

What is the scientific method ,and how is the theory applied to fingerprint analy...



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The complete friction ridge identification process involves using the “ identification philosophy and scientific methodology” in determining whether or not an “ unknown friction ridge impression”(herein, called latent) came from the same source as a “ known inked print (herein called print)to the exclusion of all others.

(1) David Ashbaugh refers to this identification process as, “ a guide of how friction ridge quantative-qualitative analysis is transformed into an opinion of individuality. It describes the friction ridge formations used during analysis while establishing parameters as to how much knowledge one must have to perform such a task.”

Analysis, Comparison, Evaluation and Verification, referred to as A. C. E.-V., is described by David Ashbaugh as the scientific methodology portion of the entire friction ridge identification process . Noting that some do not consider verification as part of the identification process.

(2) The actual identification process involves analysis, comparison and evaluation (A. C. E.) of the latent and the known prints by the Latent Print Examiner.

Another identification process is proposed by Pat A Wertheim , C. L. P. E, which is a five step formula. The conclusion found by the examiner would be the same, and verification is still required. Alot of examiners find this five-step formula easier to understand , follow , and apply. These steps include:

1) Examination of the latent.

2) Developement of Hypotheses to be addressed.

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3) Experimentation.

4) Formation of Tentative Conclusion.

5) Testing the Conclusion.

1)When examining a latent, it is important to follow the same order each and every time. If one or more steps is overlooked , it could result in an inaccurate assessment which will impact the remaining identifying steps in this process. The more experience derived from analyzing latents , the more adapt one will become when recognizing important factors that ultimately end to a final

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conclusion. Latent print examiners should carefully look at clarity of a print. Good clarity such as defined ridge path, edges and incipient ridges, comes better with knowledge that our tolerance for any discrepancies between the latent and the print should be low. If there is a lack of clarity along with lack of quantity of the 2nd and 3rd level detail , the examiner may have to rely on alternate information in the print. This can include creases, incipient ridges or scars in order to make a positive I. D. The quality of information is a clear indicator of the significance of the information provided by the latent. The quality and quantity of information in the latent affects whether a possitive I. D. can be effected.

Red Flags are abnormalities in the lift and provide many cautions. They are contained within the latent or surrounding areas . These include:

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*Double taps

*Similar shaped ridge path formations

*Matrix smears

*Colour reversals

*Inconsistencies in ridge width

*Light or dark areas

*Sudden directional change in ridge flow.

*Does the lift appear consistent with the surface from which it was lifted?

When a Latent Print Examiner considers any of these red flags, and how significant they are in the identification process.

2) Development of Hypotheses to be addressed.

There are only three possible hypotheses a latent Print Examiner must address:

*Result= Identification

*Result= Non-Identification

*Result= Inconclusive

The question that will need to be answered from the above mentioned hypotheses will be, " What is the error rate of fingerprint identification?"

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Since this question addresses identifications only, the conclusions one will reach are now limited to:

1) The friction ridge impressions were left by the same source or , 2) they were not.

Unless the examiner made a mistake, it will contain the right answer.

3) Experimentation

Experimentation will involve going between the latent and the print, first finding features in the latent, and then examining the known print for the same formations within tolerance.

4). Formation of a Tentative Conclusion.

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If it has been found to have substantial agreement of friction ridge formations in sequence between the latent and print, it is now possible to form a “ tentative conclusion” that the latent came from the same source as the known print.

5). Testing the Conclusion

Substantial agreement of friction ridge formations in sequence has been established at this point in the identification process . Testing the conclusion is the final step in the identification process. The hypothesis is said to be proven and the identification finalized when the examiner has established “

reliable predictability” in the relationship of features as they exist in the unknown and known prints.”*Pat Wertheim’s view.

Verification-Final Step in a Complete Scientific Methodology

Verification occurs when another Latent Print Examiner completes a second independent identification process of the first Latent Print Examiner’s friction ridge identification. Verification of the initial friction ridge identification, in some cases, non-identification make up a complete scientific methodology of framework. The “ Five Step Formula” and “ A. C. E.” are two established identification processes that contain steps Latent Print Examiners can follow in making friction ridge identifications. Training, knowledge, experience and personal likings will determine which identification process an individual Latent Print Examiner finds most useful.

References:

Ashbaugh, David,” Quantative-Qualitative Friction Ridge Analysis, Intro to Basic Rideology”, May1999. Wertheim, Pat A.,” Scientific Comparison and Identification of Fingerprint Evidence,” The Print, Volume 16(5)Sept./Oct. 2000