



A70 The Tyranny of the Machine and the Role of the Criminalist

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After attending this presentation, attendees will understand the role of the criminalist in the identification of physical evidence at the scene of

an incident and the development of relevant conclusions concerning that evidence once the analysis of the evidence has been completed.

This presentation will impact the forensic community in an effort to convince criminalists that their role is not primarily the operation of automated analytical machinery, but in the recognition of physical evidence and the testing of relevant hypotheses based on the analysis of that evidence.

The modern forensic laboratory is a place where scores of people monitor dozens of machines that use terabytes of flops to generate gigabytes of data resulting in megabytes of results printed on reams of paper finally resulting in a three page report with conclusions which are often ambiguous, irrelevant, incomplete, or misleading. What is missing in this process? This presentation will look at the input to the laboratory, and the output from the laboratory and demonstrate that often the input is deficient and the output does not address the relevant questions. From the crime scene to the analytical machine, and from the analytical data to the opinion of the forensic scientist, the laboratory machinery is irrelevant. At the incident scene, scientists need consider basic principles of criminalistics (Transfer, Individuality, and Divisibility) to understand how physical evidence is produced. Scientists must understand basic principles of chemistry and physics to understand how evidence may be altered as it is produced, by the passage of time, or as a consequence of the scene environment. After the data is produced by the laboratory machinery, the scientist must understand the basic processes of scientific inquiry (Deduction, Induction, and Abduction) to derive a hypothesis and design an experiment to test that hypothesis. And finally the *forensic* scientist must understand applicable legal requirements (admissibility, expert testimony, and applicable statutory and case law) to insure that the relevant questions have been addressed. The critical component in both the pre-analysis scene investigation and the post-analysis reporting is the scientist. Case examples include an automobile accident in which one of the two occupants survived, and was charged with manslaughter. Blood samples taken from the very badly damaged car, but the report did not address with any specificity how the samples that were subjected to DNA profiling could be used to establish who was driving the car. In another case, the female occupant of a vehicle was fatally shot, either by the driver of the vehicle or a person standing outside of the vehicle. GSR was found in multiple locations of the vehicle and the clothing of the driver. Reenactments of the possible positions of the shooter were done, but the analyst provided little information to the jury to allow them to determine which alternative was more likely. In another homicide case, fibers were essentially the only evidence. A wide variety of analytical methods were used to measure various properties of the evidence and exemplar fibers. No effort was made to determine the relative or cumulative value of the techniques that were employed. Further, no effort was made to determine a reasonable explanation for a connection between the evidence fibers and the alleged crime. In each of these cases, in spite of extensive and very sophisticated analytical work, little guidance was provided to the investigators or jury as to how the evidence related to the questions that were relevant to the adjudication of the case. Isn't that our job?

Criminalistics, Evidence Recognition, Hypothesis Testing