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Considerations in Crime Scene Analysis

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The function of bloodstain pattern analysis is to define the events associated with a given crime. As such it is an integral part of what is often referred to as Crime Scene Reconstruction or Crime Scene Analysis. The bloodstain pattern analyst, in seeking his or her end, is a true reconstructor of crime.

Where then, does one develop crime scene analysis and reconstruction skills? References to the process are few. Joseph Rynearson offered a specific approach to reconstruction, and other authors have certainly touched on the associated issues.¹ "Analysis" is not typically taught as a specific subject in the forensic education of most investigators, yet daily in departments across America crime scene analysis occurs. One might assume that as investigators and analysts we choose to apply an intuitive approach to analysis. As John Locke would view the issue, we are rational by nature, so analysis is nothing more than a natural process of human thought.²

No doubt, this intuitive approach is a functional method of solving analytical problems, but as Rynearson believed, a more directed approach to analysis serves the investigation best.

As man is subjective by nature, it is helpful to understand and then apply such a directed method of analysis. I believe this is certainly true in bloodstain pattern analysis, as well as overall crime scene analysis. The following methodology defines some considerations for such an approach.

Structuring Our View of Crime

Crimes do not happen outside of the reality of our world. Any number of events and actions lead to a given incident and of course others follow. Nothing "just happens". In viewing crime for the purpose of analysis or even general comprehension, it helps to break the crime down into defined windows or moments. These moments in time define some specific action taken during the crime.

In this view, the crime itself, may be considered in my vocabulary as an **Incident**. This incident encompasses all the actions and events associated with the crime. Incidents then are made up of **Events**, which are simply those things that must transpire for the crime to occur. Events are general snapshots of the crime. As an example of how we might choose to define events, consider an incident of a burglary/murder. The events might be:

- ♦ Arrival at the scene by the subject.
- ♦ Entrance into the residence.
- ♦ Removal of valuables.
- ♦ Awakening or alerting of the resident to the presence of the burglar.
- ♦ The encounter of burglar and resident.
- ♦ A resulting altercation ended by the killing.
- ♦ Attempts by the burglar to complete the original purpose of the intrusion.
- ♦ The final departure from the scene.
- ♦ Subsequent disposal of fruits and instruments of the crime.

Events can often be detailed without knowledge of the specifics of the crime. Events are those things that had to occur. For example, to kill, one must have an encounter of some nature. Should we fail to find the subject at the scene, then certainly we know he or she had to leave the scene in some fashion. This idea of event definition is quite similar to ANACAPA Sciences view of "Activity Flow Charts".³

Each event is defined by the individual **Actions** that transpire as the event occurs. For example, in considering the event of the altercation, these actions might have occurred as:

- ♦ A rushing of the burglar by the resident.
- ♦ The two falling to the floor.
- ♦ The introduction of a weapon by the burglar.
- ♦ Subsequent blunt trauma blows to the resident's head using the weapon.

Actions are precise snapshots of the crime. In the investigative process we seek to define these actions in as great of detail as possible. As such, actions are often broken down in to subactions. (See Figure 1)

Incident 1 - Burglary

Event A - Entrance to the scene.

Action A1- Check doorway for access.

Subaction A1a- Attempt simple opening.

Subaction A1b- Attempt to force handle.

Action A2- Check window for access.

Subaction A2a- Attempt to slide open.

Subaction A2b- Attempt to pry open with tool.

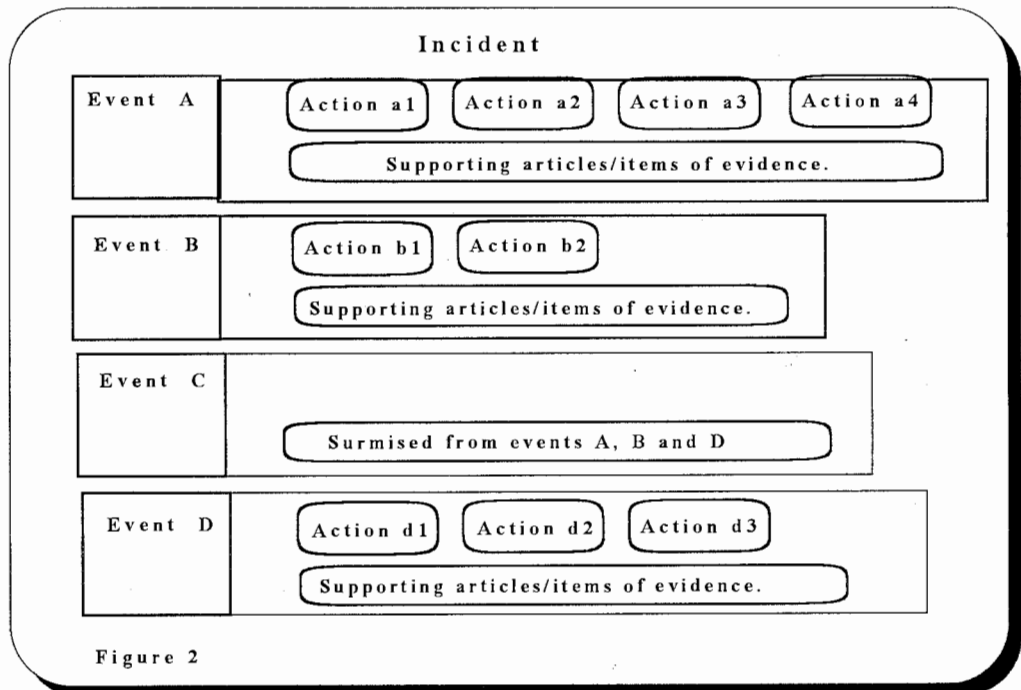
Subaction A2c- Break glass with tool.

Subaction A2d- Reach through and unlock.

Figure 1

Actions detail the specifics of how the event was accomplished. We may know the event of the encounter occurred, but we may not know exactly how the action involved in that encounter transpired. The evidence discovered at the scene serves to define these actions, which allows us to better understand the event.

Our crime or incident then, is a series of events, macro components which were necessary for the completion of the crime, and actions, micro components which define the actual manner in which the event occurred. Obviously some events may be better supported by physical evidence than others. In fact, others may only be surmised based upon the entire picture as it has developed thus far. (See Figure 2)



Evaluating Actions and Evidence

As we examine the actions and associated evidence which support our events, we must consider each in light of three issues:

- ♦ Their basic nature.
- ♦ Relational aspects to other evidence/actions.
- ♦ Sequence and timing aspects.

With regard to basic nature we simply consider the specific action or evidence being evaluated, asking ourselves: "What is this?" and "What purpose did it serve?" If we find a bloody cinder block at the site of our burglary/murder altercation, our answer to the first question is easy, this is a cinder block. Its use as a weapon may be concluded, but we may still question its function prior to the burglars use.

As we proceed to relational aspects, we direct our attention to how the evidence or action is related to other items within the scene or to the subject or victim. By answering these questions we often shed light on the "What purpose did it serve?" question. In our instance of the cinder block; should we find a similar one holding a door open in an adjoining room, we have established a link to the home. The indications of course being that the cinder block was present in the scene by choice of the owner.

In dealing with relational aspects we seek to define specific links between items of evidence and the classic linkage triangle (scene, subject, victim).⁴

Last, we must consider our actions and evidence in light of timing and sequencing issues. Each is a specific concern. Timing helps establish the actual or relative time of the crime. Classic examples are body temperatures and the onset of rigor. Timing aspects help in establishing when or perhaps over what period the crime occurred.

Sequencing helps establish the order of events and actions within the framework of the incident. For instance, our ability to distinguish a lack of skeletonization in a stain would be good example of sequencing two actions.

Finding a spatter stain which has been wiped, with no indication of skeletonization; we may reasonably

conclude the action causing the spatter occurred first. It was then followed very closely by whatever action caused the wipe.

Bloodstain patterns often hold important keys in establishing the sequence of actions and events. They detail specific stain producing actions and any subsequent motions through those stains.

The Auditing Function In Analysis

Viewing the crime as discussed, we recognize the basic events which should have occurred, and then seek evidence to support the specific actions which would establish if these events did occur. Each action becomes, much as in Rynearson's storyboard concept, a window or snapshot of the crime. Through our consideration of sequencing, we then place these snapshots in a logical and supportable order.

As this order develops, specific issues may also develop. Contradictory evidence, indications of some missing part of the picture, or indications of staging may present themselves.

Auditing the crime based upon the actions, may help clear up such concerns. Remember, crimes do not occur in a vacuum. Actions precede and follow each event of concern to us. We may be forced to look beyond the immediate issues/evidence for background indications that some event occurred.

Consider being faced with a situation in which we are asked to believe a victim first cut themselves in the course of a suicide but then chose to shoot themselves to complete the act. Even if we believe the victim prepared for both methods in advance of the first cut; after creating numerous bleeding injuries we should certainly expect to find evidence of bloody fingerprints on the weapons involved, or somewhere on the surrounding surfaces. A failure to find such background evidence sheds a light of suspicion that these actions occurred as described by the individual who reported them.

This auditing function and the anomalies we discover through it also serve to focus efforts of the investigation. If we see indications of a missing picture (e.g. our surmised Event C in Figure 2), we are then obliged to look for specific evidence to support

this missing piece. Was some piece of evidence missed, or perhaps set aside because at the time its relationship to the crime was not evident?

Simply stated, auditing looks beyond the primary evidence and issues for background indications that some event occurred. It helps decide which of some group of possible events or actions is the more probable.

Rating Conclusions and Actions

In deciding what an analyst believes occurred during any incident, we must also consider that not all evidence and actions deserve the same level of confidence.

Without attempting to claim that some specific rating scheme must exist, we might establish a rating which follows as:

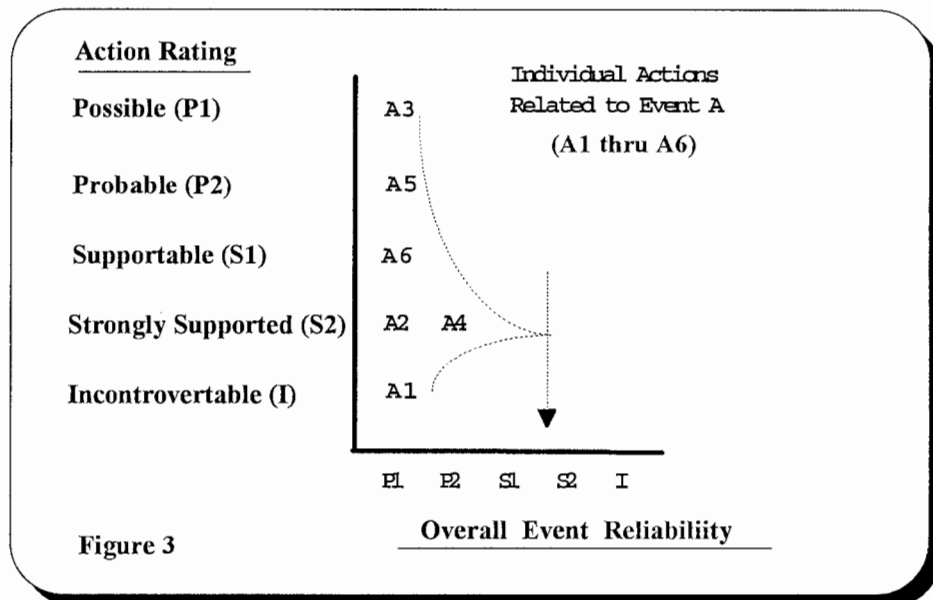
- ♦ incontrovertible
- ♦ strongly supported
- ♦ supportable
- ♦ probable
- ♦ possible

Incontrovertible actions set the overall stage of our incident. Neither defense nor prosecution should honestly be ready to attack the likelihood that these actions occurred. They establish hopefully, that which we may all agree upon.

But not all evidence stands in such strong regard. As we consider the supportable, probable or even possible items, such evidence or actions may assist the analyst in making a conclusion. Our evidence and actions then, weave through this rating scheme defining some level of reliability for the overall event in question. (See Figure 3)

There are two issues of concern when considering this reliability.

First, the analyst must establish which items of evidence lead to their conclusions. I firmly believe if we choose to claim that some action or event happened, we must point directly to specific detailed evidence and define "why" its supports such a



conclusion. Once established, the analyst must decide where in the reliability scale their conclusion lies. Just as all evidence is not incontrovertible, certainly our conclusions as analysts should not be considered as such.

Given an action which rates as strongly supported and several others rating possible and probable; it is not inappropriate that the analyst draw some conclusion from the conglomerate. The analyst must not however, base the overall conclusion on the highest rated action defining that event. The conclusion should be based on a review of all related actions.

A second issue is that the reliability we assign to an action or item of evidence cannot change within the analysis.

This problem manifests itself when a particular action impacts on more than one conclusion. For instance: an action is used by the analyst to establish that some event occurred, and is rated as strongly supported. If later the same action contradicts another event the analyst wishes to support, it cannot then be given a lower rating. This effectively results in an argument against oneself.

Issues of contradictory evidence or actions must be dealt with in their own right. The analyst is not allowed to have their cake and eat it too. Decide the rating you believe an item of evidence or action deserves and live within the confines of your decision.

We cannot vacillate for the convenience of our conclusions.

A Reconstructionist View

In my opinion, the function of crime scene reconstruction and analysis is one of definition. Such definition should be clear, concise and objective. Using the processes described we should:

- ♦ Establish specific snapshots (the actions) of the crime based upon evidence found.
- ♦ Consider these actions in light of what they establish individually, then in relation and combination with other actions.
- ♦ Decide how supportable each action is based upon the evidence available.
- ♦ Order or sequence the entire series of actions, using specific sequencing evidence and common sense.
- ♦ Where contradictions and questions arise, audit the actions of concern looking for background indications to help decide what happened.
- ♦ Using the actions and evidence established, define the events and our overall conclusions about the crime. We decide these conclusions based on all known information.

The end product of this analysis is a defined view of the crime. We may not understand the "why" behind the actions, but we do know they occurred. In effect this product is an investigative framework. Depending upon the nature of the scene and evidence available, this framework may be quite strong providing focused investigative considerations. It might also be weak, with few specific supportable actions.

Whatever the case, from this framework we can expand our considerations to any investigative issue necessary. Using deductive and inductive reasoning skills and all of our normal investigative resources, we may then attempt to fill in gaps in our information.

The basis for all subsequent decisions will still be firmly rooted in an objective initial analysis. If for any reason during the course of the investigation, our focus becomes muddled or misdirected, we still have this initial analysis as a reference point to return to.

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Rynearson, Joseph and Chisum, William, Evidence and Crime Scene Reconstruction, 1989, pp 100-109

² Locke, John, An Essay on Human Understanding

³ ANACAPA Sciences, Inc., Analytical Investigation Methods, ANACAPA Sciences Inc. Santa Barbara, CA, 1978, Session 32, Sheet 13

⁴ Bevel, Tom, Crime Scene Reconstruction, Journal of Forensic Identification, Vol. 41, Number 4, pp 248-254, 1991