



B34 Crime Scene Search Theory

H. Dale Nute, PhD, and Mark A. Feulner, MA, Florida State University, Panama City, 4750 Collegiate Drive, Panama City, FL 32405*

After attending this presentation, attendees will increase understanding of the factors involved in a complex crime scene search.

This presentation will impact the forensic community and/or humanity by providing an awareness of a theoretical basis for crime scene search.

The discipline of crime scene investigation (CSI) like the rest of forensic science has focused predominately on technology rather than theory. For the most part this has worked; however, there are indications that changes are becoming necessary. Some thought process is needed rather than just “do what worked last time.” In this vein, a theory for crime scene search is explored.

Search theory was worked out fairly extensively for naval purposes in World War II and subsequently applied to marine search-and-rescue (SAR) operations. The marine SAR procedures are currently being expanded for land SAR operations in remote, rural areas. The SAR procedures could also be adapted for evidential searches. Some suggestions for making these adaptations are advanced in this presentation.

Breaking the search down into its parts allows each to be examined for improvement. This analysis includes both the theoretical components and the technological methodology. A crime scene search begins with the theory: A crime is the intersection of a criminal with his target in time and space. The crime scene is obviously the space but the evidence in that space is determined by the impacts of the criminal, the victim, and the time of occurrence against what was there, i.e., the changes in the scene. In order to get the most from a crime scene search, the crime scene investigator must make a time-space-psyche analysis. Such an analysis combines the art of the investigator and the craft of the scientist and focuses on three factors – Purpose, Probability, and Procedures.

The Purpose has two aspects – to reconstruct what happened, when, where, and how; and to associate the culpable individual with the event, if not its cause. Reconstruction depends on the type of crime as that determines what information is required and thus what types of evidence needs to be located to provide that information. Association depends more on locating and evaluating materials that originate from any individual that had means, motive, and opportunity.

Probability also has two aspects – the probability that the evidence of interest is in a particular location; and the probability that it will be found in that location with a particular search methodology. The first is based on applying investigative information and the second is based on error analyses of the various search methodologies under the particular conditions of the search area.

The Procedures are of two types – those for calculating the probabilities and those for executing the search. The probability calculations are based on subjective information but still need to be methodical. Investigative probability calculations are based on knowledge of people and how they act in various situations. Search methodology probability calculations are based on protocol development. The search procedures include techniques for controlling the search and methods for detecting the evidence during the search. Both are highly situation dependent and the variety of situations requires a range of protocols. Based on the replicate testing used when developing the protocols, one can calculate the probabilities used both to make decisions about managing the search and for evaluating the results.

Crime Scene, Search Theory, Probability