



B129 Reducing the Prevalence of Pseudoscientific Interpretations in Complex Physical Evidence Casework

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The goal of this presentation is to increase awareness concerning the essential role that reconstructions based on physical evidence play in a complete forensic science service.

Information of critical relevance in both civil and criminal investigations is often encoded in the physical evidence record that results from activities taking place at the crime or event scene. Human initiated events, through the medium of chemical and physical laws, alter the environment or the scene of the event. It is these interactions of energy and matter, resulting from the human activities taking place during events of concern to an investigation that produce the physical evidence record. This encoded record is never perfect, but it can often provide a wealth of information. However, it is essential that the physical evidence is recognized, analyzed, and properly interpreted for this potential to be realized. These activities, recognition, analysis, and interpretation, require extensive expertise based on experience built around a solid scientific core. Unfortunately, the need for reconstruction is given insufficient attention by many forensic science laboratory systems. This leaves an empty niche which may create two kinds of problems. There may be no integration of the scientific data to yield a reconstruction that develops the information encoded in the physical evidence to give it meaning; or worse, a well-intentioned non-scientist expert, who underestimates the complexity of reconstructions, may fill the niche. The latter phenomenon has been occurring with increasing frequency. This can lead to misinterpretations and miscarriages of justice. Reconstruction should be viewed as the culmination of the scientific work in a complex case. Interpretation should not be left to chance or to a non-scientist expert.

Laboratory accreditation, scientist certification, and the development of standard methods have all been among the major advances taking place in forensic science in recent years. However, these advances have not come without a cost. One unintended negative consequence of laboratory accreditation and the increasing reliance of standard methods has been the neglect of the need for integration of laboratory results leading to scientific event reconstruction. The quality assurance effort has been focused predominantly on individual test results. The focus needs to be broadened to include the product of the overall forensic science service.

Attention to reconstructions by scientists is not a panacea. It does not guarantee freedom from pseudoscientific interpretations and inaccurate expert testimony. An opinion held by a scientist is not necessarily a scientific opinion. Scientists are human beings and develop opinions on many issues in everyday life. Most of these are formed without the luxury and rigor of a scientific analysis. Some opinions of this type may form during a review of the physical evidence and may relate to important issues in a case. They have no place in expert testimony. It is the obligation of the scientific expert witness to recognize those opinions that are not supported scientifically and differentiate them from those that are so supported. Such a differentiation of opinions might appear to be relatively straightforward, and it is clear that scientific expert testimony should only be offered on the latter. However, in practice the two are often conflated. This must be guarded against vigorously. Forensic science service systems need to address this in considering the issue of overall quality assurance.

The physical evidence record has limitations. Sometimes no reconstruction will be possible. At other times, a valid and detailed reconstruction will not yield information that addresses critical issues in the case at hand. These limitations are best recognized by an experienced forensic scientist. There is a need for forensic scientists and laboratory administrators to direct an increased amount of attention to the overall interpretation of the totality of the physical evidence and the reconstruction of the event based on this physical evidence. This should be the capstone work of the forensic laboratory service. No one should be better qualified to render this important service than those who examined the physical evidence and generated the laboratory data. It should not fall to someone else by default.

Casework, Laboratory Accreditation, Pseudoscientific Interpretation