A65 Outdoor Crime Scene Reconstruction

Dennis C. Dirkmaat, PhD, Mercyhurst University, Erie, PA 16546; Luis L. Cabo, MS, Mercyhurst University, Erie, PA 16546*

Learning Overview: After attending this presentation, attendees will have a clear understanding of new perspectives on the processing of outdoor crime scenes that focus on the roles of forensic archaeology, forensic osteology, and forensic taphonomy.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by outlining how the disciplines of forensic archaeology and forensic taphonomy can have a significant impact on better reconstructions of the death event at outdoor crime scenes.

The discipline of forensic anthropology has changed significantly since it was first defined in the 1970s. Initially described as a laboratory-based, human osteology-centered discipline, the focus was almost exclusively on providing more accurate biological profile assessments that would aid efforts to identify unknown individuals found in a forensic setting. This study suggests that in the last few years forensic anthropology has evolved into two related but disparate sub-disciplines: (1) one focused on assessing biological profile at the time of death; and (2) another that focuses on the recovery and interpretation of human remains found in forensic contexts as one part of a medicolegal investigation. This sub-discipline involves scene-processing protocols utilizing forensic archaeological methods, practices, and principles; the consideration of remaining soft tissues, biological profile assessment, and interpretation of skeletal trauma in the laboratory; and, most importantly, the incorporation of forensic taphonomy into the construction of the most parsimonious, most evidence-based hypotheses of past events that transpired at the outdoor crime scene.

Law enforcement processing of the indoor scene is typically performed extremely well. However, a new approach to the processing of the outdoor crime scene is required. This new approach involves not only the thorough collection of the appropriate evidence, but an overarching set of guiding principles that focus on creating and testing viable and verifiable scientific-based hypotheses of what happened in the past at the scene. Forensic taphonomy fits the bill since it is particularly interested in the specifics of the removal/movement/alteration of the biological tissues and considerations of all relevant taphonomic agents from the time of emplacement until recovery. However, for law enforcement and medicolegal officials, reconstructing the death event (i.e., site formation), and not so much what has happened to the evidence since the site was formed, is what is important. From this perspective, the primary goal for processing a forensic scene is to provide a detailed sequence of events related to the death of the human victim: the crime scene reconstruction. At an outdoor scene, given different types of evidence and the important roles of forensic anthropology, forensic archaeology, and forensic taphonomy (not found in indoor scene recoveries), this presentation has labeled this activity: Outdoor Crime Scene Reconstruction (OCSR).

This newly described perspective and approach focuses on incidents surrounding the death event (the ephemeral, short-term event that oftentimes occurred months or years earlier) and includes three phases. Phase 1 requires the gathering of information from the outdoor forensic scene in order to reconstruct: (1) circumstances surrounding the death event; (2) the original location, position, and orientation of the body at the time of deposition on the scene; (3) what has happened to the remains since that time and whether humans have altered the scene; and (4) final Postmortem Interval (PMI) estimates. Location, documentation, and collection of evidence is best completed through forensic archaeology. During the recovery, multiple and varied hypotheses related to specific events of the past are constructed and tested. Phase 2 occurs in the laboratory. Remaining soft and hard tissue is analyzed for information critical to producing scientific estimates of PMI. Types and degree of impact of modifications to the biological tissues from various taphonomic agents (including humans) are noted. Final determination of specific bone, portion, and side for each skeletal element are made. Phase 3 of the OCSR approach involves the production of final hypotheses of past events. Scene information is melded with osteological information, and forensic taphonomy perspectives and paradigms of how to interpret the data are used to produce hypotheses of events surrounding the death event. These reconstructions are presented in the final report that is prepared as a courtroom-ready document.

Outdoor Crime Scene Reconstruction, Forensic Taphonomy, Forensic Archaeology