Is ACE-V a Process or a Method?

Fingerprint examiners often refer to ACE-V (analysis, comparison, evaluation, and verification) as the methodology used to arrive at conclusions. The 2009 NAS report, *Strengthening Forensic Science in the United States: a Path Forward*, states the ACE-V framework, “…is not specific enough to qualify as a validated method… merely following the steps of ACE-V does not imply that one is proceeding in a scientific manner or producing reliable results.”

Before exploring whether ACE-V can be validated, we have to determine whether ACE-V is a process or a method. The answer may seem simple, but these terms are frequently used interchangeably which makes the question somewhat confusing. A process is a task to be performed whereas a method is a specific set of actions on how to perform the task. A method may be validated while a process is too broad to validate. A method is often referred to as a procedure, as in standard operating procedure. Each procedure states how to perform the indicated process.

A method (procedure) is needed when a task (process) should be performed in a preferred manner. For example, ninhydrin is a chemical process for visualizing latent prints on porous items. There are different methods that may be employed for completing the ninhydrin process. Dipping or spraying an item with the Ninhydrin solution, allowing the item to sit for several days versus adding humidity to accelerate the reaction time, and using different solvents with the ninhydrin crystals are examples of using different methods to perform the same task. When a preferred method is desired it should be stated in writing.

On the other hand, it would be acceptable to only state a process, without listing the method, if a specific approach to completing the task is unnecessary. For instance, it may be acceptable to state the process or task of “clean the equipment” without specific instructions on how to clean the equipment if the method of soap or another cleaning agent is irrelevant. Simply stating the process, without stating a method, is also acceptable when the set of actions is generally known; it is generally known that “secure the office when leaving” means to turn off electrical equipment and shut and lock the doors and windows.

There are times when it may be hard to determine whether an action is a process or a method. Under the above descriptions, the scientific method of hypothesis testing is more of a process than an actual method since the individual actions within each task are not specifically listed or generally known.

Like hypothesis testing, the four processes of analysis, comparison, evaluation, and verification can be viewed as the processes needed to perform a visual comparison. The acronym ACE-V describes the tasks analysts have performed for over 100 years. ACE-V is a process, or processes, when no specific actions on how to perform each individual task are used. Currently, analysts or agencies employ different procedures for the ACE-V process. For instance, in the comparison process some agencies require a procedure of working from the unknown print to the known print while other agencies have no such procedure. Also, some agencies use magnifiers while others utilize computer software; many agencies use both.

Analysts may arrive at different results for the same comparison due to differing procedures. As an example, one analyst may give a conclusion of individualization due to the determination that images are from the same source whereas another analyst, performing the same comparison, may give a conclusion of inconclusive due to a procedure that requires they be able to demonstrate the support behind a conclusion of individualization.
Alternatively, a third analyst also performing the same comparison may give a conclusion of exclusion due to a procedure that requires that they explain all discrepancies and dissimilarities. These three scenarios illustrate how the potential exists for three separate analysts performing the same comparison to arrive at three different conclusions based on the procedure in place at their respective agencies.

ACE-V can be considered a method by agencies that employ particular actions to perform the tasks within the ACE-V process, such as requiring a full analysis prior to performing a comparison. Procedures may have existed over a long period of time or be new actions for performing ACE-V. An existing procedure may consist of only verifying identifications. A new procedure may include verifying all conclusions or changing verification to be a blind procedure.

Before examining the validity of ACE-V, it is first imperative to determine if ACE-V is being used as a process or as a particular method. This delineation is required because ACE-V as a process is too broad to validate with no specific requirements to review for soundness. Specific applications of ACE-V can be validated, but those applications would need to be stated to allow one to measure the basis and reliability behind the method.

Whether ACE-V is a process or a method is dependent on how ACE-V is being used. ACE-V is a process, but can be a method if the processes are well defined to ensure that the actions are performed in the desired manner. Comparing different procedures (methodologies) and the associated conclusions may show that a particular ACE-V procedure has a stronger basis and provides more favorable results compared to other methods; therefore, a particular use of ACE-V may qualify as a validated method.