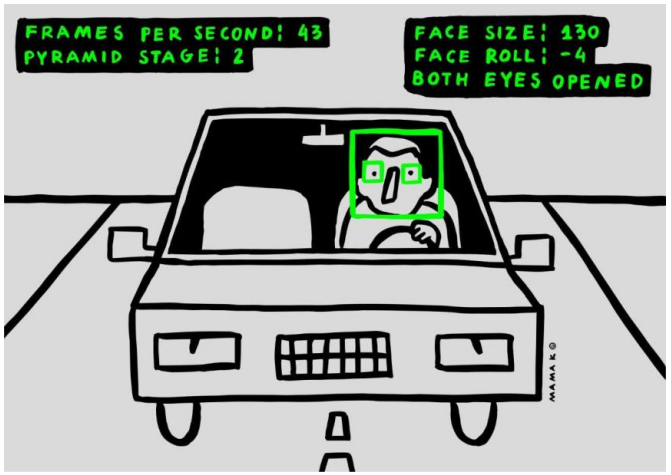
Robots are better at calculating speed?
(Arisdorf Tunnel)

1 What do we want from an Expert (in the Digital Age)?

Robots are better at assessing tiredness?
(Bernese Oberland)



2 Terminology and Methodology

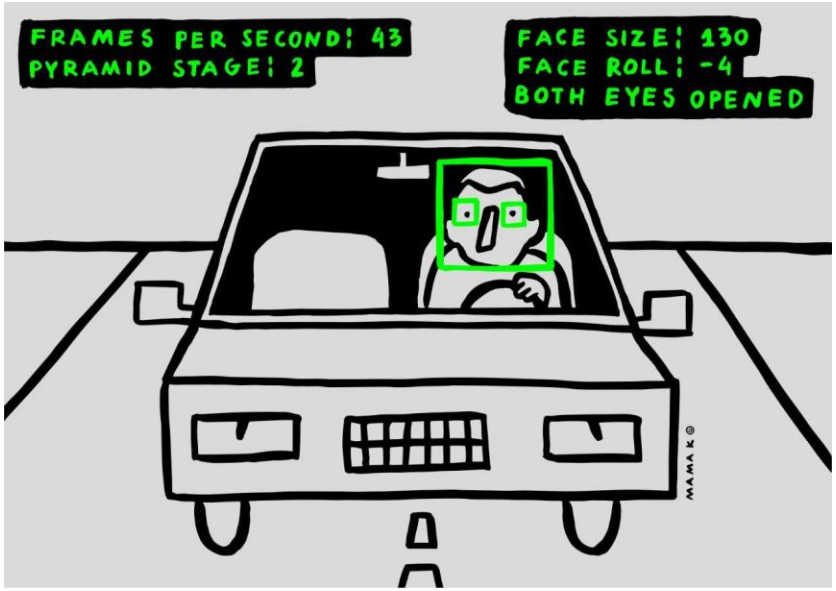


“Device evidence”, “**Machine evidence”**, “**AI evidence”,**
i.e. autonomously generated observations by AI-systems

- either construed for forensic purposes
  (like Hansken or CATCH [NL] or ANPR [UK]);

- or construed for consumer needs
  (like drowsiness alerts).

2 Terminology and Methodology



Device evidence is often a “function creep” generated by a consumer product, for example driver drowsiness detection, which is:

- required by Regulation (EU) 2019/2144 of 27 November 2019, but not fixed to a standardized, certified technology;
- based on a “smart mix” of steering pattern and lane keeping monitoring; driver eye/face monitoring as well as other physiological measurements like muscle activity, sitting positions, etc.

2 Terminology and Methodology

Crime_AI: **Functional legal comparison**

(1) legal systems face similar problems: AI evidence/ *devices generating evidence without a meaningful credibility test*;

(2) for the same problem, different legal systems take different legal measures, e.g.
- *regulate technology?*
(a) Initiative for a "Justice in Forensic Algorithms Act";
(b) EU AI Act (or other EU laws on "Trustworthy AI").
- *re-interpret or modify procedural rules?*
(a) re-inventing the confrontation clause for "device evidence";
(b) introduce a new taxonomy & rules specifically tailored for scrutinizing AI evidence.

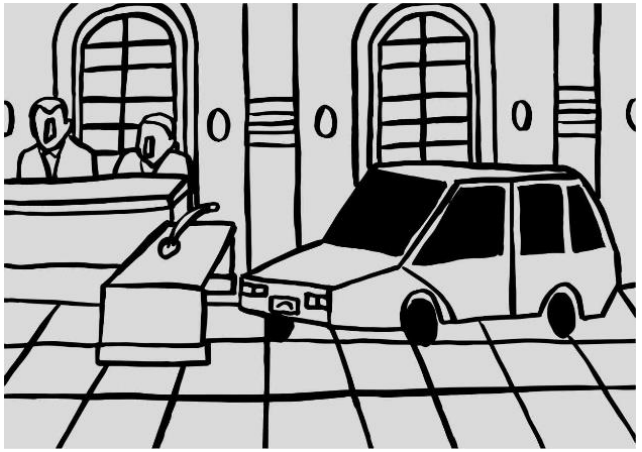
(3) despite differing measures, legal systems reach similar results.

3 Judges as Gatekeepers?

Today, evidence enters courtrooms which could be “scientific”, but could also be “witch dunking”, *e.g. smart devices reporting observations of their own, like cars’ reporting drowsiness alerts.*

Law's epistemology covers relevance, admissibility, weight, and “sufficiency” (including credibility) of evidence.

# 3 Judges as Gatekeepers *in their systems*
for (sufficiently reliable) evidence in courtrooms.



As a rule:

All relevant evidence is admissible.

Reliability is based on the weight of the evidence, not the admissibility.

Whether evidence is persuasive or not is a question for the trier of facts – which differ, in general, with it *being the jury in the U.S. and bench judges in Europe.*

As an exception untrustworthy evidence is excluded,
like, for instance, observations that cannot be discredited through confrontation/cross-examination.

We want experts to assist judges in keeping out witch-dunking, but bring in science, even where traditional confrontation fails.

# 3 Judges as Gatekeepers
for (sufficiently reliable) evidence in courtrooms in a comparative perspective

***U.S. Federal Rules of Evidence*, Rule 403**

The court may exclude relevant evidence if its probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence.

No such rule in Swiss Criminal Procedure (or German or Dutch)

as the bench is the trier of facts and judges are expected to be "professionals", there is an "open gate" policy in inquisitorial tradition:

Art. 139 Principles

In order to establish the truth, the criminal justice authorities shall use all the legally admissible evidence that is relevant in accordance with the latest scientific findings and experience.

4 Experts as Gate-openers for (sufficiently reliable) evidence in courtrooms–***Jury*** *vs. Bench*

***U.S. Federal Rules of Evidence*, Rule 702**

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

(a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;

(b) the testimony is based on sufficient facts or data;

(c) the testimony is the product of reliable principles and methods; and

(d) the expert has reliably applied the principles and methods to the facts of the case.

4 Experts as Gate-openers for (sufficiently reliable) evidence in courtrooms– *Jury vs.* ***Bench***

Swiss Criminal Procedure

Art. 182 Requirements for requesting the services of an expert witness

The public prosecutor and courts shall request the services of … expert witnesses if [the court does] not have the specialist knowledge and skills required to determine or assess the facts of the case.

Art. 183 Requirements for the expert witness

1 Any natural person with the required specialist knowledge and skills in the relevant field may be appointed as an expert witness.

2 …

3 Authorised experts are subject to [exclusion for conflict-of-interest].

Art. 184 Appointment and instructions

1 The director of proceedings shall appoint the expert witness [and ask relevant questions for a report prepared out of court].

…

3 The director of proceedings shall give the parties prior opportunity to comment on the expert witness and on the questions and to submit their own applications.

Art. 190 Fees

The expert witness is entitled to an appropriate fee [paid by the state or convict].

4 Experts as Gate-openers – “Daubert ” and the science dilemma

Under Rules 104(a) and 702, a court is to assess whether the expert is qualified; the judge is to determine whether the expert's methodology and principles are relevant and "scientifically valid”.
Under Rule 706, a court is free to appoint its own expert.

The key lies in the criteria for “scientific knowledge".

4 Experts as Gate-openers – “Daubert ” exposes the science dilemma

“.... Yet something doesn't become "scientific knowledge" just because it's uttered by a scientist; nor can an expert's self-serving assertion that his conclusions were "derived by scientific method" be deemed conclusive **....** [Courts] are largely untrained in science and certainly no match for any of the witnesses whose testimony we are reviewing, it is [their] responsibility to determine whether those experts' proposed testimony amounts to "scientific knowledge," constitutes "good science," and was "derived by the scientific method …” *Daubert,* 43 F.3d 1311, at 1315-16.

4 Experts as Gate-openers – Inquisitorial traditions blur the science dilemma

Despite its principle-based approach in many respects, inquisitorial systems do not address the problem of how to determine in a concrete case:

(a) what intellectual enterprise that might yield expert testimony is a science that is *rationally pertinent* to the case;

(b) who is a *scientist* capable of using her knowledge in a manner that satisfies the standard of epistemic appraisal and the attendant level of confidence.

4 Experts as Gate-openers – Adversarial setting disregards the cost problem

“There is an unfortunate reality, however, that constitutional rights may not be enough to address these issues, where they have been unevenly enforced in criminal cases, given the challenges that largely indigent defendants face in obtaining adequate discovery and the pressures to plead guilty and waive trial rights. …”

Garrett, Brandon L., and Cynthia Rudin. "The Right to a Glass Box: Rethinking the Use of Artificial Intelligence in Criminal Justice." *Cornell Law Review, Forthcoming, Duke Law School Public Law & Legal Theory Series* 2023-03 (2023).

5 Rules on Expert Testimony based on a Comparative Perspective on Device Evidence

1 Expert witnesses are called where a trier of fact is not epistemically competent to assess a scientific claim (“device claim”/”AI claim”).

2 Admissibility of expert testimony requires standardized tests as to what scientific knowledge is, and what its limits are (in particular regarding “device evidence”/ “AI-evidence”) to acknowledge “science bias”.

3 Rules on expert testimony need to address the “science bias” by succumbing to meaningful vetting of its result (confrontation rights, second opinions, access to models of devices / AI systems etc.);
this is a specific problem in jurisdictions with inquisitorial traditions.

4 Rules (or rather legal defense funds) must ensure that expert testimony does not affect the “equality of arms”;
this is a specific problem in jurisdictions with an adversarial setting.

Relevant Literature

ROTH, Robot Testimony? A Taxonomy and Standardized Approach to Evaluative Data in Criminal Proceedings, 141-165
SILVERMAN, ARNOLD & GLESS, Robot Testimony? A Taxonomy and Standardized Approach to Evaluative Data in Criminal Proceedings, 167-192
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Thank you.

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