B200 Rise of the Machine and the Demise of the Forensic Science Laboratory?

Brooke W. Kammrath, PhD, University of New Haven, West Haven, CT 06516; David San Pietro, PhD*, University of New Haven, West Haven, CT 06516; Peter R. De Forest, DCrim*, Forensic Consultants, Ardsley, NY 10502*

Learning Overview: After attending this presentation, attendees will understand the benefits and potential risks of the uncritical implementation of advanced technologies.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by initiating a discussion on the consequences of advances in technology and its effect on forensic science laboratories.

'Rise of the Machine' in this title refers to two emerging technologies that have an impact on the field of forensic science: laboratory automation and field deployable instrumentation. These two technologies can each have profound implications on the effective practice of forensic science in all areas of the physical evidence continuum.

Laboratory automation has already impacted analytical methods in forensic laboratories, improving efficiency and casework flow, thereby decreasing turn-around times. This has enabled an increased time for the more critical front-end issues of informed specimen selection. If this advantage of the role of the scientist in front-end evidence assessment is not appreciated, and this step is omitted, then there is a risk of the misapplication of this technology rendering any perceived advantage doubtful.

Field deployable instrumentation (i.e., rapid DNA analysis, hand-held infrared and Raman spectrometers, portable gas chromatography/mass spectrometers) has provided the potential for on-the-scene analysis by non-scientist investigators. The perceived advantage of these technologies is the analysis of materials with immediate and easy-to-understand results that can be used in real-time investigations. These instruments have utility in the relatively simple and straight-forward analyses of materials such as illicit drugs. However there are concerns with their use in complex crime scene investigations and reconstructions. There are numerous potential dangers with this tempting approach, including evidence destruction, the failure to recognize critical traces, an absence of scientifically informed specimen selection process, and the production of computer algorithm-based unverified conclusions and identifications. There is evidence of this already taking place with respect to scene investigations with connection to the rote use of swabbing in lieu of scientifically-based selection.

This directed discussion with potential audience participation will focus on suggestions for the proper implementation of these high technology **tools**. It is easy to lose sight of the fact that these technologies are just tools, and their utility is only as good as the scientific basis for their utilization. Although these technological capabilities are useful, they cannot supplant the need for scientific problem solving by educated and experienced criminalists.

This discussion will be fostered using "Poll Everywhere", a web-based audience response system. The audience will be able to respond in real-time to the questions posed during this presentation via the web or via SMS texting on their phones. The authors request that attendees download the Poll Everywhere free app onto their mobile devices prior to attending this presentation to facilitate discussion. This is not mandatory because attendees will be able to respond via texting.

Automation, Field-Deployable Instrumentation, Technology