



F24 Communicating Error and Uncertainty in the Courtroom: The Language, Methods, and Psychology of Doubt and Belief

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After attending this presentation, practitioners will have a better understanding of: (1) how to effectively communicate forensic results and their uncertainty to fact-finders; (2) the psychological and cognitive dynamics created by the presence of error and uncertainty which may hinder rational decision making; (3) how these forces interact with the formation of belief or doubt in arriving at verdicts; and, (4) the creative use of language and analogies in educating fact-finders.

This presentation will impact the forensic science community by facilitating communication of forensic results in a manner intended to lead to legal outcomes that are consistent with scientific reality. Attendees will be provided tools for clearly illustrating what a scientific result represents, the role played by its uncertainty, and the limitations the uncertainty places on the conclusions supported by a result. These tools help dispel naïve notions of “scientific certitude” and facilitate informed, unbiased consideration of forensic results and the verdicts they support.

Scientific results do not permit us to know anything with absolute precision. Rather, due to the presence of error and necessarily imperfect and incomplete information, the conclusions supported by forensic results are always accompanied by uncertainty. A consequence of this is that forensic science cannot establish what is or is not true, but, rather, only what is more or less likely based upon the information possessed. Thus, relatively justified belief concerning a physical state rather than knowledge of the actual physical state itself is what science leads to. This holds for all fields of science and any results obtained no matter how good the procedures, equipment, or scientists involved. Only by properly understanding what conclusions scientific results actually support can fact-finders issue verdicts that consistently comport with the science underlying the result relied upon. As a result’s uncertainty conveys the conclusions the result supports, a critical aspect of the decision-making process is an adequate understanding of a result’s uncertainty and what it represents.

Unfortunately, many triers of fact don’t realize that uncertainty is a part of all forensic results and instead imbue them with an “aura of scientific infallibility,” interpreting them as a direct revelation of the truth of what is to be proved. This misunderstanding of what these results represent undermines the fact-finding process leading to legal outcomes that must be questioned even when the science relied upon is sound. Knowing the problem doesn’t solve it, though. Conveying these concepts so that they can be understood in the context of a trial or hearing by scientifically naïve decision makers can be difficult. Moreover, awareness of the existence of uncertainty itself creates psychological and cognitive impediments to rational decision making which creates further complications. The reaction of some to the presence of uncertainty is to reject a proposition altogether regardless of how certain it is. The reaction of others is to reject uncertainty altogether regardless of how uncertain the proposition is. Neither response is warranted in most contexts.

If the ultimate mission of our courts is the determination of factual truth, fact-finders must be taught to appreciate the role played by scientific uncertainty and to weigh scientific evidence in a rational manner consistent with science itself. In the courtroom, the responsibility for communicating what forensic results represent and the conclusions they support rests with scientific witnesses testifying about the results and the legal professionals presenting or challenging them. If forensic results are to be considered and weighed in a scientifically defensible manner by fact-finders, then these forensic and legal professionals must be able to act in the capacity of courtroom teachers, educating decision makers so that they are equipped to make informed decisions. This involves creative use of both language and analogies, translating scientific jargon and concepts into laymen’s terms and images. When used effectively, these tools not only facilitate understanding but diminish the impact of psychological and cognitive blocks to rationality.

This presentation will address the challenge of communicating scientific results and their associated uncertainty and will present tools that can be used to facilitate this process in a manner that both educates substantively as well as defusing psychological and cognitive blocks to rational decision making.

Uncertainty, Error, Communication