## B144 Time Context in Criminalistics

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Attendees will understand the definition of time context, the manner in which it affects the ultimate utility of criminalistics evidence, the practical difficulties that have plagued time-context methods over the years and general approaches that have been successfully applied in the areas of forensic taphonomy and criminalistics.

This presentation will benefit the forensic community by illuminating the often overlooked issue of time context, as well as suggesting potential avenues for research.

Time Context is the set of circumstances or facts surrounding a criminal event that relate to a particular period of time. The term 'Time Context' is proposed because it encompasses other concepts such as time dating, sequencing and reconstruction.

Advances in forensic science, especially in DNA analysis, have improved the ability of criminalists to link suspects, victims and crime scenes using ever decreasing quantities of evidence. The lower detection limits allow evidence of contact to be established, even from casual interactions with the environment. However, approximately half of all violent crimes in the United States involve suspects and victims with at least an acquaintance relationship. This creates the very real possibility that evidence from casual interactions could have been transferred prior to the event in question. In fact, suspects with no prior relationship may also claim to have had legitimate access to the victim or crime scene, when confronted with strong physical evidence. If time context for casual transfer evidence can not be established, opposing counsel can sidestep its significance at trial.

Despite the degree of attention that trial counsel pay to "timelines," criminalists have continued to focus the bulk of their efforts toward the identification and individualization of transferred evidence, rather than determining when the transfer occurred. But in the area of death investigation, medical examiners and other taphonomic professionals have developed a substantial body of research for estimating the time of death (TOD) of an individual. Even though the TOD methods each have their limitations, criminal investigators and the courts rely on the estimates to exclude suspects, refute alibis and identify actions occurring before, during or after death. But time-of-death estimates are only half of the equation. Investigators also need to demonstrate that evidence linking the suspect to the crime was transferred at or near that same time of death. Without support from the criminalistics evidence, investigators and the courts are often forced to use less reliable evidence (e.g., eyewitness testimony) to fill in the gaps. In addition, time-of-death estimates are not applicable for other types of crimes.

Medical examiners and other taphonomic professionals encounter the same sources of uncertainty in time context as criminalists: environmental factors; original analyte mass; the analyte's mechanism of action; measurement and interpretational errors and undocumented alteration of evidence prior to recovery. Selected examples from criminalistics and forensic taphonomy will be presented to demonstrate the importance of time context, as well as successful approaches that may be applied generally. Overall, there appear to be three major distinctions among time context methods: (1) whether the event produces a static effect, or initiates a dynamic progression, (2) whether the result is relative to the crime event, or indicates a fixed date and time, and (3), whether the characteristic is compared to general or individual data sets.

**Time Context, Reconstruction, Time of Death**

 ** Presenting Author*