THE SCIENCE OF FINGERPRINT IDENTIFICATION

- or -

How to Make Your Point in the Courtroom!

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The Science of Fingerprint Identification

The first misconception about latent print identification is:

**Latent print examiners don’t just count points!**
Latent print identification relies on three levels of detail NOT just points!

- **Level 1 detail** -- Ridge flow (patterns)
- **Level 2 detail** -- Ridge formations (ridge endings, bifurcations, dots, or combinations thereof)
- **Level 3 detail** -- Ridge path deviation (ridge structure or formation, which includes ridge width, shape, pores and other details)
Level 1 Detail
Ridge Flow
Ridge flows make up three distinct pattern types:

- Loops
- Arches
- Whorls
Level 1 Detail
Pattern Types

Left slant loop
Right slant loop
Plain arch
Tented arch
Whorl
Double Loop Whorl
Level 2 Detail

Friction Ridge Formations

Friction skin ridges on the hands and feet create distinctive features that are grouped into three basic characteristics (also known as “points”):

- **Bifurcations** (or the splitting of a single ridge into two ridges)
- **Ridge endings** (or point at which a ridge ends)
- **Dots**
Level 2 Detail
Friction Ridge Formations

Bifurcation

Ridge Ending

Dot
Level 3 Detail
Ridge Path Structure
Latent Print Examiners are allowed to make positive identifications

1. With appropriate training
2. With appropriate experience
3. With appropriate ability
4. When using the scientific procedure of ACE-V
   • Analysis
   • Comparison
   • Evaluation
   • Verification
The Scientific Methodology called ACE-V

- **Analysis** – the qualitative and quantitative assessment of Level 1, 2, and 3 details to determine their proportion, interrelationship and value to individualize.
- **Comparison** – to examine the attributes observed during analysis in order to determine agreement or discrepancies between two friction ridge impressions.
- **Evaluation** – the cyclical procedure of comparison between two friction ridge impressions to effect a decision, i.e., made by the same friction skin, not made by the same friction skin, or insufficient detail to form a conclusive decision.
- **Verification** – an independent analysis, comparison and evaluation by a second qualified examiner of the friction ridge impressions.