Out of the Frye-ing pan and into the Fire

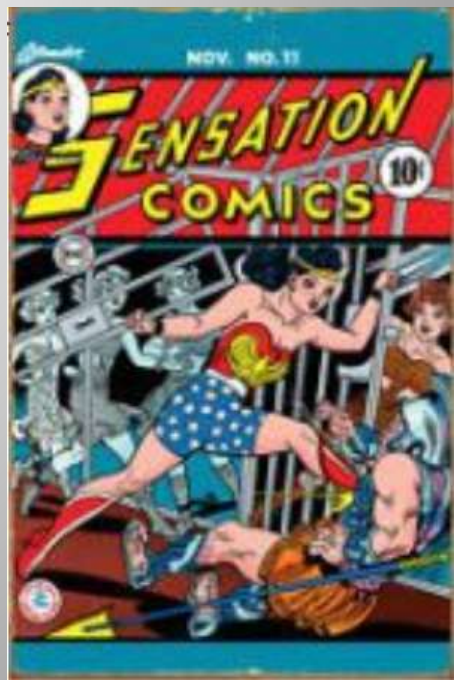
April 27, 2016

Latent Prints

By Francis P. Senese, CLPE

AFIS/Fingerprint Unit Manager

Bureau of Identification



Outline

- Understanding Court precedence
- What is Frye?
- Why was a Frye hearing requested in this case (A look at the Defense motion for having the Frye hearing)
- The Defense's Subpoena Duces Tecum: are they for real!
- The presentation I gave at the Frye hearing
- Point/Counterpoint from my Cross
- Arguing against the Defense's key points
- *Safford and how foundational issues were again brought up*

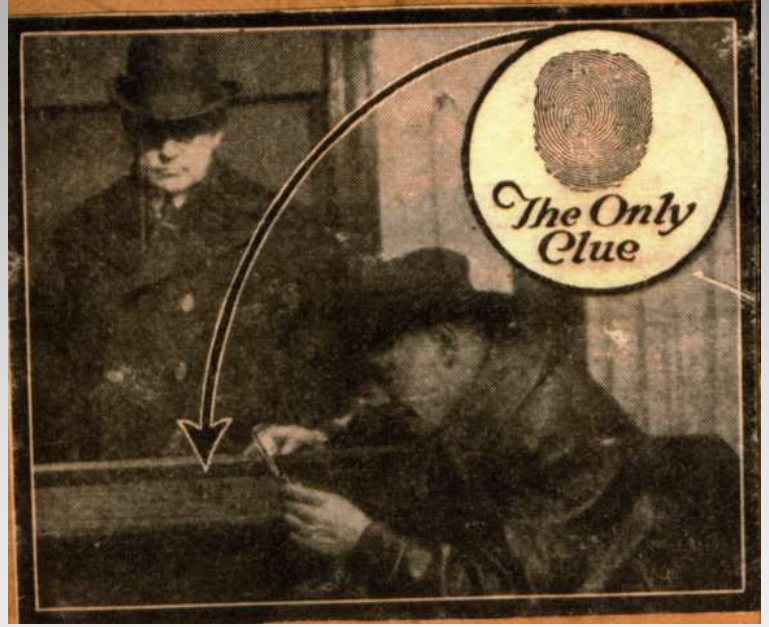
Court Precedence

What made Fingerprints admissible in the first place?

People v Jennings

- September 19, 1910, an intruder shoots homeowner, Clarence B. Hiller in middle of night
- Four latent fingerprint impressions on recently painted railing at point of entry
- Thomas Jennings picked up by police at 2:38 AM,
- Fingerprint card of Jennings from a previous Burglary arrest on file was compared to the latent impressions
- Four fingerprint experts testify at trial (**William and Michael Evans** from Chicago Police Department, **Edward Foster** of the Royal Canadian Mounted Police, and **Mary Holland** started the first bureau of identification in the USA
  - Jennings found guilty in 1911.
  - First use of fingerprints in US Courts
  - Conviction supported/upheld by Illinois Supreme Court.
  - Jennings was sentenced to death by hanging February 16, 1912

Rear of House



The landmark Illinois Supreme Court decision in Thomas Jennings V State of Illinois was:

"We are disposed to hold from the evidence of the four witnesses who testified and from the writings we have referred to on this subject, that there is a scientific basis for the system of finger-print identification and that the courts are justified in admitting this class of evidence; that this method of identification is in such general and common use that the courts cannot refuse to take judicial cognizance of it."

Court Precedence

Legal arguments almost always rely on previous legal decisions. The names we throw back and forth in our science have routinely come about from court rulings:

- Jennings- People v Jennings (which in part cited Carleton v People and the use of foot ware identification in admitting the fingerprint evidence)
- Daubert- Daubert v Merrell Dow Pharmaceuticals
- Safford- People of the State of Illinois v Corey Safford
- Frye- Frye v United States

What is a Frye hearing

Frye v. United States

- November 27, 1920, Dr. Robert Wade Brown was shot point blank in front of his house.
- The suspect, 22 y/o James Alphonso Frye was arrested for the murder in March of 1922 after having had already been arrested for a robbery in 1921 and allegedly admitting to his robbery accomplices he was responsible for the Brown murder.
- Frye confessed to the murder after his arrest stating, " I tried to run to the door and he grabbed me again and knocked me down and I told him to put his hands up and he kept on hitting me, hitting me on the head, and in the struggle I think that my gun was fired."
- Frye recanted his confession and through a stroke of timing along with the sensationalism of his case garnered the attention of Professor William M. Marston.

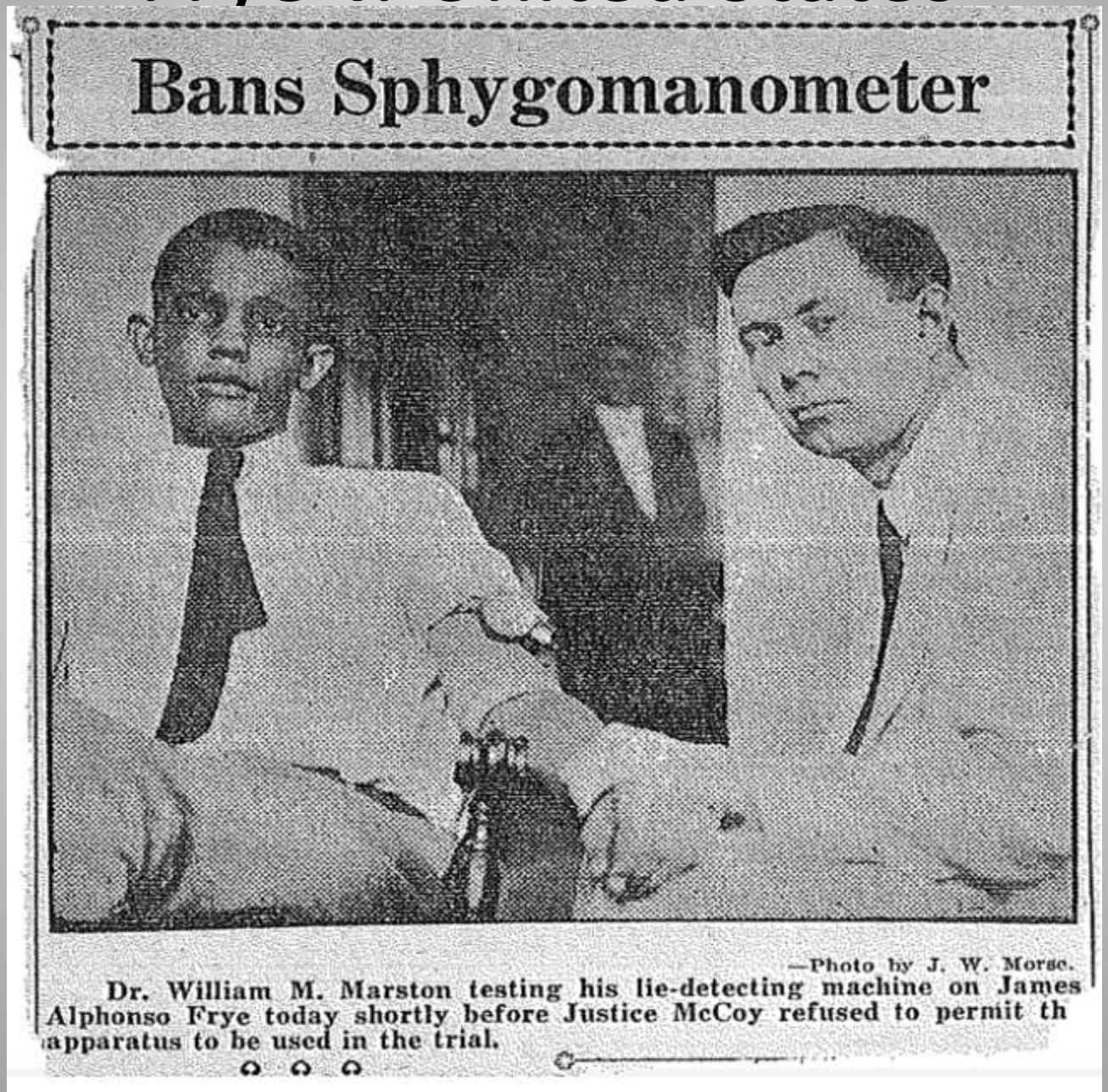
Marston, in eyeglasses, conducting a test on Frye, in shirtsleeves, 1922. Courtesy of Corbis

- Marston who held several doctorates including law and psychology was wanting an opportunity to bring his “systolic blood pressure deception test” (aka polygraph) into a court of law.
- June 10, 1922 Frye underwent Dr. Marston’s lie detector test and passed.

Frye v. United States

- Frye's defense hinged on Frye having been tricked into a confession by being told if he confessed to the murder, the robbery charge would be dropped and the murder charge wouldn't stick with his alibi.
- At the trial, the defense tried to get Dr. Marston to testify to his systolic deception detection examination performed on Mr. Frye as corroborative evidence to Frye's innocence. This would be coming directly after Frye's own testimony refuting his previous admission.
- Chief Justice Walter I. McCoy would not allow Dr. Marston's testimony. Ruling. "We do not bring experimental matters into court, but when it is established that scientific development has reached such a point as to become a matter of common knowledge as to its results we allow the results to be shown in court".

Frye v. United States



Bans Sphygomanometer

—Photo by J. W. Morse.

Dr. William M. Marston testing his lie-detecting machine on James Alphonso Frye today shortly before Justice McCoy refused to permit th apparatus to be used in the trial.

Frye v. United States

- The defense argued back and forth with Justice McCoy but to no avail. Justice McCoy argued two points.
  - One: He did not feel Marston's test was sufficiently proven or accepted to be used in a court of law
  - Two: The jury should be responsible for determining if a witness was telling the truth or not at the time of testimony.
- Frye was convicted of second-degree murder.
- The defense team set out for an appeal and the ruling came December 3, 1923 from the D. C. Court of Appeals denying the appeal.

Frye v. United States

- The D.C. Circuit Court of Appeals wrote in their decision regarding the admissibility of Marston's polygraph test what has become known as the Frye admissibility test for Scientific evidence or the "General Acceptance Test" ruling:
  - Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while the courts will go a long way in admitting experimental testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made *must be sufficiently established to have gained general acceptance* in the particular field in which it belongs. (Emphasis added.)
- James Alphonse Frye served over 18 yrs for his crime and made multiple appeals for pardons even after his release. He died in 1956


I OBJECT!
OBJECTION SUS-
ARE YOU THE CHEETAH?
I'M COMPELLED TO TELL THE TRUTH - I DON'T KNOW - I REMEMBER NOTHING!

Illinois' First Frye Hearing on Fingerprint Testimony?

People v Robert Morris

- April 3, 2009 James W. Sanders was the victim of a robbery/ attempted murder when he was shot in the abdomen while sitting in his vehicle outside of a Western Union.
- Mr. Sanders died of complications from his wounds right before the Frye hearing in 2011.
- The original suspect was quickly eliminated as not having made any of the prints identified.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The latent print lift

The Defense's motion to Judge James Rhodes for a Frye Hearing on Fingerprints

Defense Motion Arguments

- National Academy of Sciences (NAS) Report is authoritative and represents the Relevant Scientific Community (RSC)
- The RSC does not accept that finger print (FP) analysis is infallible or that there is a validated basis for making IDs to a particular Individual
- The RSC does not accept that the courts (Testing in the Adversarial System) validates FP IDs
- Latent Print Examiners, along with the RSC, agree that FP identifications have not been subjected to scientific testing
- The RSC conclude that the error rate for FP analysis is unknown
- The RSC believes that friction ridge analysis lacks standards
- Because errors have happened (like the Brandon Mayfield case), judicial weight should not be granted to Latent Print Examiners

Arguments made for the Defense by Dr. Ralph N. Haber PhD/ Dr. Lyn Haber PhD

1. Current LP analysis has resulted in a significant number of erroneous identifications.
2. No valid scientific basis exists to conclude that latent fingerprints are unique impressions.
3. ACE is a loose process not a true scientific method and requires examiners to rely on their subjective opinion.
4. ACE is not a reliable process because examiners applying it can arrive at different conclusions about the same latent prints.
5. ACE is not a valid process because there is insufficient scientific validation testing to confirm the accuracy of the method.
6. The LPE community suffers from a lack of verifiable standards, training and accreditation that prevents courts from reasonably relying upon its conclusions.
7. Examiners are exposed to biasing information leading to errors at multiple stages of the identification process.
8. The RSC consists of latent print examiners and research scientists and that community has not concluded that ACE is reliable or valid process for matching a latent fingerprint to a unique person.

The State's Response

- Frye is the law in the State of Illinois commonly called "General Acceptance (GA)" test:
  - "Scientific evidence is only admissible at trial if the methodology or scientific principle upon which the opinion is based is sufficiently established to have gained general acceptance in the PARTICULAR SCIENTIFIC COMMUNITY IN WHICH IT BELONGS"
  - Under Donaldson: GA does not concern the ultimate conclusion but focuses on the underlying methodology used to generate the conclusion.
  - GA does not mean universal acceptance of methodologies, the methodology need not be accepted by unanimity, consensus, or even a majority of experts.
- ACE-V is not "new scientific methodology"
- Traditional friction ridge analysis is generally accepted in the RSC as defined by Frye as the PARTICULAR SCIENTIFIC COMMUNITY IN WHICH IT BELONGS

Illinois Supreme Court ruling in People VS Thomas Jennings

"There is a scientific basis for the system of fingerprint identification . . . this class of evidence that this method of identification is in such general and common use that the courts cannot refuse to take judicial cognizance of it."

The Defense's Subpoena Duces Tecum

Requests meant as a fishing expedition

Requests: Shaken but not stirred

- All research studies related to reliability, validity or general acceptance of latent print analysis, including but not limited to any and all research studies on the rate of error, that you intend to discuss or otherwise rely upon during your direct testimony.
- Documents sufficient to show the scores you received on any internal or external proficiency tests including but not limited to the tests administered by the Illinois State Police and the Collaborative Testing Services, Inc.
- The same proficiency tests for the examiner who performed the verifications in this case.
- All Documents relating to the contents of the internal test administered by the Illinois State Police, including but not limited to the manner in which the internal test is administered.

Requests: Shaken but not stirred continued

- A Sample of the most recent internal proficiency test administered by the Illinois State Police.
- All Documents relating to chain of custody for each and every item related to the case in question.
- All research reports written by you that relate to latent print examination and analysis, including but not limited to the four research reports listed on your CV.
- Documents sufficient to show your grades from the School of Nursing at the University of Illinois at Chicago, including, without limitation, a certified transcript.

Requests: Shaken but not stirred continued

- Case specific requests
  - All notes
  - Case file information
  - Protocols to include policy and procedure manuals
  - Chain of custody and current disposition of evidence
  - AFIS software
  - Data files
  - Candidate matches from AFIS as .eft or .wsq file formats
  - Electronic images of all tenprint files associated with the defendant
  - Any digital enhancement done
  - Documentation of corrective actions for discrepancies or Errors
  - Copies of Accreditation certificates
  - Background information on all laboratory personnel involved in the fingerprint portion of the case.
  - All validation studies done by the lab or relied upon by the lab system
  - A copy of the Quality Assurance manual
  - A copy of the Training manual
  - Documentation on all testimony reviews by anyone who will be testifying in the case
  - Copies of all communications oral or in writing between the State's Attorney's office and the latent print section about the case before and after knowing about the suspect involved.

My Frye Presentation

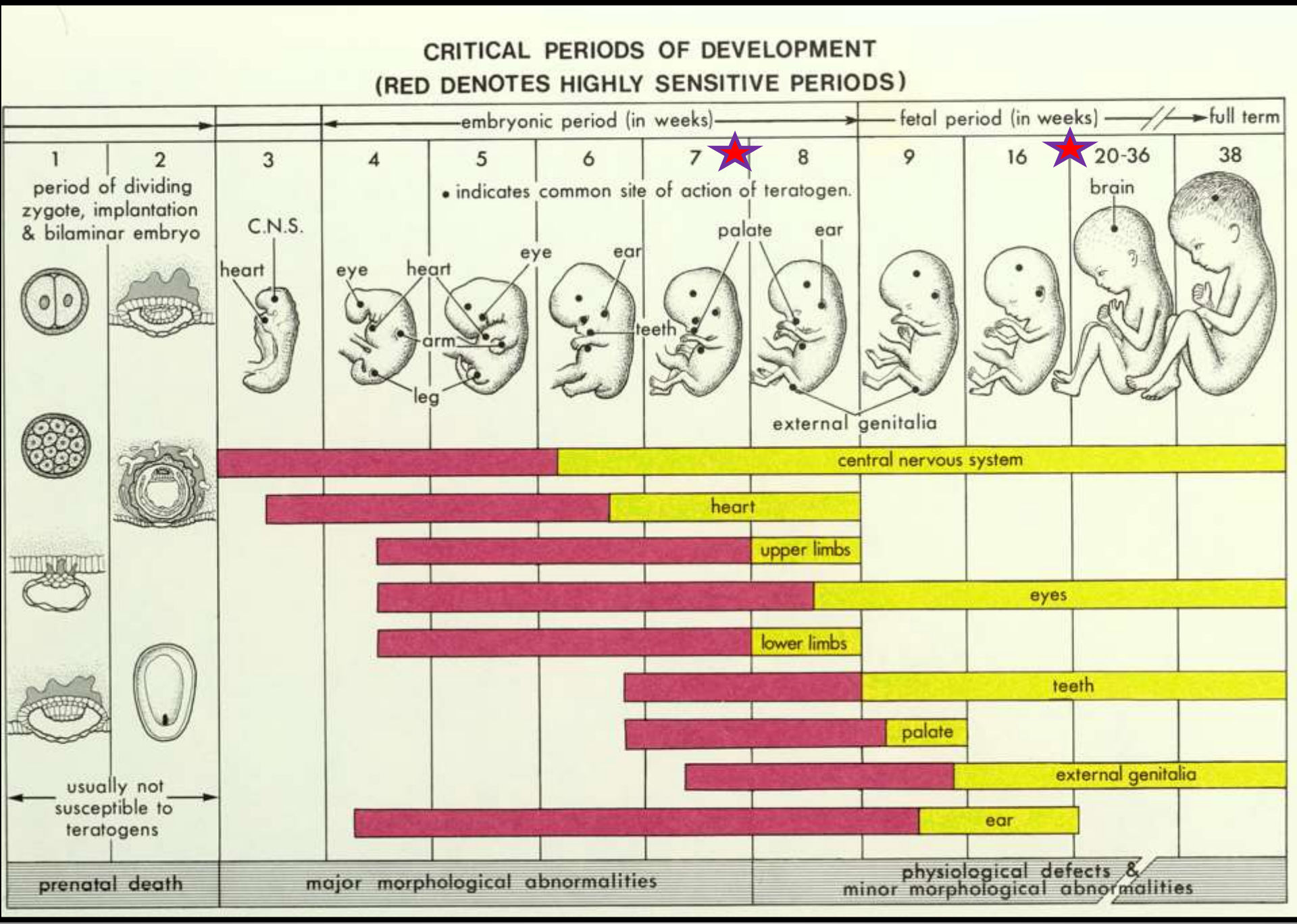
The underlying Principles of Fingerprint Examination

"The science behind what we do"

Uniqueness

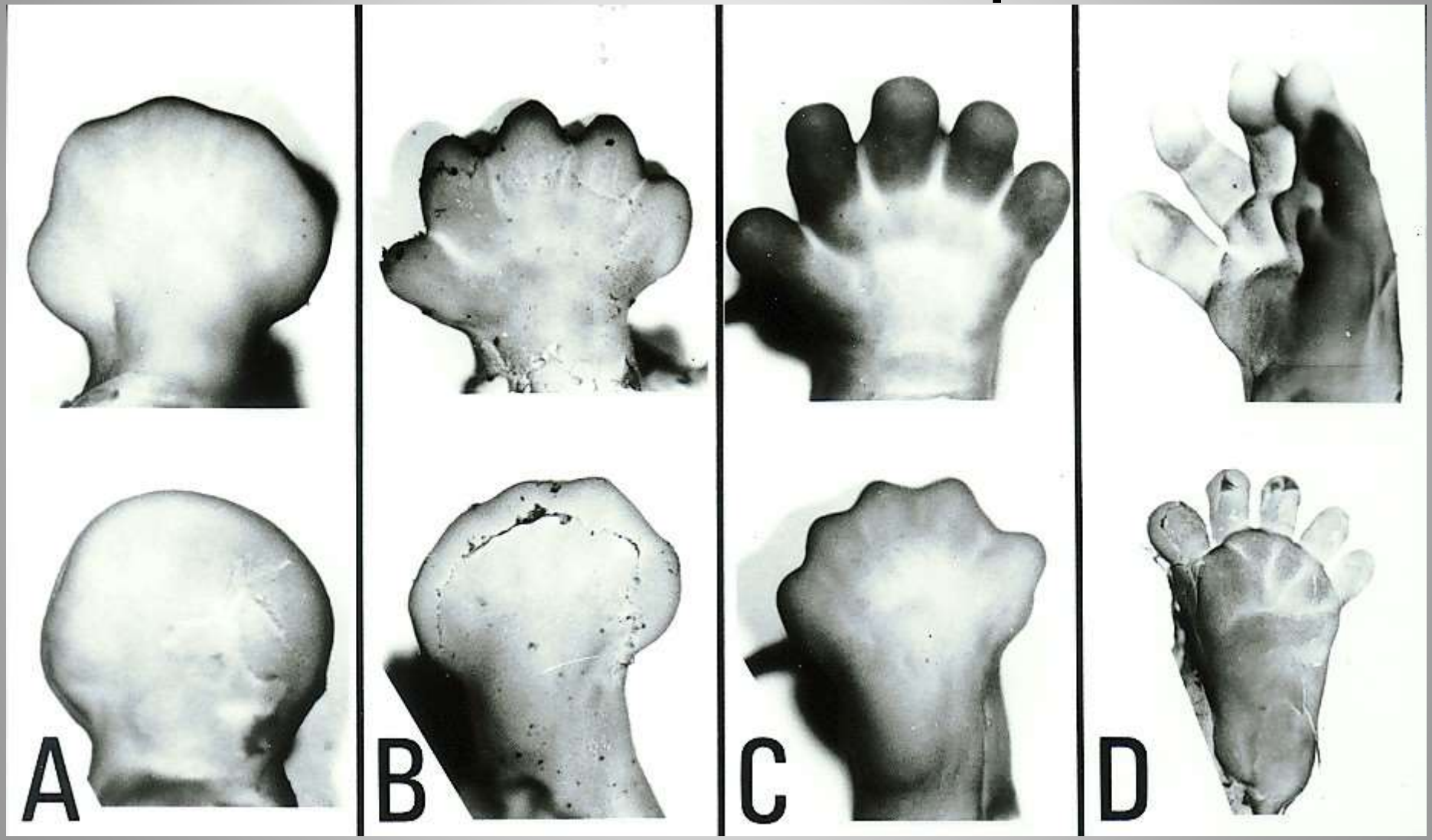
Uniqueness of Friction Ridge Skin

- Although it is generally accepted that friction ridge skin is unique, it warrants a brief description of why:
  - Friction ridge skin is formed during fetal development beginning at about the 7 to 8th week of fetal gestation.
  - Friction ridge skin development continues until about the 17th week of fetal gestation, at which point it is fixed.



From: K. Moore, The Developing Human, 1982

Hand & Foot Development



From: Babler lecture on development of dermatoglyphic patterns

Why is the development unique?

An analogy comparison to lawn growth

Differential growth of grass	Differential growth of friction ridges

• You start off cutting your grass to a 1” height at the peak of summer
• Many variables effect the growth of your lawn over your entire property
  • Sunshine
  • Water
  • Bacteria
  • Fungi
  • Insects
  • Root growth
  • The other blades of grass
  • Wear on the grass through lawn use
	• Friction ridge skin begins development with a genetic blueprint, predisposing it to maintain a uniform ridge spacing
	• Many variables effect the ultimate determination of both pattern and unique formations in the short 10 week period.
	  • The timing in the development of volar pads
	  • The timing in the regression of the volar pads
	  • The timing of ridge formation
	  • The ossification of bone in the phalanges
	  • The nerve path development
	  • Capillary blood flow and development
	  • Sweat pore development
	  • Inter-pressure from developing ridge paths
	  • Genetic blueprint
	  • Maternal diet

Some of the Scientific Researchers on the Development of Friction Ridge Skin by Anatomists and Mathematicians

- 1904: Whipple researched the development of friction ridge skin in developing her theory on the evolutionary progression of volar surface
- 1918: Wilder and Wentworth
- 1926: Cummins researched development of friction ridge skin in developmental-defect cases
- 1987: Babler extensively studied the embryological development of epidermal ridges (or friction ridge skin) and has given testimony to such in United States VS Mitchell
- 2008: Srihari Monozygotic twins and triplets in an AFIS related study

Permanence

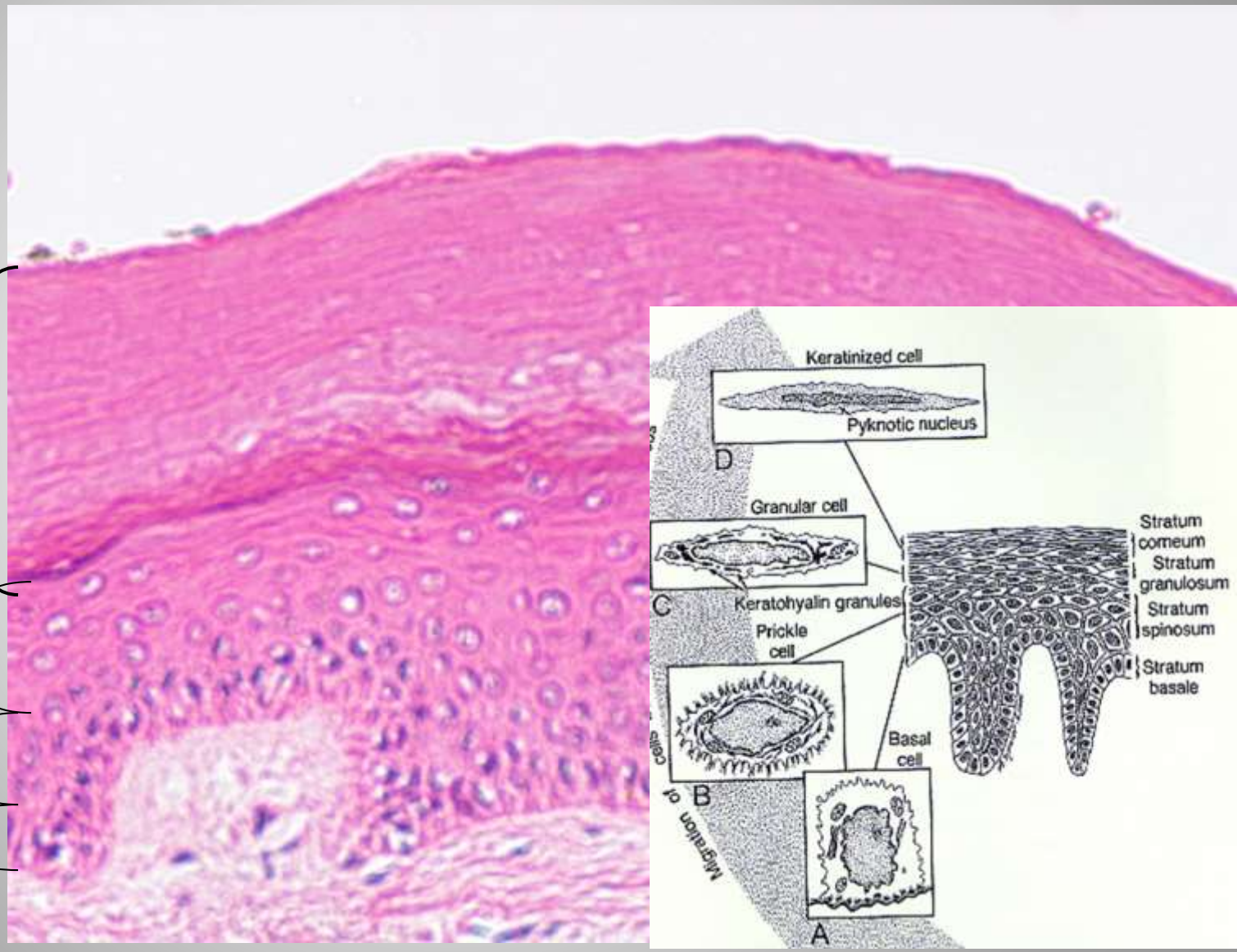
Permanence of Friction Ridge Skin

- Although it is generally accepted that friction ridge skin is permanent, it warrants a brief description of why:
  - The epidermis of the skin, from which fingerprints are left, is determined by the underlying structure of the dermis.
  - The epidermis cells are continually replaced as cells are formed at the basal layer and migrate up to the outer most layer of the epidermis.

Histology of Adult Skin

From: Babler lecture on development of dermatoglyphic patterns

Four Layers of the Epidermis



Corneum

Granular

Spinosum

Basale

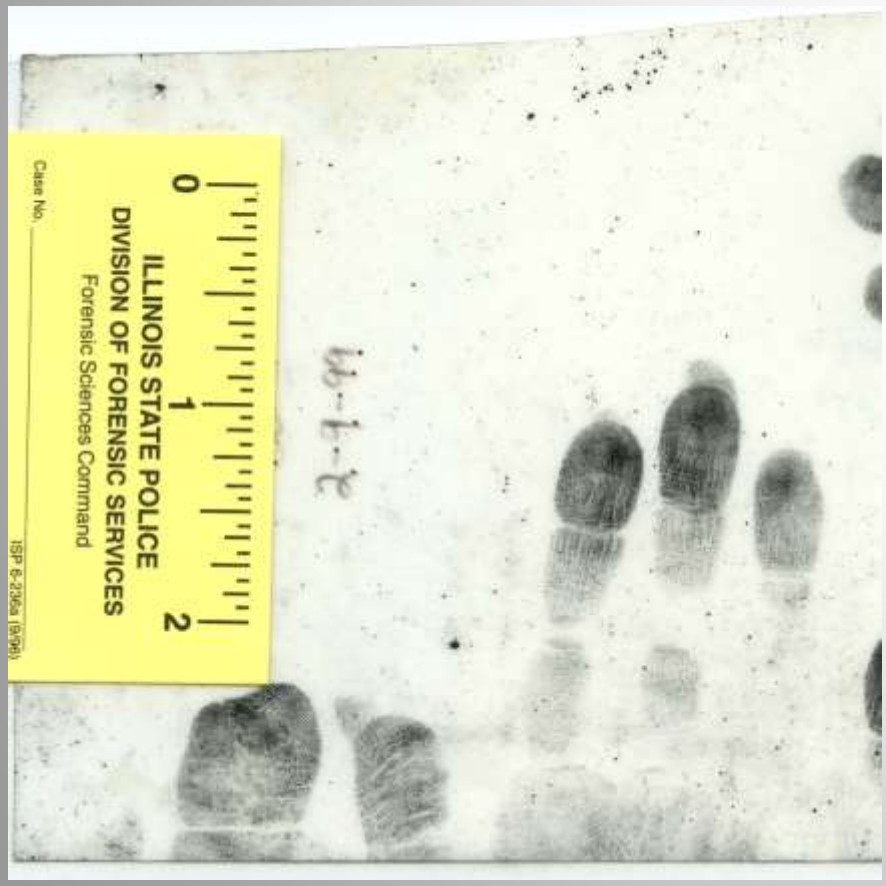
From: Babler lecture on development of dermatoglyphic patterns

Some of the Scientific Research on Friction Ridge Skin Permanence by Anatomists and Research Scientists

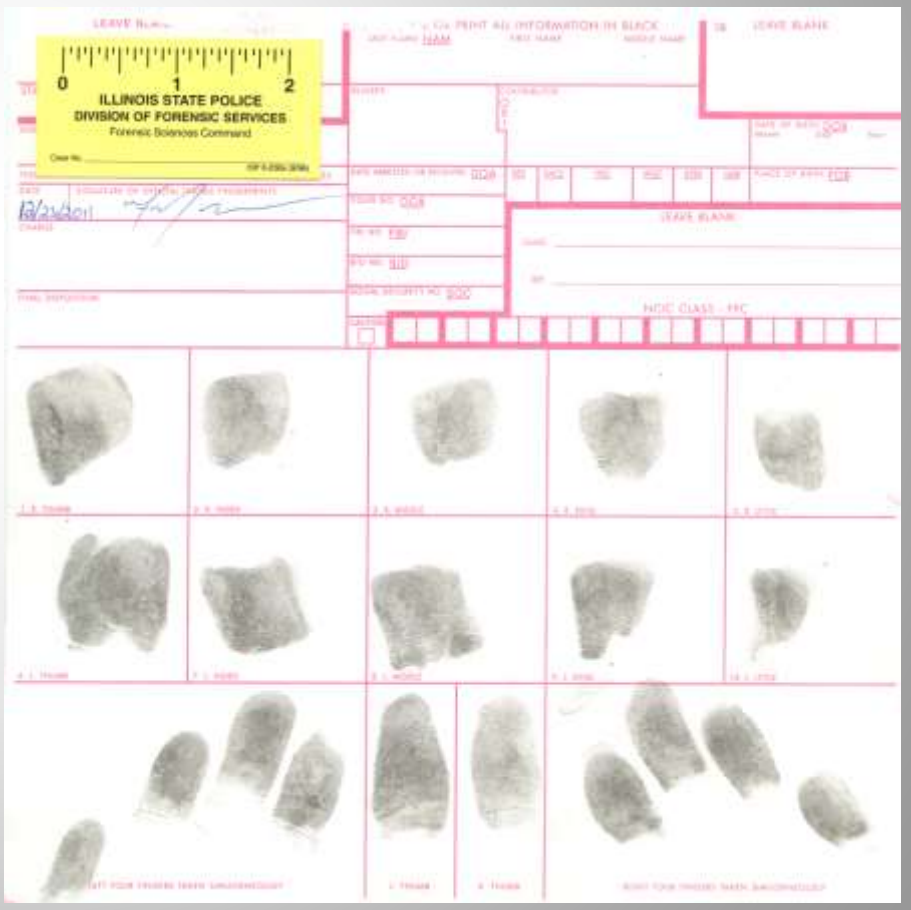
- 1892: Galton studied the persistency of ridge formations on 15 individuals over a 9 to 31 year interval
- 1916:Herschel published prints taken over his lifetime
- 1913: Locard researched the permanence of pore location along ridge paths coining the term poroscopy
- Vast anecdotal instances as well as empirical use in AFIS systems worldwide

My child with an 11 year interval

Standards taken at age 3



Standards taken at age 15



Comparison of Right Index finger over an 11 year interval

Age 3

Age 15

The images have been scaled to look approximately the same size, but a scale in each shows the most apparent difference is size, which does not effect the ridged patterns/events

Applying the Theories of Friction Ridge Skin Uniqueness and Permanence to the Impressions They Make

Latent/Inked Prints

- Latent and inked prints are 2 dimensional reproductions of the 3 dimensional skin.
- The 2D print detail will be dependent on the contact between the 3D finger and the 3D surface being touched.

The Touch

In the picture, you can see the skin in the red circle is coming in contact with glass (viewed through the glass), while the rest of the skin is not, because of the 3 dimensional aspect of a finger.

The skin then produces the following latent impression

Comparing the 2 Dimensional Images to Each Other in a Method Called ACE-V

ACE-V

A*nalysis*

E*valuation*

C*omparison*

V*erification*

A way to articulate application of the Scientific Method

ACE-V compared to the Scientific Method

Scientific Method	ACE-V
1. Collect Data	1. Analyze an impression using the three levels of detail to determine suitability for comparison.
2. A question is asked, which leads to the formation of a hypothesis/null hypothesis	2. Where the two impressions made by the same source? Where the two impressions not made by the same source?
3. Experiment or collect data	3. Compare two or more impressions noting the existence of discrepancies, dissimilarities, or similarities.
4. Form a conclusion based on did the experiment or data collected support the hypothesis or null hypothesis	4. Evaluate the similarities, dissimilarities and discrepancies sorting out if they support or refute your hypothesis and reach a conclusion
5. Review work: show the consistency of an experiment.	5. **V**erification: Have another examiner perform the ACE process and agree or disagree with your conclusion.

Is ACE-V a Validated procedure?

- ACE-V is a framework in which to be followed to reach a conclusion.
  - Our science is an applied science. We use hard science models of anatomy and physiology to describe and justify concepts depicting uniqueness and permanence qualities of friction ridge skin.
  - We observe objective details and make subjective conclusions about them to reach a final conclusion.
- Despite ACE-V being tested, it is not a validated procedure with established guaranteed results.

A = Analysis

C

E

V

A = Analysis

- Analysis:
  - Is there sufficient detail in the latent print to allow a competent examiner to reach a conclusion on its source.
  - The analysis starts with a qualitative/quantitative assessment of levels of detail present in the print (Level 1, Level 2, and Level 3 details).
  - This assessment is affected by other relevant information as well as anatomical origin and orientation. (SWGFAST 2011)

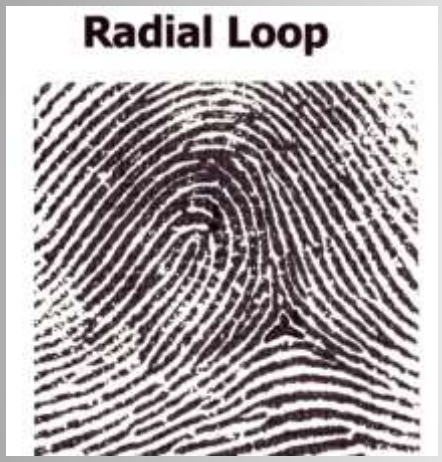
Analysis
The Three Levels of Detail

- ***Level 1 detail*** **-- Ridge flow (patterns)**
- ***Level 2 detail*** **– Friction ridge paths and events (ridge endings, bifurcations, dots, continuous ridges or combinations there of)**
- ***Level 3 detail*** **-- Ridge structures (ridge width, shape, pores, and other details)**

Analysis
Ridge Flow/ Fingerprint Patterns
Level 1 Detail

65% of the pattern types

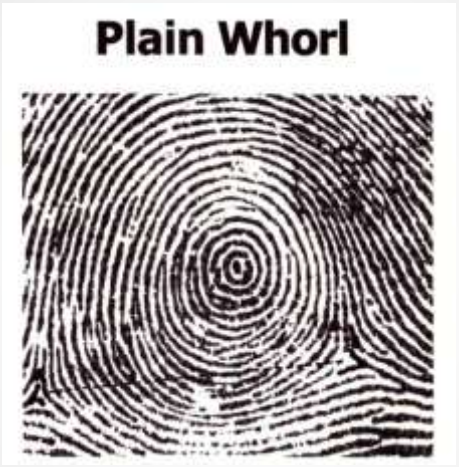
Radial Loop



One or more ridges of the pattern exit the side of the finger on which they entered

30% of the pattern types

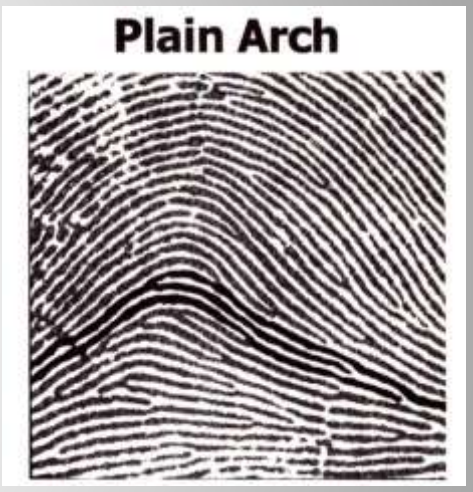
Plain Whorl



At least one ridge makes a complete 360 degree circuit around the print's center

5% of the pattern types

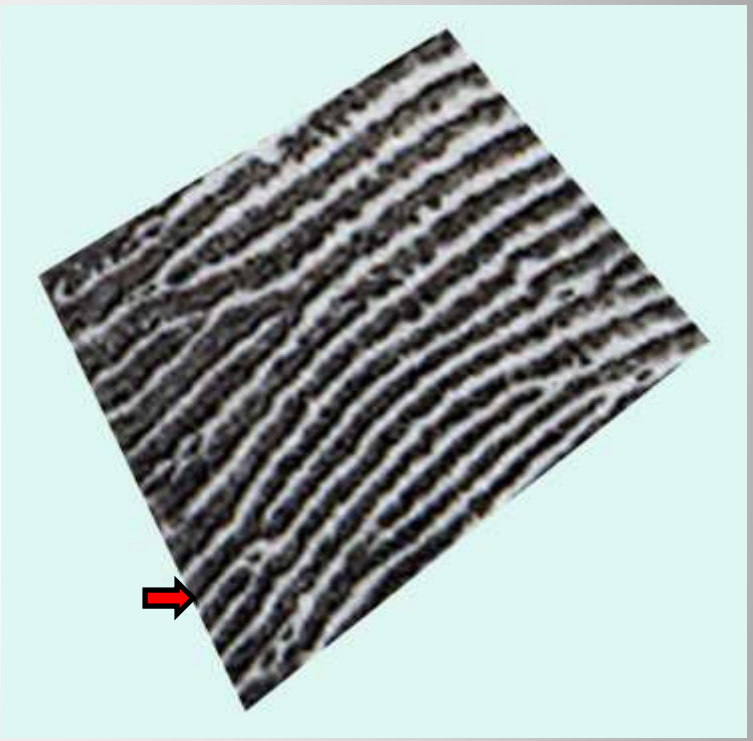
Plain Arch



Ridges enter the finger from one side, rise in the center and then exit on the other side

Analysis
Ridge Flow
Level 1 Detail

- Relatively straight ridges are also considered to have direction and shape.
- These ridges flow from the bottom left up towards the top right

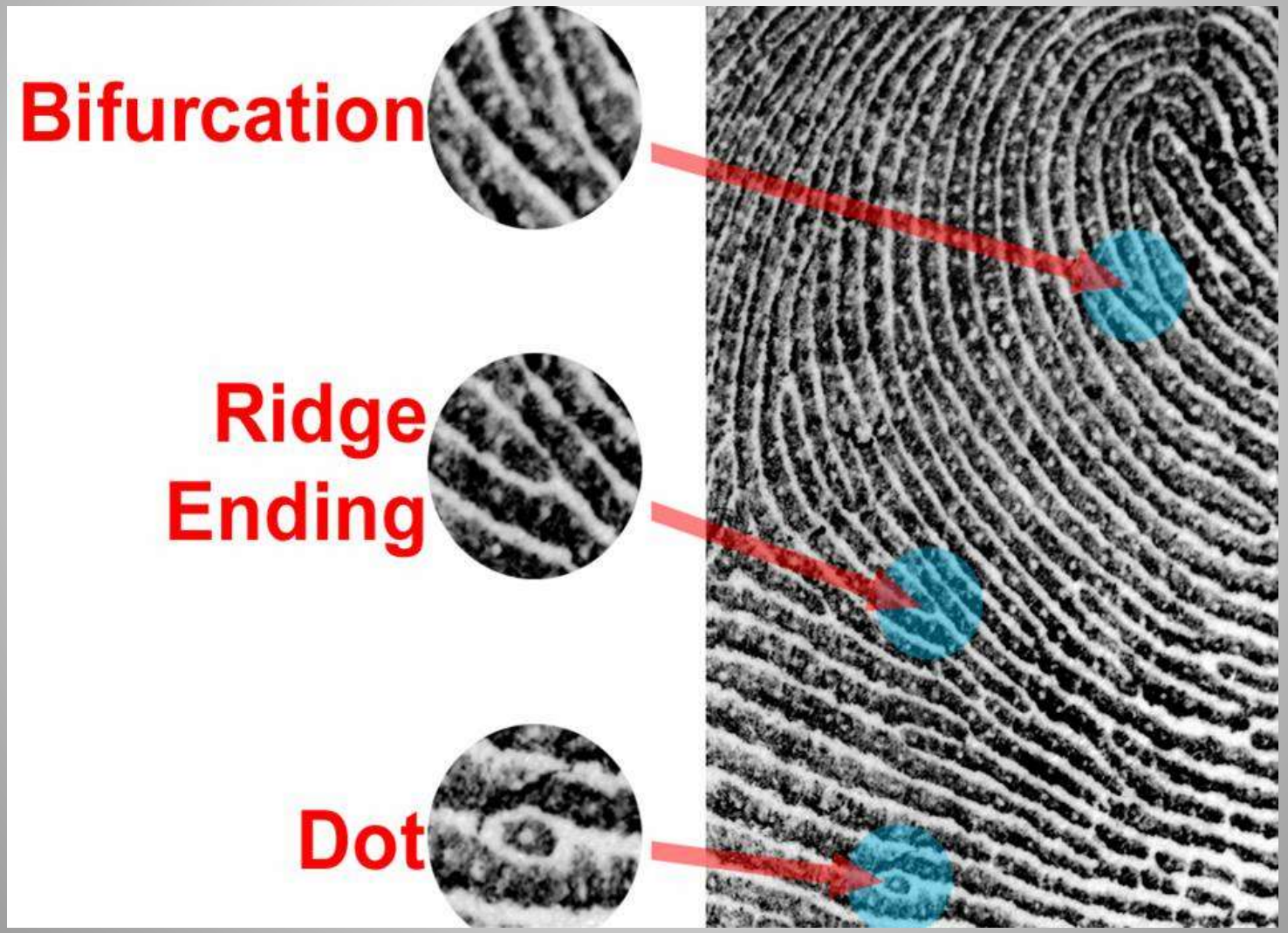


Analysis
Ridge Paths/Events
Level 2 Detail

- Ridge events along ridge paths
- Three basic types:
  - Ending ridge
  - Bifurcation
  - Dot
- Type, relative position, group relationship, and orientation
- They are also called minutiae or Galton Points

Analysis

Minutiae

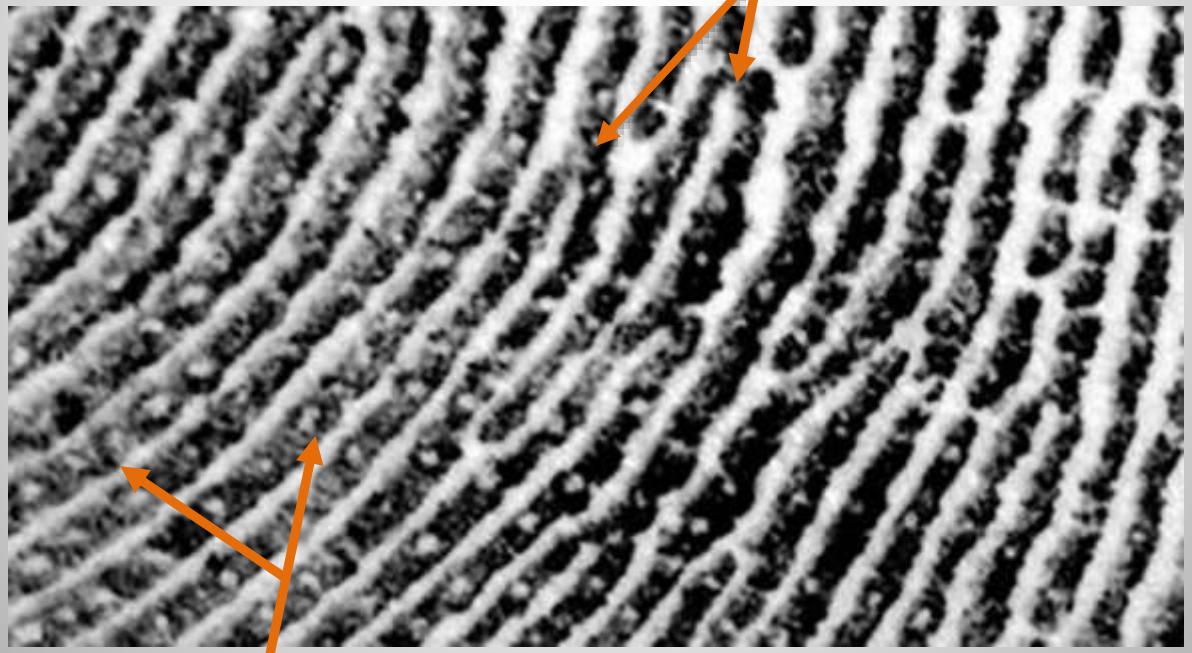


Analysis
Ridge Structures
Level 3 detail

- Pore shape and location
- Ridge size and shape
- Ridge structure

Analysis
Ridge Structure
Level 3 Detail

Ridge Size & Shape



Pore Shape & Location

A

C = Comparison

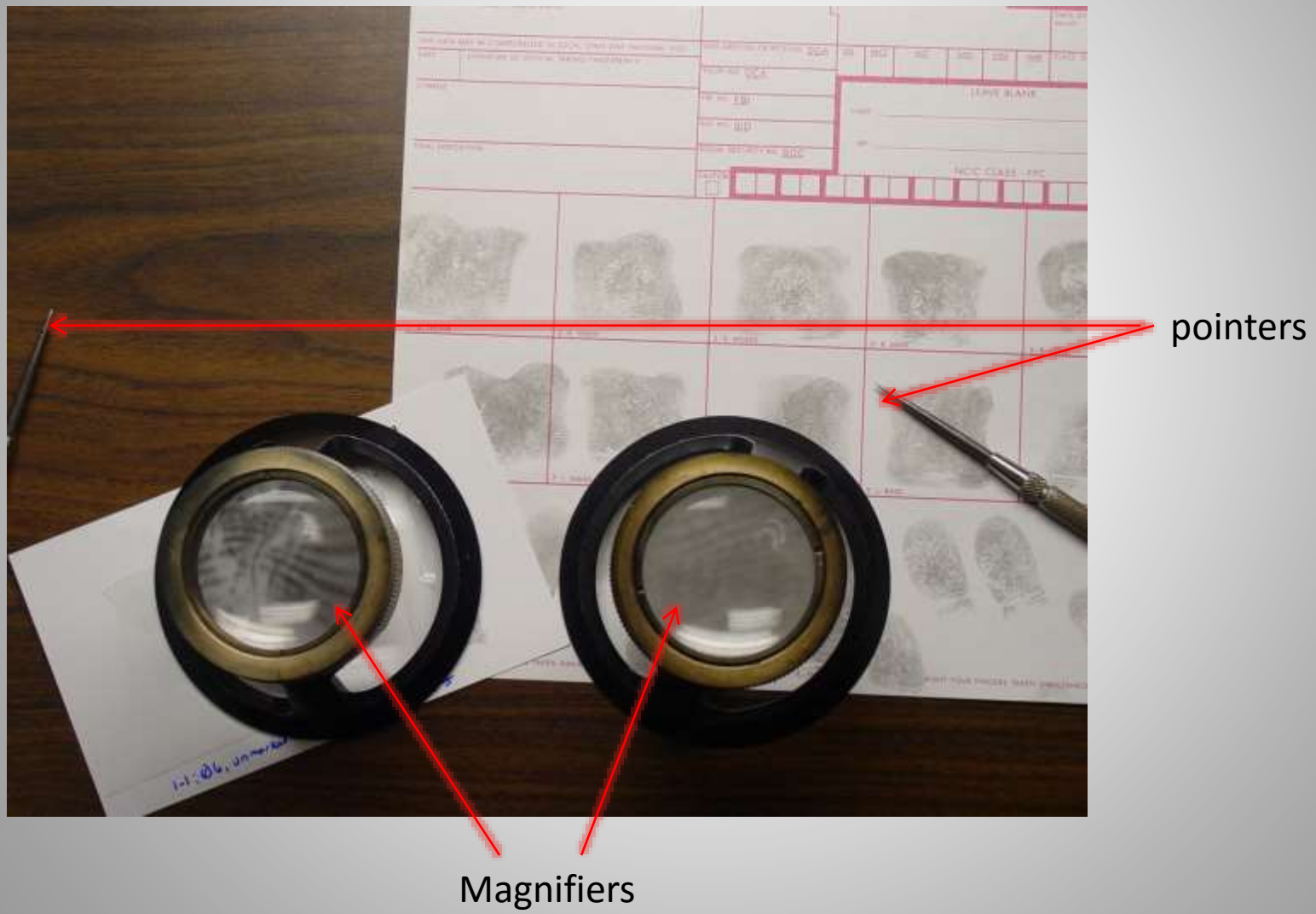
E

V

Comparison

- Comparison:
  - A side-by-side observation of all levels of details to determine whether the two impressions are in agreement or disagreement based on features, sequences, and spatial relationships within the tolerances of clarity and distortion. (SWGFAST 2010)
    - Comparison begins with a determination of dissimilarity or similarity within tolerance at Level 1 detail.
    - A target group of level 2 and possibly level 3 detail observed in the Analysis stage is searched within the selected area.
    - If similarity with the target group exists, additional detail is compared in a cyclical process from unknown to known.

Comparison Tools



A

C

E = Evaluation

V

Evaluation

- The point in comparison when sufficient information has been observed so that a conclusion can be determined.
- This subjective determination will be based on agreement or disagreement of the objective detail observed. The subjectivity is influenced by past experience, knowledge and training.

Determinations that can be made at the end of the Evaluation stage with all the detail having been compared

- Exclusion:
  - The decision that there are sufficient features in disagreement to conclude that two impressions did not originate from the same source.
- Identification
  - The decision that there are sufficient features in agreement in sequence to conclude that impressions originated from the same source.
- Inconclusive
  - The decision that there is neither sufficient agreement to identify nor sufficient disagreement to exclude.

At what point did you realize that these are not the same pictures?

A

C

E

V = Verification

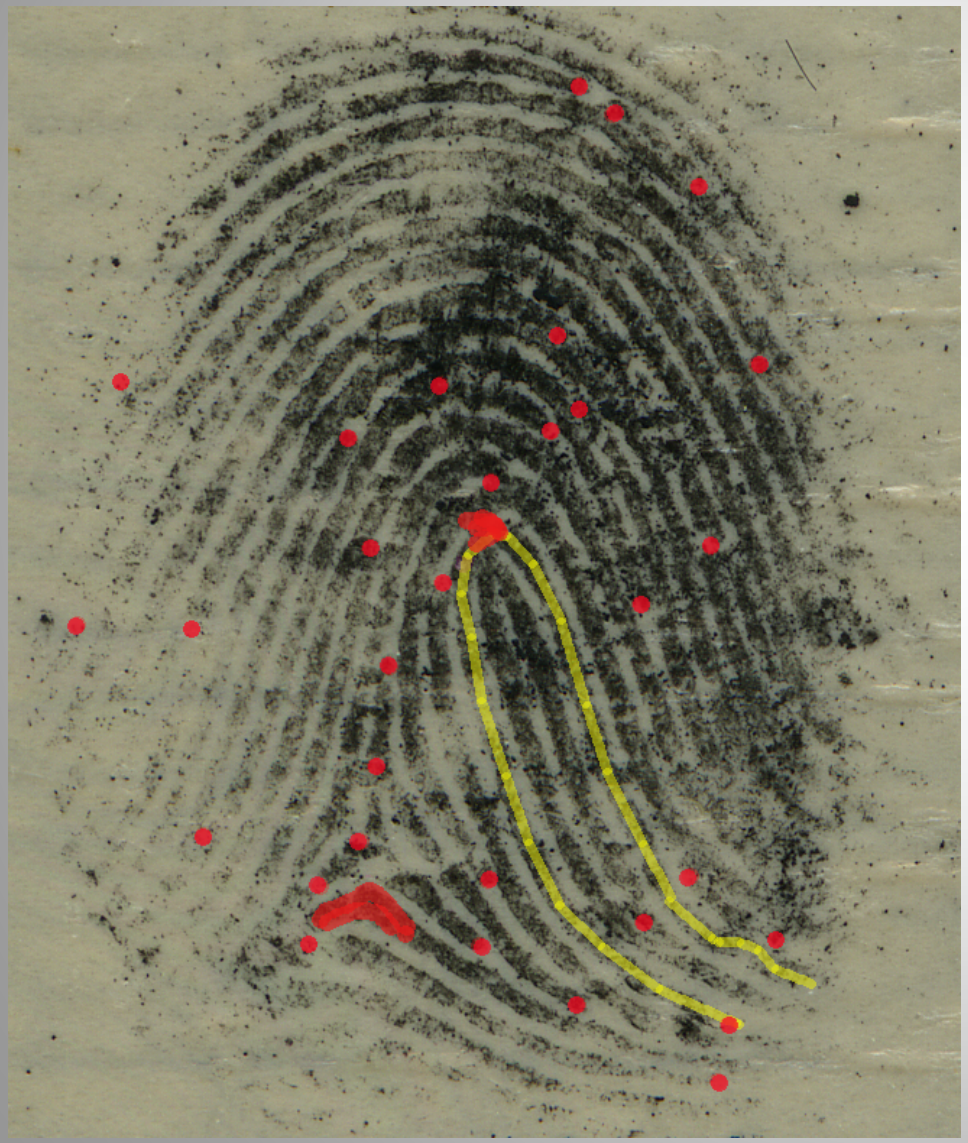
Verification

- The independent application of Analysis, Comparison and Evaluation by another competent examiner to support or refute the original conclusions.

ACE in Action

Analysis applied to a latent impression

Latent Impression



Level 1 Detail:

Ridge flow in this print is a loop with ridge flow originating on the right. Although a single ridge path is traced, ridge flow is not necessarily specific to an individual ridge.

Level 2 Detail:

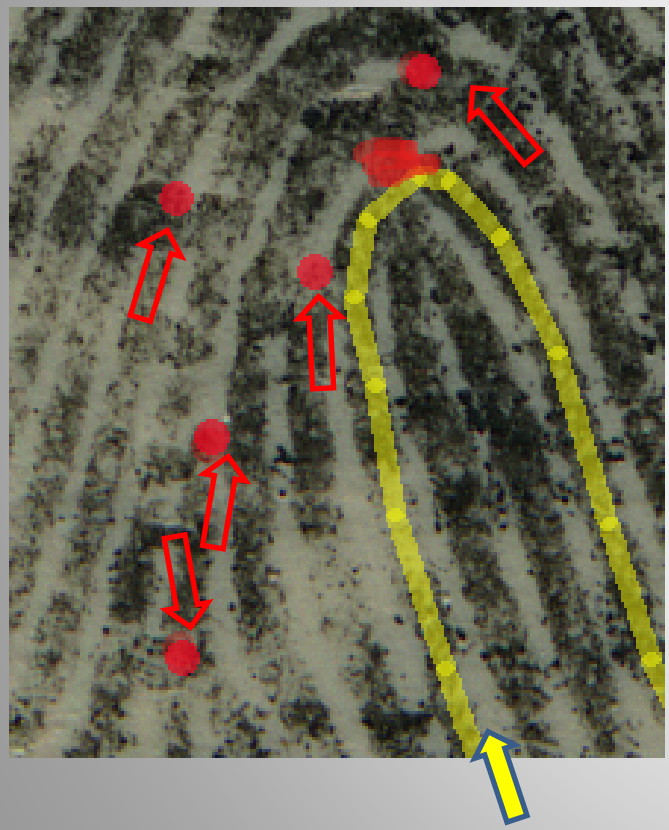
The specific ridge events have been annotated with red dots to draw attention to the area at which the event occurs. The detail is specific to individual ridge paths.

Level 3 Detail:

What has been highlighted in Burnt Orange is the ridge contour in this print in areas of widening ridge breadth and at ridges interconnecting.

Comparison

Latent impression



Level 1 Detail: highlighted in Yellow = consistent

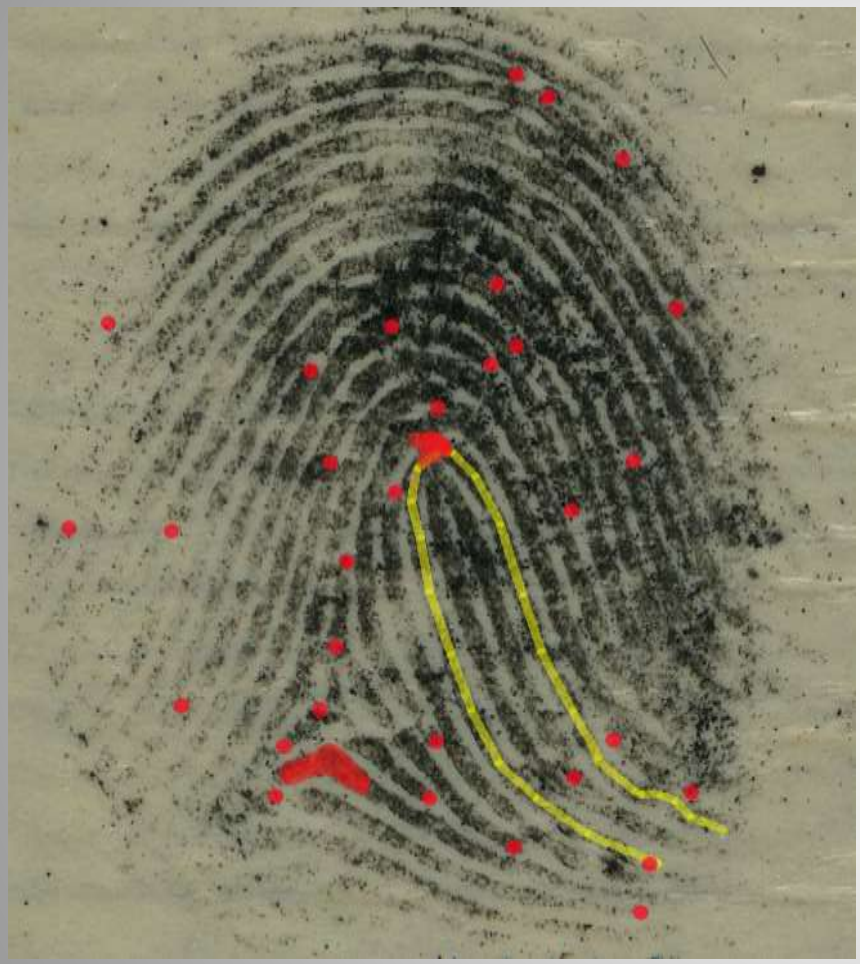
Level 2: grouping of five minutiae denoted by red dots

Comparison ends because discrepancies (differences that cannot be explained) exists

Inked impression

Evaluation:

The two impressions were not made by the same source

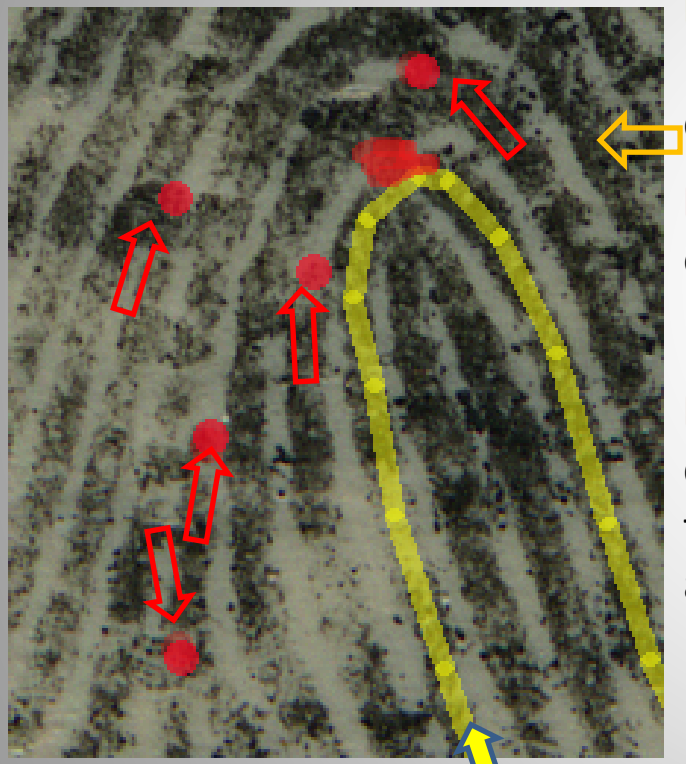


Level 1 Detail: highlighted in Yellow = Consistent

Level 2 Detail: denoted with red dots at events= Discrepancies in ridge event type, relative position, group relationship and direction exist

Comparison

Latent impression

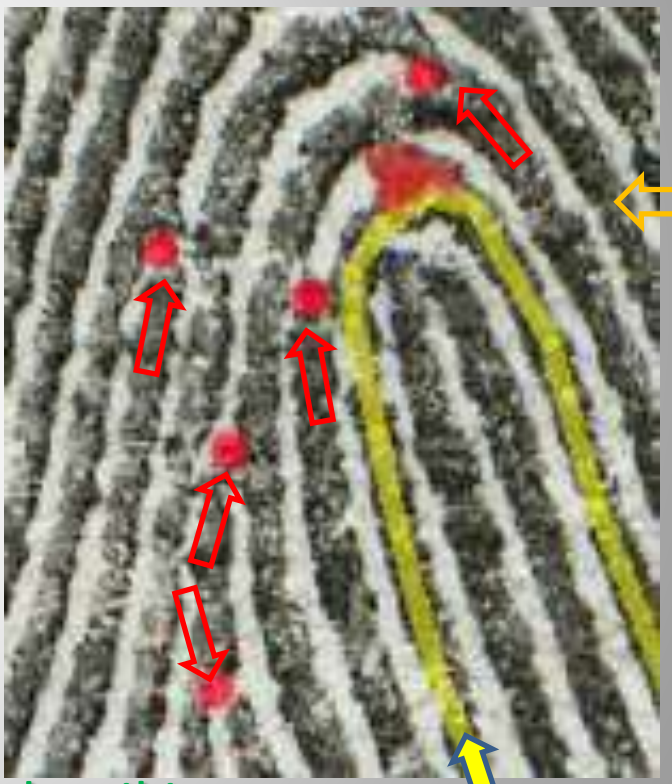


Level 1 Detail: highlighted in yellow = consistent

Level 2 Detail: grouping of five minutiae denoted by red dots

Level 3 Detail: ridge contour widens and flows into above ridge above second innermost re-curving ridge

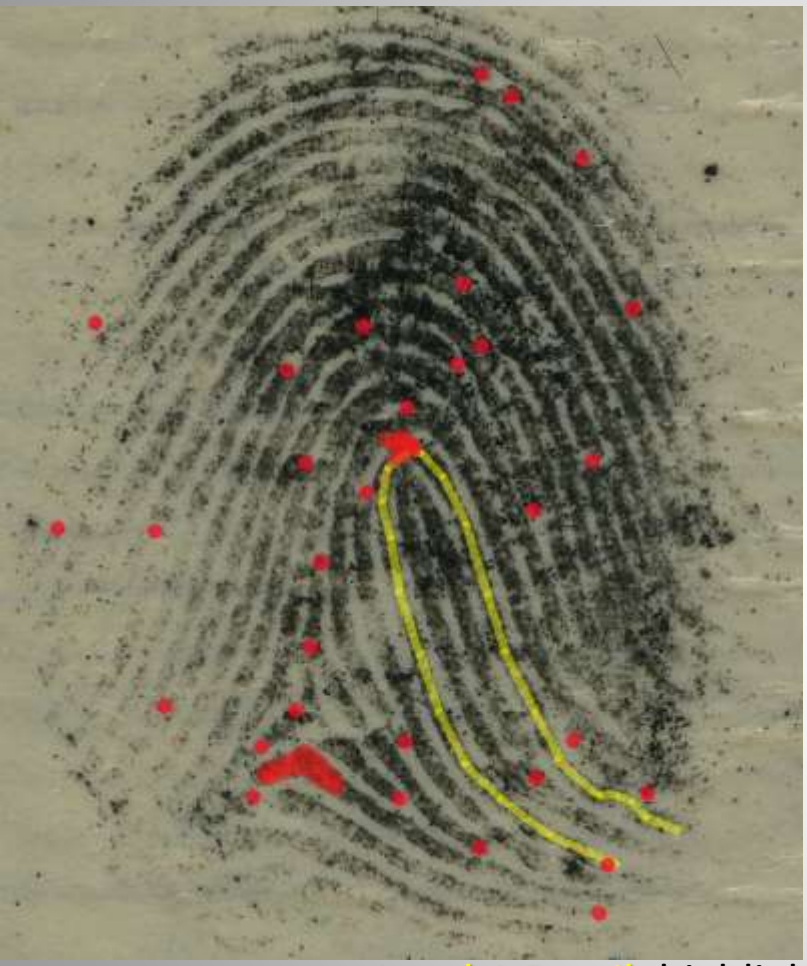
Inked impression

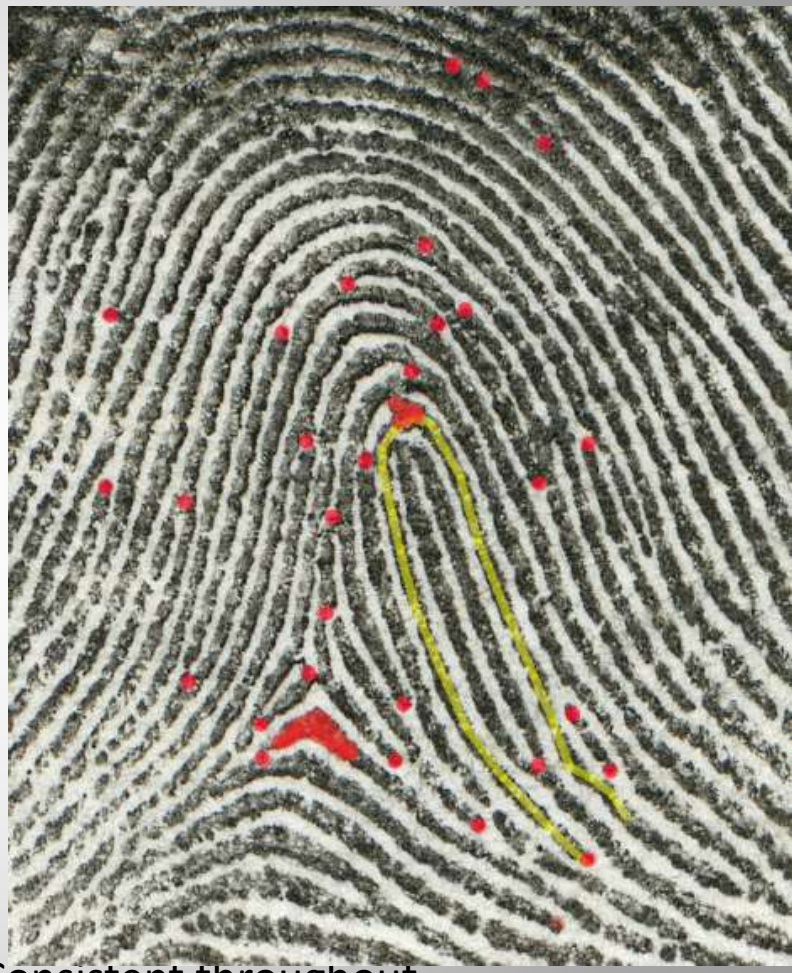


Comparison continues because detail is consistent in type, direction, relationships, and relative position in the prints

Evaluation:

The two impressions were made by the same source





Level 1 Detail: highlighted in yellow = Consistent throughout

Level 2 Detail: denoted with red dots at event= Consistent in type, relative position, group relationship and direction

Level 3 Detail: highlighted in orange = Consistent in ridge breadth and contour

Cross Examination

The Defense's Cross examination of me

- Their Goal
  - Establish I am not a research scientist to discredit anything I might say about understanding research done as compared to their expert Dr. Ralph Haber, PhD.
  - Have me read excerpts from publications to discredit both my and later Dr. Glenn Langenburg, PhD's statements, using items co-authored by Glenn or the NAS report
- My counter:
  - I agreed I am not a research scientist my research has been all validation studies of techniques.
  - I responded the first time they took an excerpt for me to opine on, that "taking things one sentence or even one paragraph out of a large document would not allow me to know if it was being used out of context, or within the context of the point the defense was trying to make."

Point- Counter point

- Uniqueness:
  - Point: The Defense argued that per a paper co-authored by Glenn for UCLA, the uniqueness premise can not be moved from the unproven skin being unique to an image produced from them being unique.
  - Counterpoint: The uniqueness premise is limited to the skin. Latent prints are re-productions of that unique skin. What is being deliberately obfuscated is that acknowledgement of the skin being unique does not make it impossible to make identifications from prints made by said unique skin.
    - As for research done on examiners ability to make such identifications, I would list Langenburg, Hickley, Everet, Wertheim

Point- Counter point cont.

- Standards:
  - Point: There are no standards for determining whether a latent is suitable or not.
  - Counterpoint: It is true we do not have set standards as being described by the defense and based on how it was being argued, there are reasons we don't:
    - For example
      - Having a set number of minutiae to be considered suitable
      - What determines sufficient clarity

Point- Counter point cont.

- Disagreement among experts:
  - Point: Per Glenn Langenburg's white box study, every examiner in the study differed in the number of points of comparison they found while applying ACE.
  - Counterpoint: Not having been part of the study, I surmised the lack of consistency had more to do with examiner's lack of comfort/experience with having to mark what they formerly acknowledged subconsciously. The more examiners would be exposed to having to mark detail, the more consistent it might be, however, by Glenn's own testimony, he had given pretty explicit directions, and still saw wide varieties in what examiners marked.
    - This led to the GYRO method of documenting characteristics.
    - I agree that more research is needed here

Point- Counter point cont.

- Unreliability in ACE
  - Point: “Esteemed” LPE have stated in their writings that selecting different numbers of points is indicative of unreliability. They cite NAS statement “each agency …should define “suitable” or “sufficient” in its SOP” as their justification for their point.
  - Counterpoint: This was yet another attempt to obfuscate what was said by stating if we all don’t use the same information in the same way in ACE, then it is unreliable. That is frankly false. I described comparison as analogous with doing a jig-saw in that where you start with the puzzle has no bearing on being able to complete it.

Point- Counter point cont.

- Training and Experience (T&E):
  - Point: Per UCLA article, “Forensic analysts when asked about the basis for their claims frequently refer to experience and training rather than provide any systematic data”
  - Counterpoint: What area of science does not rely on training and experience in the application of their work. All **applied** science relies on T&E

Point- Counter point cont.

- 100% certainty:
  - Point: If you cannot say that this print belongs to this person with 100% certainty you cannot rule out that it may belong to some other individual.
  - Counterpoint: I can only say that I am significantly confident with the information I have observed based on the theories of Uniqueness and Permanence these two impressions were made by the same source of skin. Although I can't say I'm 100% confident since I haven't compared every fingerprint in the world, I can't say that I am 100% certain that gravity will work tomorrow, but I am pretty confident it will. Both are based on assumptions of theories.

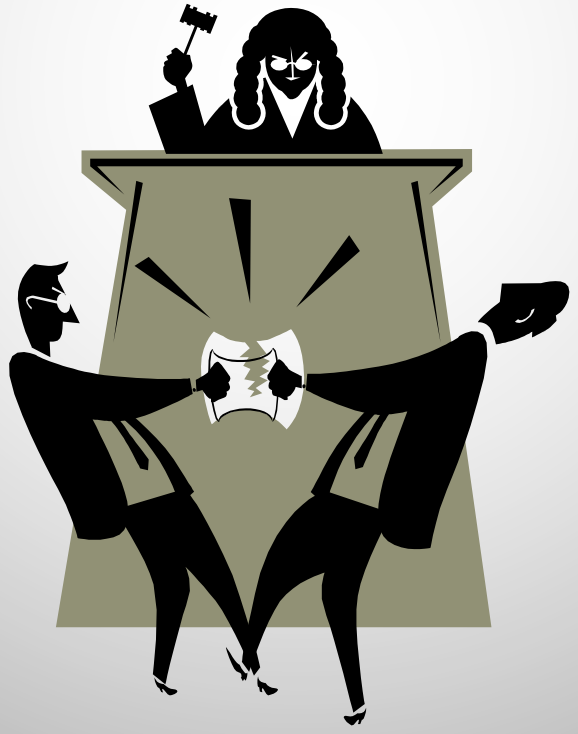
Point- Counter point cont.

- Use of probability models:
  - Point: Defense tried to purposely confuse and miss direct, stating that I was using probability models in my identification and that AFIS was one such model
  - Counterpoint- I repeatedly stated that I did not use probability models; however, such models did back up my claims to be able to identify, citing Shrihari and Neumann's studies.

Point- Counter point cont.

- SWGFAST Standard:
  - Point: Defense wanted me to explain why I did not apply the 2011 SWGFAST Standards in my initial examination of this case.
  - Counterpoint: I explained I worked the case in 2009 and it would be impossible to have applied standards that were not created for another two years.
  - An interesting point, the defense also went into the fact that my verifier did not have any documentation of the ACE process they used to arrive at their conclusion.

Arguments against the Defense's Motion for Frye



1. NAS Report is authoritative and represents the Relevant Scientific Community (RSC)

- The NAS report is strictly that, a report of recommendations. Although it was made up of many research scientists, the practicing examiners who make up the PARTICULAR SCIENTIFIC COMMUNITY IN WHICH IT BELONGS were few and only given 15 min to present at the NRC fact finding sessions

2. The RSC does not accept that finger print (FP) analysis is infallible or that there is a validated basis for making IDs to a particular Individual

- That is not entirely false or true. The PARTICULAR SCIENTIFIC COMMUNITY IN WHICH IT BELONGS acknowledges that errors do occur, but have to do with over/under assignment of value to minutiae characteristics by the examiner in the Comparison phase.
- Research be it black box or white box has shown that the rate of error for miss-identification is inversely proportionate to the number of minutiae being considered.
- Likelihood ratio research has shown that discriminating ability of minutiae can vary based on the location of the minutiae groups
- Per the NAS report "Nothing in the report suggests that a test or method that has not been completely scientifically validated is invalid and therefore the evidence for which that test is used is inadmissible. Lack of complete validation does not make a test or method invalid."

3. The RSC does not accept that the courts (Testing in the Adversarial System) validates FP IDs

- This is a true statement. I agree that a court can not validate the identification process. The ID process (ACE-V) is validated through testing, like error rate studies, likelihood ratio studies, etc.
- However, it bears mentioning that is has been in practice for over 100yrs and it has never been found that two individuals bear the same fingerprint.
  - Errors have been made, but it is always shown that the individuals had different fingerprints.
  - The use of database systems like AFIS and NGI have never produced two individuals with the same fingerprints when being used to search known and latent impressions.

4. Latent Print Examiners, along with the RSC, agree that FP identifications have not been subjected to scientific testing

- Likelihood ratio studies are moving towards application in actual case work, and were employed in the white box study. In that respect, FP identifications are moving towards population statistical studies as recognized by the IAI.

5. The RSC conclude that the error rate for FP analysis is unknown

- Error rate studies thus far have not incorporated actual case like scenarios.
  - The CTS studies look at error rates in a known testing environment
  - Black box studies look at comparisons with identifications that are not always indicative of case work, and do not allow all casework responses.
  - The white box study was purposely composed of highly difficult impressions, not indicative of the percentages of difficult impressions in case work.
- In all cases, the error rates from these studies were quite low

6. The RSC believes that friction ridge analysis lacks standards

- This is straight out of the NAS report.
- Much of it depends on how you define standards. (define standards as objective detail that can be observed by another, then)
  - FP Standards that do exist and are taught:
    - Pattern type/ridge flow
    - Minutiae type
    - Minutiae direction
    - Minutiae position in relation to the core.
    - Minutiae position in relation to other minutiae

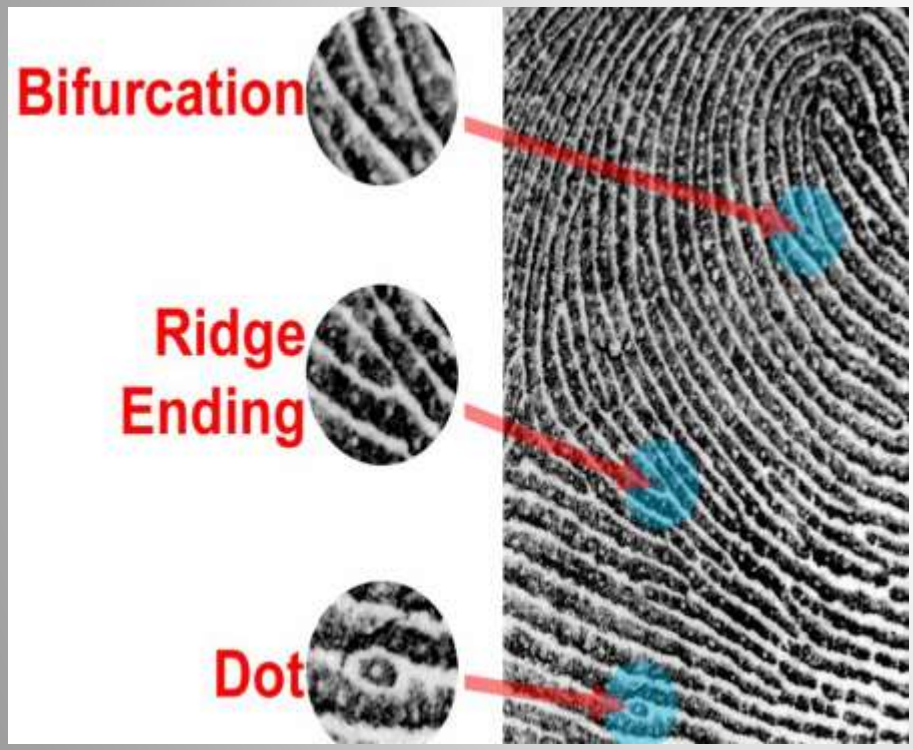
7. Because errors have happened (like the Brandon Mayfield case), judicial weight should not be granted to Latent Print Examiners

- Errors happen because human's are involved, and humans make errors in judgment. This is true in all applied science, and is minimized through a vigorous QA system.
- Discovery of errors is through proper application of the process. Additional research on weighting the visual information used in comparison is always beneficial, but not having it does not preclude fingerprint identification's use.
  - Per Frye and Donaldson: "GA does not mean universal acceptance of methodologies, the methodology need not be accepted by unanimity, by consensus, or even by a majority of experts."

Common misinterpreted terms monopolized by the defense and Dr. Haber

- Points
- Suitable
- Dissimilarity VS Discrepancies
- Preserved

Points



Points can be:

- Level 2 detail like Bifurcations, Ridge Endings and Dots
- Level three detail like pores, ridge shapes, ridge breadth, ridge contour
- Scars, disassociated ridges, open fields

The common definition is Level 2 detail only and refers to “Galton Points”. Named after Sir Francis Galton.
But in areas that require a minimum point standard, other detail maybe being considered as a point.

Suitability

- SWGFAST definition of Suitable:
  - **Suitable:** The determination that there is sufficiency in an impression to be of value for further analysis or comparison.
- ISP definition of Suitable for Comparison:
  - **Suitable for Comparison**: The latent print has or appears to have a sufficient amount of information and clear, distinguishable ridge detail for comparison which may result in an identification.
- Suitable for Identification:
  - Common interpretation: Sufficient quality detail exists within the impression that if given the mate (who also has sufficient quality of detail) a conclusion of identity could be rendered.

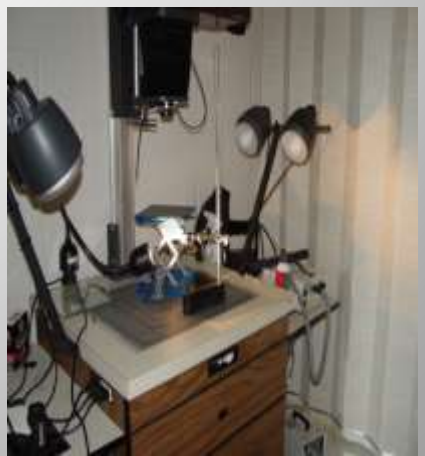
Dissimilarity VS Discrepancies

- SWGFAST definition of Dissimilarity:
  - **Dissimilarity:** A difference in appearance between two friction ridge impressions (compare with discrepancy).
- SWGFAST definition of Discrepancy
  - **Discrepancy:** The presence of friction ridge detail in one impression that does not exist in the corresponding area of another impression (compare with dissimilarity).

Preserved

- Definition: To protect from harm or danger
- Methods:
  - Lifts

  - Photography:
    - Cut Film (silver halide emulsions)
    - Digital



Judge Rhode's Ruling

- "My ruling is the State has met their burden required under our statute. And while I agree with almost everything the Defense has to say, I don't feel there's anything I can do about it at this point. So they will be allowed to present their evidence, their expert witness."
- When questioned if Judge Rhodes' decision was based on his interpretation of Rule 702, he replied, "Yes…we have a rule that controls, and I'm sworn to follow the rule"

Illinois Rules of Evidence
Rule 702: Testimony By Experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Where an expert witness testifies to an opinion based on a new or novel scientific methodology or principle, the proponent of the opinion has the burden of showing the methodology or scientific principle on which the opinion is based is sufficiently established ***to have gained general acceptance in the particular field in which it belongs****.*

Our Notes in a Post “Safford” Environment

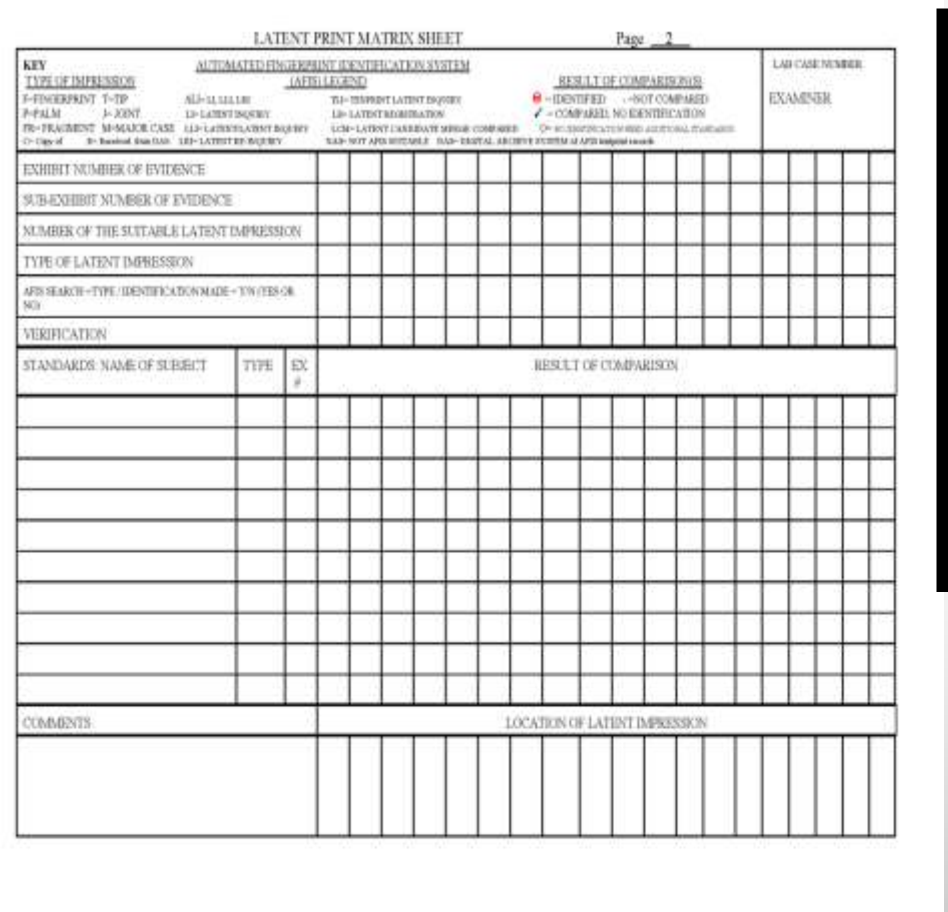
Meeting “foundation”

What happened in **People V Safford** The Latent Print Examiner Perspective

- The Appellate court sent the case to be re-tried citing the Latent Print Examiner did not sufficiently lay foundation for his opinion testimony.
  - "Our concern over the claimed error here is not a matter of documentation; our concern is whether admitting expert testimony without a showing of the requisite foundation so curtails the ability of the defendant to challenge the conclusion drawn by the expert that it leads to a suggestion of infallibility. Admitting Examiner's expert testimony, absent the evidentiary foundation, is not unlike admitting the results of a lab test without any testimony that the lab equipment used was reliable and trustworthy."
- Although it was not a matter of documentation as was stated, the only way to meet the requirement in testimony was to improve our documentation. This went hand in hand with new recommendations by the Scientific Working Group of Friction Ridge Analysis, Study and Technology (SWGFAST) draft document on documentation.

Pre “Safford” Notes

A matrix notating an identification



LATENT PRINT MATRIX SHEET Page 2

KEY

TYPE OF IMPRESSION

F=FINGERPRINT T=TIP

P=PALM J=JOINT

FR=FRAGMENT M=MAJOR CASE

AUTOMATED FINGERPRINT IDENTIFICATION SYSTEM (AFIS) LEGEND

TLI= TENPRINT LATENT INQUIRY

LR= LATENT REGISTRATION

LI= LATENT INQUIRY

RESULT OF COMPARISON(S)

= IDENTIFIED = NOT COMPARED

= COMPARED, NO IDENTIFICATION

LAB CASE NUMBER

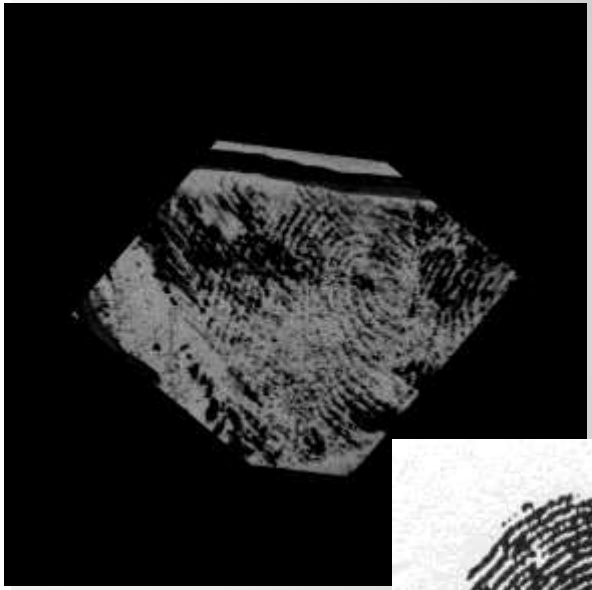
EXAMINER

EXHIBIT NUMBER OF EVIDENCE	
SUB-EXHIBIT NUMBER OF EVIDENCE	
NUMBER OF THE SUITABLE LATENT IMPRESSION	
TYPE OF LATENT IMPRESSION	
AFIS SEARCH = TYPE / IDENTIFICATION MADE = Y/N (YES OR NO)	
VERIFICATION	

STANDARDS: NAME OF SUBJECT	TYPE	EX #	RESULT OF COMPARISON

COMMENTS	LOCATION OF LATENT IMPRESSION

Negatives to allow another examiner to reach a conclusion



Post “Safford” Notes

EXAMINER: Senese, Francis P.

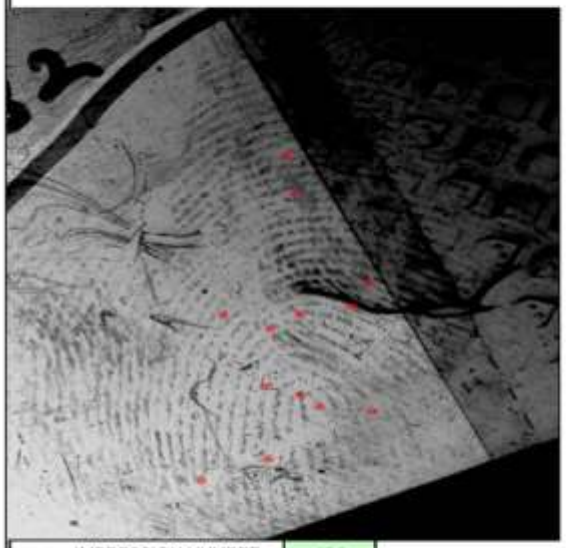
INITIALS:

ILLINOIS STATE POLICE
DIVISION OF FORENSIC SERVICES
FORENSIC SCIENCE COMMAND
LATENT PRINT COMPARISON

LABORATORY CASE NUMBER

ORIGINAL/SUPPLEMENTAL: Original

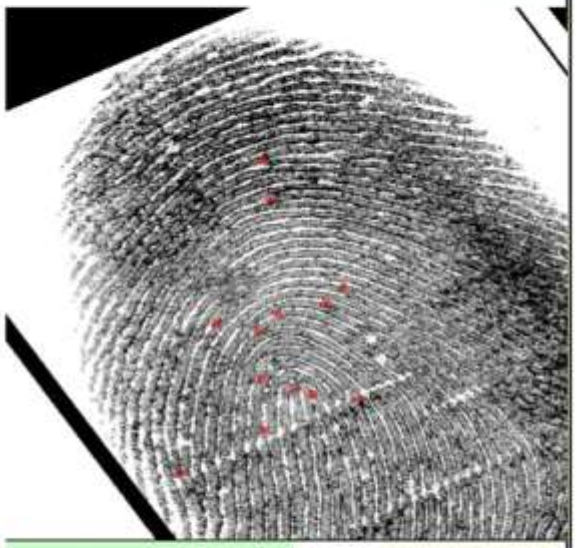
PAGE 6



☑ First Level Agreement (check yes)

☑ Second Level Agreement (check yes)

☑ Third Level Agreement (check yes)



IMPRESSION NUMBER: 4B2

SUBJECT NAME:

FINGER / PALM: #6 Left Thumb - Rolled

SOURCE: Submitted by Agency

NUMBER: Exhibit 2

☐ AFIS IDENTIFICATION (check if yes)

COMMENT:

First level detail: ridge flow is looping from left to right / Second level detail: denoted by red dots / Third level detail within ridge contour as well as flexion crease // Detail annotated in this image may not be all encompassing.

CONCLUSION: IDENTIFICATION

People v Robert Morris

At the trial

- Judge Rhodes who allowed the original Frye hearing was removed from his courtroom and assigned as a “fill in Judge”.
- The new judge, Judge Anna Demarcopoulos received multiple attempts from the defense team of Jenner & Block LLP to block any fingerprint testimony including a motion in limine citing the lost Frye hearing as reason.
- After the case was assigned to Judge Demarcopolus, the defense team went from requesting a bench trial to a jury trial.
- After they lost their motion in limine as well as all other attempts to bar fingerprint testimony, and the chief counsel was taken off the case, they redirected their efforts and tried to establish a gloved assailant was the actual perpetrator and Mr. Morris’ fingerprints were on the vehicle by mere chance contact.
- The jury deliberated one day and found the suspect guilty.
- Morris allegedly had a failed attempt at suicide after the ruling.

Thank you for your time

QUESTIONS?

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