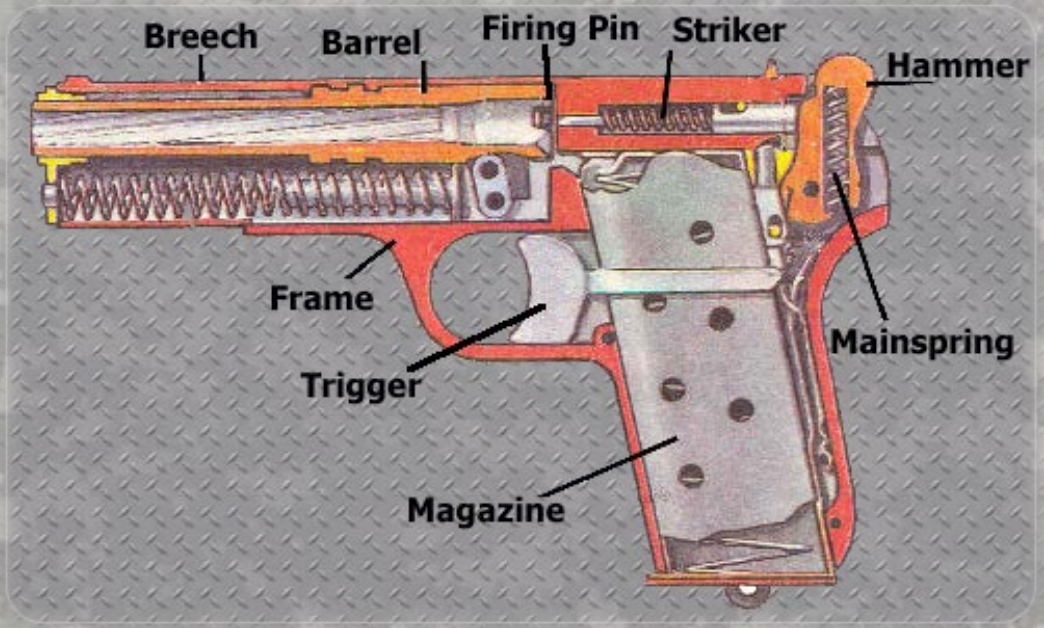
GUNS: Mystery Solved

Presented by Richard Vickers

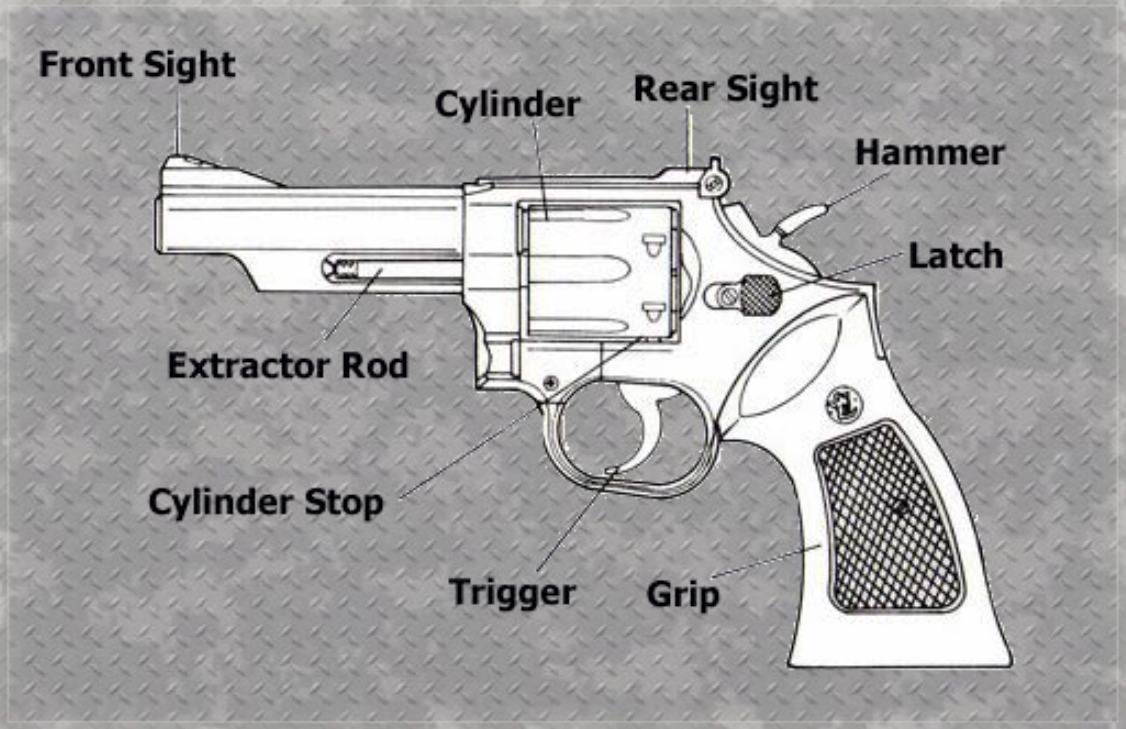
Office of the Federal Public Defender
for the Southern District of Ohio

Semi-Automatics



Revolvers

CHARTER 2000
SHELTON, CONN


Front Sight
Cylinder
Rear Sight
Hammer
Latch
Extractor Rod
Cylinder Stop
Trigger
Grip

SPEER
.38 SPL+P

Shotgun

Assault Rifle

Breech Face Styles

R-P cartridge from a Glock

Speer cartridge from a Glock

Wolf cartridge from a Glock

W-W cartridge from a Glock

W-W Subsonic from a Glock

R-P cartridge from a S & W

Speer cartridge from a S & W

Wolf cartridge from a S & W

W-W cartridge from a S & W

W-W subsonic from a S & W

R-P cartridge from a Bryco

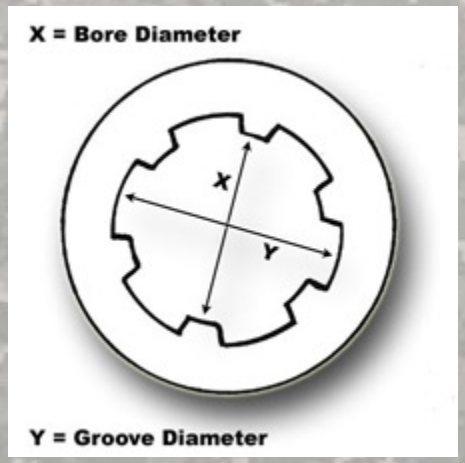
Speer Cartridge from a Bryco

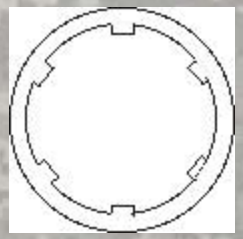
Wolf cartridge from a Bryco

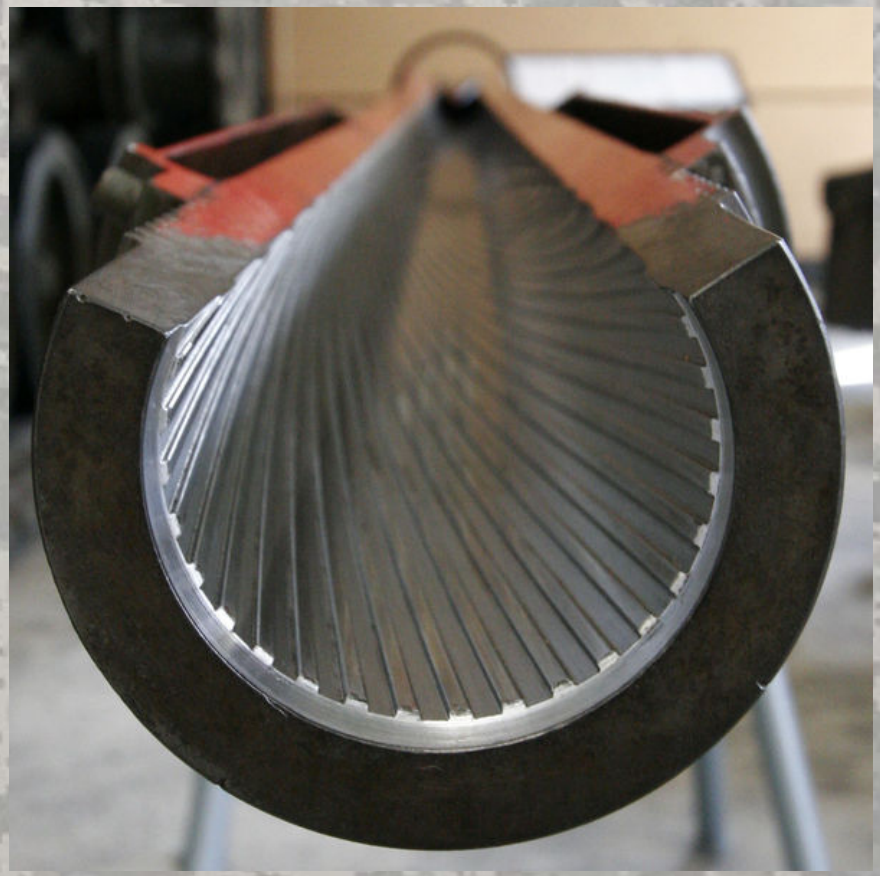
Figure 3-4. Breech Face Styles

Bullet Impressions

(Lands and Grooves)







Touch DNA on Firearms

- **Touch DNA** is a forensic method for analyzing **DNA** left at the scene of a crime. It is called "**touch DNA**" because it only requires very small samples, for example from the skin cells left on an object after it has been touched or casually handled.
- Firearms are objects that have several surfaces that are potentially good places for sloughed off skin cells-containing sweat and body oil to accumulate.
- The grips and hammer are usually textured which makes them difficult to examine for latent prints but actually aid in the accumulation of DNA.

Touch DNA on Firearms

Touch DNA on Firearms

- The slide grip area of a semi-automatic pistol is typically grooved, again a good place for DNA to accumulate.
- The trigger itself may be too small an area to retrieve a useable latent print but may contain sufficient DNA for analysis.
- Not all people who handle an object will leave a sufficient quantity of DNA behind for analysis.
- success rate for analysis of handled objects varies greatly and is affected by many known and unknown variables.
- Second, anyone who has touched the object is a potential DNA donor to the object.

Touch DNA on Firearms

- DNA analysis cannot determine the length of time the biological material has been on the item nor definitively determine the order in which multiple individuals may have handled an object.
- The DNA results cannot determine if the DNA was deposited before, after, or during the commission of a crime.
- Further complications arise if individuals in the chain of custody have handled the gun without gloves.
- In the end, if an individual's DNA is found on an object, it only means that the individual came in contact with the object at some point in time.

Touch DNA on Firearms

- It is unwise to put a firearm containing potential DNA evidence in plastic.
- The moisture that is retained in the packaging promotes the growth of bacteria and mold that can degrade the DNA and render it unusable.
- Paper envelopes, bags and boxes are the preferred packaging because they "breathe" and allow moisture to escape. Render guns safe first and then secure them in a sealed gun box with plastic zip ties (otherwise, the gun could puncture through the box).

Touch DNA on Firearms

- Remove magazines and secure them in the gun box with zip ties.
- Contamination can occur if a police officer touches the evidence with un-gloved or gloved hands
- Unlike fingerprints that are not transferable from a gloved hand to an object, if an officer touches something with a gloved hand and then touches the evidence, the DNA from whatever was touched with the glove can be transferred to the evidence, thus contaminating it.

Touch DNA on Firearms

- In addition, if two pieces of evidence come into contact with one another, biological fluids or other DNA-bearing cells from one piece of evidence can transfer onto the other item of evidence leading to cross-contamination.

- In general, this means the firearm should be processed for DNA evidence before anything else is done.

- However, when processing the firearm for latent fingerprints prints first, the use of disposable brushes and powders is recommended to minimize the possibility of contamination that could render the item useless for court purposes.

Touch DNA on Firearms

- DNA and latent print evidence must always be collected prior to firearms examination (ie test firing), as the extensive handling of the weapon required by firearms examiners will destroy any usable fingerprints and DNA evidence.
- *Miller v. State*, 107 So.3d 498 (Fla. 2d 2013),
- Miller was convicted of possession of a firearm by a convicted felon.
- *April 24, 2008* — Miller was a convicted felon
- *March 1, 2009* — Miller moved into a two bedroom apartment with his sister;

Touch DNA on Firearms

- *May 12, 2009* — police conducted a search of Miller's apartment, and discovered a firearm in between his sister's mattress in her bedroom (not Miller's bedroom).
- the police sent the firearm off to an expensive lab for DNA testing.
- DNA testing revealed Miller's DNA on the hand grip of the gun
- At trial, the DNA lab director testified that Miller was *probably* the last person to have touched the firearm.
- "Probably" is the key term here. But, timing is everything. Could the prosecution prove *"when"* Miller touched the handgun?

Touch DNA on Firearms

- The director of the DNA lab noted that "there was no way to determine from the existence of the DNA itself when the DNA was deposited or how long it had been on the gun." *Id.* at 499.
- The State claimed that, because Miller and his sister moved into the apartment on March 1, 2009, the jury could infer that he possessed the gun after April 24, 2008.
- Fortunately, the appeals court did not agree, finding that:
- *"[o]n the issue of constructive possession, the State had to prove beyond a reasonable doubt that Miller knew of the presence of the gun and had the ability to exercise control over it…*

Touch DNA on Firearms

- *because the apartment was jointly occupied and the gun was not in plain view, Miller's knowledge of and control over the gun could not be inferred…*
- *but instead had to be established by independent proof…Here, the State failed to meet this burden.*
- *he gun was found hidden between a mattress and box spring in the bedroom occupied by Miller's sister…*
- *While the State presented DNA evidence that established that Miller had touched the gun at some undetermined point in the past,*
- *state presented no evidence whatsoever to establish that Miller knew that the gun was between the mattress and box spring in his sister's room on May 12, 2009, or that he had the ability to exercise any control over the gun at that time."* Id at 500-501. [Internal citations omitted]
- *Conviction reversed*

Comparative Bullet Lead Analysis

- **Comparative bullet-lead analysis** (CBLA) also known as **Compositional bullet-lead analysis**) is a now discredited and abandoned forensic technique which used chemistry to link crime scene bullets to ones possessed by suspects on the theory that each batch of lead had a unique elemental makeup.
- **The FBI was the primary proponent of CBLA**
- FBI agents were often called as expert witnesses to testify in criminal cases
- In 2004 U.S. National Academy of Science's Board conducted study on CBLA

Comparative Bullet Lead Analysis

- (The National Academy of Sciences is the official research body that advises the federal government on scientific and technical matters. Its charter to do so was initially granted by Congress in 1863. The NRC was established in 1916 as the principal operating agency of the National Academy of Science and the National Academy of Engineering. There is no more independent or prestigious scientific organization in the United States.)
- Board concluded CBLA “could cause confusion and misinterpretation by prosecutors or when explained to jury.”
- In 2004 FBI ceased offering CBLA analysis to law enforcement entities

Comparative Bullet Lead Analysis

- In 2008 Jimmy Ayers released from Florida prison-murder conviction overturned based primarily on CBLA-release attributed to U.S. N.A.S. report
- But see, Maryland v. James Kulbicki, 577U.S._(2015)
- Kulbicki tried for Murder in 1995
- Lead bullet fragment found in Kulbicki's truck and in brain of murder victim
- FBI agent testifies as to CBLA comparison-says there was a match between fragments and bullet in Kulbicki's gun
- In 2006 post-conviction filing, Kulbicki raises claim of IAC by defense counsel for failing to question CBLA at trial
- Court of appeals holds CBLA evidence not generally accepted by scientific community-not admissible

Comparative Bullet Lead Analysis

- Court of appeals: “any good attorney should have spotted methodological flaw” in CBLA evidence
- Find defense counsel’s conduct deficient and prejudicial
- OSCT reverses
- In 1995 CBLA valid
- Defense counsel not constitutionally required to predict demise of CBLA
- “Counsel did not perform deficiently by dedicating their time and focus to elements of the defense that did not involve poking methodological holes in a then uncontroverted mode of ballistics analysis.”

Firearm Toolmark Identifiers

- **A firearm examiner is someone who through the use of a comparison microscope and various other methods and techniques, determines whether or not a bullet, discharged cartridge casing or discharged shot shell was fired in a particular firearm.**

- A comparison microscope is two microscopes joined by an optical bridge that allows for an examiner to compare firearms evidence (bullets, casings) simultaneously under magnification. The field of view is separated by a hairline which allows an examiner to merge and compare unique imperfections present in the evidence in question.

- Firearms examiners frequently testify that based on their comparison of a “suspect” firearm with fired bullets or cartridge casings recovered from the crime scene, that the “suspect” firearm and the bullets/casings are a match to the “exclusion of all other firearms in the world.”

- Within the parlance of firearms examiners, this is known as a forensic “leap of faith.”

- This “leap of faith” involved in excluding all other all possible sources in the world was made in specific reference to firearms identification as early as 1991.

Two extrapolations:

1. First, that the marks on the suspect bullets and cartridge casings are sufficiently consistent with true matches to have come from the same firearm.

2. Second, that the quality and similarity of the matching marks on the suspect bullets and cartridge casings are dissimilar to marks produced by different firearms.

Both extrapolations-especially the second-require considerable experience in comparing exhibits and training in recognizing significant features. (i.e. has the firearms examiner sufficient training, skill and expertise to reach the ultimate conclusion)

Class Characteristics

- The **class characteristics** of firearms that relate to the bullets fired from them includes the **caliber** of the firearm and the **rifling** pattern contained in the barrel of the firearm, including the lands and grooves. Spiral grooves are cut into a barrel of firearm imparting spin on a bullet to give it stability in flight, so that it would not tumble end over end. The cut or lower areas of the barrel are called “grooves” and the raised or higher areas are called “lands.” The spiral cutting is referred to as rifling.

- Cartridges and Cartridge cases on the other hand are examined for class similarities in what are called ***breech marks***, ***firing pin impressions***, ***extractor marks***, ***ejector marks*** and others.

- Bullets collected for comparison to a specific firearm are examined first to see if they are of a **caliber** that could have been fired from the submitted firearm. They are then examined to determine if the pattern of **rifling impressions** found on the bullet match the pattern of **rifling** contained in the barrel of the questioned firearm. If these class characteristics agree the next step is to try to make a positive match between the **individual characteristics** that may have transferred to the bullet from the barrel.

- Individual characteristics are characteristics that are exclusive to one particular firearm. These characteristics are imparted on the firearm during its manufacturing process, during its use, abuse and general wear. Unique striae and imperfections constitute the individual characteristics which make no two firearms exactly alike.

R-P cartridge from a Glock

Speer cartridge from a Glock

Wolf cartridge from a Glock

W-W cartridge from a Glock

W-W Subsonic from a Glock

R-P cartridge from a S & W

Speer cartridge from a S & W

Wolf cartridge from a S & W

W-W cartridge from a S & W

W-W subsonic from a S & W

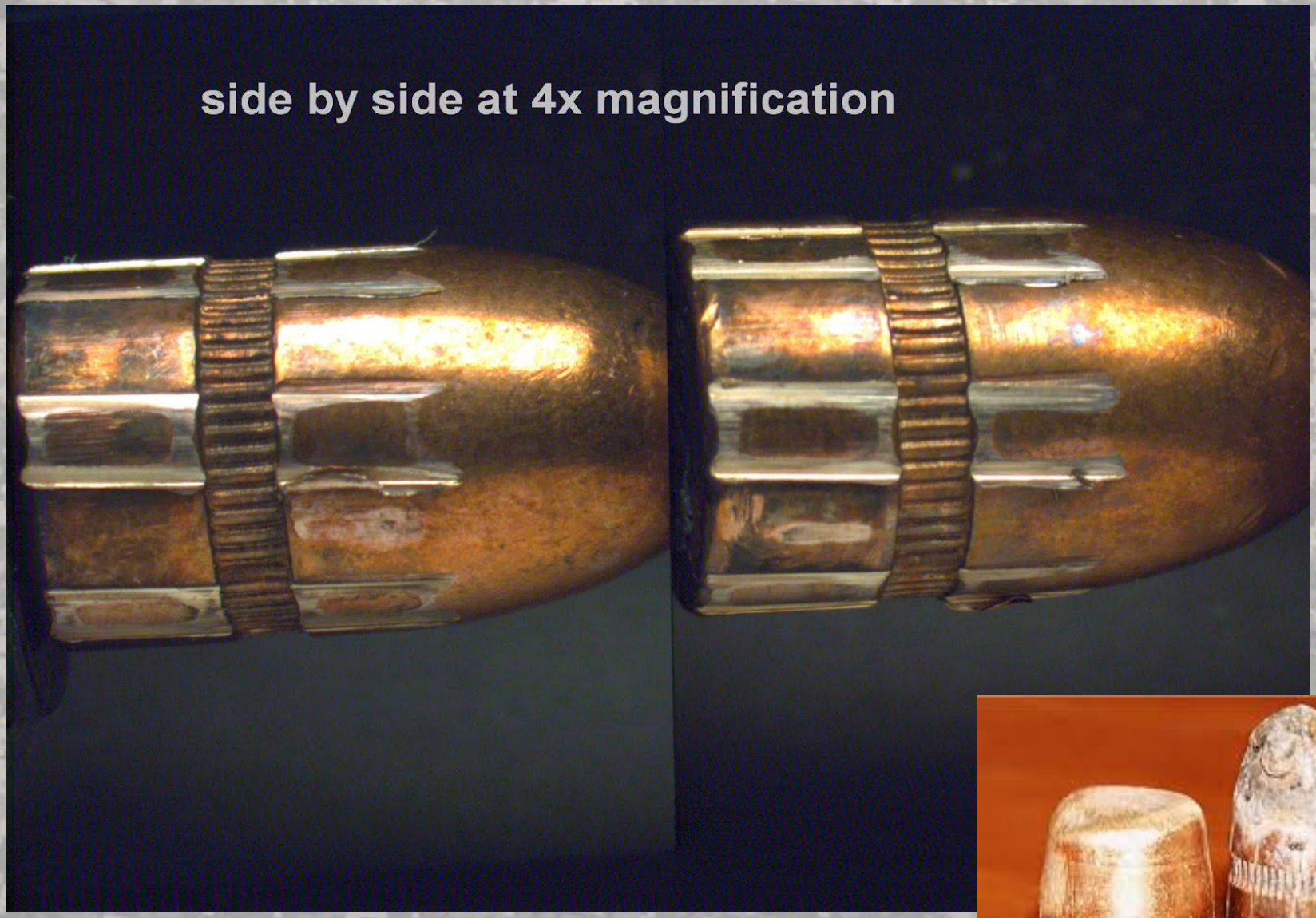
R-P cartridge from a Bryco

Speer Cartridge from a Bryco

Wolf cartridge from a Bryco

Figure 3-4. Breech Face Styles

side by side at 4x magnification



RANGE OF CONCLUSIONS WHEN COMPARING TOOLMARKS

- IDENTIFICATION: Agreement of a combination of individual characteristics and all discernible class characteristics.

- INCONCLUSIVE: Some agreement of individual characteristics and all discernible class characteristics, **but insufficient for an identification**.

- ELIMINATION: Significant disagreement of discernible class characteristics and/or individual characteristics.

- UNSUITABLE: Unsuitable for comparison.

See: Adina Schwartz, A Systemic Challenge to the Reliability and Admissibility of Firearms and Toolmark Identification, 6 Colum. Sci. & Tech. L. Rev. 2 (2005)

Confronting the Firearms Examiner

A firearm examiner is someone who through the use of a comparison microscope and various other methods and techniques, determines whether or not a bullet, discharged cartridge casing or discharged shot shell was fired in a particular firearm.

PRE-TRIAL

- Identify the prosecution's firearms examiner (aka "forensic scientist")
  - Is the examiner from police department's crime lab, coroner's office or Ohio Bureau Investigation and Identification?
  - Is the crime lab certified?
- File an ORC Chapter 149 public records request for the personnel file of the examiner
  - determine if the examiner has been disciplined
  - will also contain credentialing information (education; training; certifications; prior places of employment)

PRE-TRIAL cont'

- Use web resources to gather background
  - Google for media coverage of examiner
  - West Law for prior cases where examiner testified

- Make a **specific** discovery request for the examiner's bench notes
  - never provided with the final examiner's report.
  - examiner's final report states "inconclusive" interpreted as "can't rule out"
  - Bench notes state: "insufficient striations for comparison"-thus no opinion can be offered!

PRE-TRIAL cont'

- If prosecutor raises "work product" exception for bench notes
  - a bogus ploy!
  - make your record as to why discoverable and necessary
  - ask for order preserving the bench notes for post conviction/habeas review
  - see Raglin case

TRIAL

- ***NEVER*** concede that the firearms examiner is an expert
- ***ALWAYS*** subject the examiner to lengthy, searching voir dire
  - Review training
  - when and by whom
  - whether has had ongoing training /continuing education (one week at Quantico, hanging out with FBI agents?)
- If trained by supervisor in crime lab
  - what education, training and experience qualifications by the trainer

TRIAL cont.

- Ask about certifications
  - where, when and by whom
- Ask if the examiner is a qualified gunsmith
- Ask if the examiner is a qualified armorer for the specific type of firearm at issue in the case (i.e. Glock; Smith & Wesson; Heckler Koch, etc.)
- Ask if the examiner has ever made parts for a firearm
- If negative publicity about the examiner or crime lab, ask about that and the revelation of quality control problems
- Use the report provided in discovery
  - are the findings inaccurate?

TRIAL cont.

- Google the firearm
  - you can find all the relevant specifications
    - For example inflated trigger pull (see State v. Quisi Bryan)
- Hammer away!
  - 99% of most firearms examiners' in court experience they have never been challenged.
  - Often will say AFTE member as credential
  - AFTE=Association of Firearms and Toolmarks Examiners

TRIAL cont.

- AFTE=Trade Association-Not a Scientific Organization
- AFTE Members/Non-Members use AFTE Theory of Identification as the guideline for their examination process
- AFTE Theory of Identification-Not a Protocol; Not a Standardized Procedure; Not a Proper Scientific Theory
- It is a subjective guideline promulgated by a Trade Organization-Not a Scientific Body

- See: Tobin and Blau, Hypothesis Testing of the Critical Underlying Premiseof Discernible Uniqueness in Firearms-Toolmarks-Forensic Practice, 53 Jurimetrics J. 121-142 (2013)

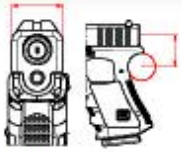
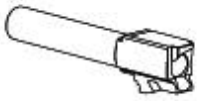
GLOCK 19

COMPACT

The GLOCK 19 is ideal for a more versatile role because of its reduced dimensions when compared to the standard sized option. Chambered in 9x19, the G19 has found worldwide acclaim with both private and public security agencies. In addition to being used as a conventional service pistol, it is ideal for concealed carry or as a backup weapon.

Compare

360° ROTATE PLAY GLOCK INNOVATION

CALIBER / SYSTEM	DIMENSIONS	WEIGHTS	TRIGGER PULL / TRAVEL	BARREL RIFLING / LENGTH OF TWIST	MAGAZINE CAPACITY
					
9x19 / Safe Action	LENGTH: 187 mm / 7.36 in. WIDTH: 30.00 mm / 1.18 in. LENGTH BETWEEN SIGHTS: 153 mm / 6.02 in. HEIGHT: 127 mm / 4.99 in. BARREL HEIGHT: 32 mm / 1.26 in. BARREL LENGTH: 102 mm / 4.01 in.	UNLOADED: 670 g / 23.65 oz. LOADED: 855 g / 30.18 oz.	TRIGGER PULL: ~2.5 kg / ~5.5 lbs. TRIGGER TRAVEL: ~12.5 mm / 0.49 in.	BARREL RIFLING: right hand, hexagonal LENGTH OF TWIST: 250 mm / 9.84 in.	STANDARD: 15 OPTIONAL: 10/17/33

ASK FOR YOUR OWN EXPERT!

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

- 2 aggravated murders.
- Police recover .38 caliber revolver from Hinton's home and fired bullets from crime scene.
- Fired bullets from crime scene-only physical evidence-at scene or in Hinton's home-Alabama Sup. Ct.: "the only evidence linking Hinton to the two murders were forensic comparisons of the bullets recovered from those crime scenes to the Hinton revolver."
- State crime lab: test bullets fired from .38 and bullets at crime scene-had all been fired from the same gun.
- Trial counsel requests funds for firearms expert-Granted $500.00 on each Murder –told to ask for more if needed
- Hired expert-but later acknowledged "did not have expertise necessary"and expert's testimony "not effective."

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

During cross-examination of the defense "expert" (Payne) the following was elicited:

1. He had testified in only two cases regarding firearms and only one case regarding a Handgun.

2. He had difficulty operating the binocular microscope-essential bullet comparison-at the sate forensic lab and had to ask for help from the crime l ab's forensic examiners

3. Payne admitted he had "vision problems" and that he had vision in only one eye.

4. The prosecutor attacked Payne's credentials; Payne had no training in firearms and tool mark identification; had only training in military weapons; had graduated with a degree in civil engineering 50 years before the trial.

5. The prosecutor pointed out that the state's "expert" "had years of training in firearms and toolmark identification.

Hinton convicted and sentenced to death.

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

In post-conviction proceedings counsel raised an IAC claim that trial counsel was "'ineffective to not seek additional funds when it became obvious that the individual willing to examine the evidence in the case for the $1,000 allotted by the court was incompetent and unqualified. Indeed, this failure to seek additional, sufficient funds is rendered all the more inexplicable by the trial court's express invitation to counsel to seek more funds if such funds were necessary.'"

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

- Hinton produced three new experts on toolmark evidence. One of the three, a forensic consultant named John Dillon, had worked on toolmark identification at the Federal Bureau of Investigation's forensics laboratory and, from 1988 until he retired in 1994, had served as chief of the firearms and toolmark unit at the FBI's headquarters.
- The other two post-conviction experts had worked for many years as firearms and toolmark examiners at the Dallas County Crime Laboratory and had each testified as toolmark experts in several hundred cases.
- All three experts examined the physical evidence and testified that they could not conclude that any of the six bullets had been fired from the Hinton revolver.

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

- State's experts refused to cooperate.
- State offered no rebuttal
- Relief denied in state court and in federal district and circuit courts.
- SCOTUS: On certiorari grants relief finding deficient performance by trial counsel and a remand for a determination of prejudice under Strickland.

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

- Hinton's attorney knew that he needed more funding to present an effective defense, yet he failed to make even the cursory investigation of the state statute providing for defense funding for indigent defendants that would have revealed to him that he could receive reimbursement not just for $1,000 but for "any expenses reasonably incurred."

- An attorney's ignorance of a point of law that is fundamental to his case combined with his failure to perform basic research on that point is a quintessential example of unreasonable performance under *Strickland.*
- This threat is minimized when the defense retains a competent expert to counter the testimony of the prosecution's expert witnesses; it is maximized when the defense instead fails to understand the resources available to it by law.

Hinton v. Alabama, 134 S. Ct. 1081 (2014)

- Regarding prejudice, the Court noted:" Prosecution experts, of course, can sometimes make mistakes. Indeed, we have recognized the threat to fair criminal trials posed by the potential for incompetent or fraudulent prosecution forensics experts, noting that "[s]erious deficiencies have been found in the forensic evidence used in criminal trials. . . . **One study of cases in which exonerating evidence resulted in the overturning of criminal convictions concluded that invalid forensic testimony contributed to the convictions in 60% of the cases."** *Melendez-Diaz* v. *Massachusetts*, 557 U. S. 305, 319 (2009) (citing Garrett & Neufeld, Invalid Forensic Science Testimony and Wrongful Convictions, 95 Va. L. Rev. 1, 14 14

- Remanded.

- Defense counsel must investigate, secure available funding and present experts. Rely on the decision in Hinton.

CRIME LAB PROBLEMS

"The quality of forensic practice in most disciplines varies greatly because of the absence of adequate training and continuing education, rigorous mandatory certification and accreditation programs, adherence to robust performance standards and effective oversight."

-The National Academy of Sciences 2009 study of forensic science.

SCANDALS

"We can't just keep stumbling from one scandal to the next." "It's sort of like Whack-a-Mole." Myrna Raeder, a professor at Southwestern Law School in Los Angeles and an expert on evidence and criminal procedure commenting on crime lab scandals nationwide.

- In January 2014, the **New York City** medical examiner's office confirmed that it was reviewing more than 800 rape cases from a 10-year period during which DNA evidence may have been mishandled by a lab technician who resigned in 2011 after an internal review uncovered problems with her work.

SCANDALS

- In December 2013, a former chemist at a now-shuttered state drug lab in **Boston** was indicted on 27 counts of obstructing justice, tampering with evidence, perjury and other charges in connection with her handling of some of the tens of thousands of drug cases she worked on during her nine years there. **"Little Annie" Dookhan is accused of faking test results, intentionally contaminating and padding suspected drug samples, forging co-workers' signatures on lab reports, and falsely claiming to have a master's degree in chemistry.**

- In September, 2013 A few months before that, the **St. Paul, Minn**., police department's crime lab suspended its drug analysis and fingerprint examination operations after two assistant public defenders raised serious concerns about the reliability of its testing practices. A subsequent review by two independent consultants identified major flaws in nearly every aspect of the lab's operation, including dirty equipment, a lack of standard operating procedures, faulty testing techniques, illegible reports, and a woeful ignorance of basic scientific principles.

- In 2001 **Joyce Gilchrist**, who spent more than a decade as a chemist in the **Oklahoma City Police Department's crime lab**, was found to be a leading forensic perpetrator. Gilchrist, who testified as a prosecution expert in 23 death penalty cases, including those of 12 inmates who were later executed, was fired in 2001 for doing sloppy work and giving false or misleading testimony. **Nicknamed "Black Magic"** by detectives for her seeming ability to get lab results no other chemist could, Gilchrist was never prosecuted for her alleged misdeeds, though she reportedly was named a defendant in at least one lawsuit against the city by a convicted rapist who was later exonerated.

SCANDALS

- August 8, 2014-**Columbus Crime Lab** error might affect 38 cases
- 2013 **North Carolina State Bureau of Investigation's crime lab** investigated:
  - "Analysts there had systematically withheld or distorted evidence in more than 230 cases over a 16 year period, **including 3 that resulted in executions."**
- 2013 "Even the much vaunted FBI crime lab, long considered the nation's premier forensic facility, has been rocked by scandal: first in its explosives unit, then its DNA unit, then its comparative bullet-lead analysis unit, and most recently in its hair microscopy unit."

SCANDALS

- There is wide variability in forensic science disciplines, not only in techniques and methodologies but also in reliability, error rates, reporting, research, general acceptability and published material.

- There is a dearth of peer-reviewed, published studies establishing the scientific bases and reliability of many forensic disciplines.

- Many labs are underfunded and understaffed, which contributes to case backlogs and likely makes it more difficult for lab workers to do as much as they could to inform investigations, provide strong evidence for prosecutions and avoid errors.

- Most labs operate under the auspices of law enforcement agencies, making them susceptible to pressures—overt and otherwise—to produce the kinds of results that police and prosecutors are looking for.

Accreditation

- Rigorous and mandatory accreditation and certification programs are lacking, as are strong standards and protocols for analyzing and reporting on forensic evidence.

- **Only a few states require crime labs to be accredited, though in 2005 more than three-quarters of all such labs were voluntarily accredited by private accrediting agencies —the vast majority of them by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board, aka ASCLD/LAB.**

- ASCLD/LAB has a website listing accredited crime labs, the disciplines in which they are accredited and the date in which accreditation will expire. **Interestingly no labs currently have their accreditations suspended or revoked**. www.**ascld-lab**.org

Accreditation

- Marvin Schechter, a member of the committee that produced the NAS report, is one of ASCLD/LAB's biggest critics. Schechter, also a member of the New York State Commission on Forensic Science, wrote a lengthy memo to his fellow commissioners in 2011 recommending that they look for a new accreditor. **He characterized ASCLD/LAB as an organization more interested in protecting its members' images than in promoting accountability.**

- 2013 Cincinnati Enquirer article: "Millions needed to upgrade **Hamilton County Crime Lab**" "The lab is so understaffed that some cases are never investigated." "The crime lab could lose its accreditation." "The best thing the Hamilton County can do is get a new crime lab which they urgently need." Attorney General Mike Dewine.

- **2013 According to ASCLD/LAB website the Hamilton County Crime Lab is currently accredited until November 2015.**

What to do?

- **CHECK THEM OUT!**
  - **IS THE LAB CURRENTLY ACCREDITED AND BY WHOM?**
  - **WHAT DISCIPLINES ARE INCLUDED IN THE ACCREDITATION?**
  - **IS THE LAB DOING DETAILED BACKGROUND CHECKS ON PROSPECTIVE EMPLOYEES?**
  - **WHAT ARE THE MONITORING PRACTICES WITHIN THE LAB TO DETECT QUALITY CONTROL ISSUES?**
  - **ARE THE SAME LAB EMPLOYEES CONTINUALLY TESTIFYING IN NUMEROUS CASES?**
  - **HAVE THE LABS BEEN THE SUBJECT CRITICISM/INVESTIGATION AS TO POOR PRACTICES?**

American Society of Crime Laboratory Directors / Laboratory Accreditation Board

ASCLD/LAB-*International* Program

SCOPE of ACCREDITATION

Corresponds to Certificate Number **ALI-157-T**

Name and Address of Accredited Laboratory

Hamilton County Coroner's Office
Crime Laboratory
3159 Eden Avenue
Cincinnati, Ohio 45219

Laboratory Contact Information

Dr. Lakshmi Kode Sammarco, Director
Phone: 513-946-8717
Fax: 513-946-8772
E-Mail: Lakshmi.sammarco@hamilton-co.org

The management and technical operations of this laboratory were assessed and found to conform with **ISO/IEC 17025:2005**, the **ASCLD/LAB-*International* Supplemental Requirements for Testing Laboratories (2011)** and all other requirements of the ASCLD/LAB-*International* program. The laboratory was found to be competent and was accredited in the following area (s):

Field of Accreditation

Forensic Science Testing

Discipline (s)

1.0 Controlled Substances
2.0 Toxicology
3.0 Biology
4.0 Trace Evidence
5.0 Firearms and Toolmarks
6.0 Latent Prints
7.0 Questioned Documents
10.0 Other

Categories of Testing:

1.1 General Controlled Substance Analysis
2.1 General Toxicology
2.2 Blood/Urine Alcohol
2.3 Blood/Urine Drug
3.1 DNA—Nuclear
3.3 Serology (Body Fluid Identification)
4.1 Paint
4.3 Fiber and Textiles
4.4 Gunshot Residue
4.6 Glass
4.7 Hair
4.8 Explosives
4.10 Fire Debris
4.15 General Physical and Chemical Analysis
5.1 Firearms
5.2 Toolmarks
6.1 Latent Print Processing
7.1 General Document Examination
10.1 Impression Evidence (footwear/tires)

Note 1: In this laboratory, testing category 10.1 is considered a part of the Trace Evidence discipline.

Note 2: Based on surveillance visits and other surveillance activities the scope document was updated, on July 23, 2014, to reflect conformance with the ASCLD/LAB-*International* Supplemental Requirements for Testing Laboratories (2011).

Customers Served: The Hamilton County Coroner's Office – Crime Laboratory is a local government laboratory and provides services and assistance to law enforcement agencies in Hamilton County, Ohio.

Accreditation Dates

Date Granted: November 16, 2010
Date Expires: November 15, 2015
Date Last Updated: July 23, 2014

Troy Hamlin
Accreditation Program Manager-Testing
ASCLD/LAB

CASE STUDY- FIREARMS/BALLISTICS ISSUES

Questions for Resolution:

1. Was the Bryco/Jennings .380 caliber semiautomatic pistol admitted into evidence against the defendant the same weapon that was used to shoot ?
2. Why was the state's firearm examiner unable to conclusively match a cartridge case recovered from the crime scene with test fired cartridge cases from the Bryco/Jennings .380 caliber semiautomatic pistol admitted into evidence?

CASE STUDY- FIREARMS/BALLISTICS ISSUES

Background:

The victim was allegedly shot by the defendant with a Bryco/Jennings .380 caliber semiautomatic pistol during the robbery. Investigating police recovered a single Remington brand .380 caliber cartridge casing from the crime scene shortly after the shooting. The bullet that struck the victim was not recovered.

CASE STUDY- FIREARMS/BALLISTICS ISSUES

Firearms and Toolmarks Analysis:

- The .380 caliber semi-automatic pistol, the two spent cartridge casings, the magazine and the unfired Remington brand ammunition were submitted to the Cuyahoga County Coroner's office for testing and analysis. Firearms Examiner Terence McFadden was assigned to conduct the testing.

- McFadden prepared a two page report dated January 30, 1996. He described his activity as a "Firearms test". McFadden's comments are excerpted as follows:

CASE STUDY- FIREARMS/BALLISTICS ISSUES

SPECIMENS:

- Subject weapon: .380 caliber semi-automatic pistol: Jennings Firearms by Bryco Arms: Model “Bryco 38"- without magazine (identified as State’s Q-1)

- Discharged Remington brand .380 cartridge case recovered from crime scene (identified as State’s Q-2)123 East Liberty Street, Cincinnati, Ohio on 12/29/95

- Six unfired Remington brand .380 Auto cartridges- reportedly recovered from Q-4 magazine of Q-1 (the firearm)

CASE STUDY- FIREARMS/BALLISTICS ISSUES

FINDINGS:

- **Recovered cartridge casing Q-2 has "class characteristics which are similar to cartridge cases test fired in the Q-1 pistol." "There is no significant disagreement between the individualizing characteristics present on Q-2 and the test fired cartridge cases. There are a limited number of individualizing characteristics present on Q-2, and the test fired cartridge case test fired in the Q-1 Pistol."**

Opinions:

- **"The Q-2 cartridge case could not be identified, or eliminated as having been fired in the Q-1 pistol."**

- **"The Q-2 cartridge case could not be identified, or eliminated as having been fired in the same firearm."**

Notes:

- " Ammunition from the Q-1 firearm's magazine and laboratory ammunition were test fired in the Q-1 pistol for comparison purposes."

CASE STUDY- FIREARMS/BALLISTICS ISSUES

- **Defendant's trial counsel were provided with a copy of McFadden's report. The important, operative fact in the report was that the cartridge casing found at the crime scene "could not be eliminated" as having been fired from the .380 pistol that would be introduced into evidence as the murder weapon.** (Prosecution's trial Exhibit 6).

- **However, the following notation appears in a document generated by the Cleveland Police Department prior to trial when McFadden informed the police of the results of his testing : " Note: Comparison tests were conducted by Firearms Examiner McFadden of the Cuyahoga County Coroners Office on the Bryco .380 Semi-Auto pistol, serial # 336755, and the 380 cartridge recovered at the scene of the homicide. The results were inconclusive."** (Emphasis in the original document)

- **This document was not provided to defense counsel. Defense counsel did not ask for McFadden's bench notes.**

CASE STUDY- FIREARMS/BALLISTICS ISSUES

McFadden's Trial Testimony:

- Firearms examiner - Cuyahoga County Coroner's Office.
- BS-Xavier University - (no major reported)
- Master of Forensic Science from George Washington University – (no curriculum mentioned)
- McFadden testifies that he had formal training and firearm and tool marks identification, from a course at George Washington University." He "also completed Department of Justice course in Firearms and Tool Mark Criteria Identification in California." He also received "in-house training during the three years I was employed by the Los Angeles Police Department in their firearm's unit."

- **NO VOIR DIRE OF McFADDEN BY DEFENSE COUNSEL**
  - **NO REQUEST FOR BENCH NOTES**

CASE STUDY- FIREARMS/BALLISTICS ISSUES

McFadden's Trial Testimony:

- **"We test fired four laboratory rounds which were consistent in manufacture and in caliber designations as well as test-firing one of those ones that came in reportedly from the magazine and three which also came in reportedly from a box of ammunition which was submitted in the case."**

- **Tr. 1286-1287-State's Exhibit 9 - empty shell casing found at crime scene**

- **Tr. 1287-1288 - Prosecutor asks if McFadden made a comparison between State's Exhibit 9 and the other cases tests-fired from the .380 Bryco - Ex. 6**

CASE STUDY- FIREARMS/BALLISTICS ISSUES

McFadden's Trial Testimony - Tr. 1288 - McFadden explains :

- **" What we were able to determine is that the class characteristics and those are characteristics that are placed in the firearm during the manufacturing process and they can become one to a group of firearms they were consistent, meaning that the test fires from this gun had class characters consistent with the evidence discharged cartridge case."**

- "In terms of individual characteristics, those are put on also during the manufacturing process, but are put on by wear, use, abuse and are put on over a period of time. They're basically finer imperfections on the surface of those parts of the firearm which mark the cartridge case. **We could not determine whether there was significant agreement to say that it was fired from that particular firearm."**

- McFadden possessed the subject weapon as well as ammunition and a magazine attributed to the weapon. He was able to conduct test firing at the Cuyahoga County Coroner's Crime Laboratory in order to **conclusively** determine whether the subject weapon fired the cartridge case found at the crime scene.

CASE STUDY- FIREARMS/BALLISTICS ISSUES

McFadden's Trial Testimony - Tr. 1288 - McFadden explains :

- Yet he was only able to determine that the cartridge casings retrieved by the police and those cartridge cases from test firing contained "class characteristics". Class characteristics result from design factors general to all similarly manufactured pistols. (ie all Bryco .380 semiautomatic pistols.)

- Specifically, McFadden found no individual characteristics on the crime scene cartridge case that would allow the conclusion that it was fired from the subject weapon. (Bryco .380 caliber pistol) Individual characteristics are those marks that serve to uniquely identify the cartridge case to only one gun. These individual characteristics include **firing pin impressions**; ejection port marks, ejector marks and extractor marks.

CASE STUDY- FIREARMS/BALLISTICS ISSUES

McFadden's Trial Testimony - Tr. 1288 - McFadden explains :

McFadden's failure to find individual characteristics to match the crime scene cartridge case with the subject weapon is puzzling. This is specially so regarding the issue of firing pin impressions of the fired cartridge cases at issue in this case. The Bryco arms line of pistols leave firing pin impressions that are of a grossly discernible nature.

CASE STUDY- FIREARMS/BALLISTICS ISSUES

The Bryco arms line of pistols leave firing pin impressions that are of a grossly discernible nature.

Figure 3-4. Breech Face Styles

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Curriculum Vitae (v3.7, Apr 08)

Eur Ing John R Nixon
PE CEng BEng(Hons) MBA FIMechE MCMI

Professional Qualifications & Memberships

2008 Admitted to American Academy of Forensic Sciences (AAFS)
2006 International Affiliate of the National Academy of Forensic Engineers (NAFE)
2005 Member of the International Society of Explosives Engineers (ISEE)
2001 Professional Licensed Member of National Society of Professional Engineers (NSPE)
2000 Joined American Society of Mechanical Engineers (ASME)
1999 Elected to Fellowship of the Institution of Mechanical Engineers (FIMechE)
1996 Founder Member of the Expert Witness Institute (MEWI)
1996 Qualified as a Corporate Member of the Chartered Management Institute (MCMI)
1995 Vetted by the UK Law Society to appear as an expert witness in court cases.
1992 Qualified as a Corporate Member of the Institute of Materials (MIM)
1992 Qualified as a Chartered Professional Engineer (PE) with the British Engineering Council (CEng)
1992 Qualified as a Corporate Member of the Institution of Mechanical Engineers (MIMechE)

One of the youngest people to be elected to Fellowship of the Institution of Mechanical Engineers. Author of several patents relating to munitions design. Court qualified expert in firearms, ballistics, wound ballistics, & explosives in numerous States and US Federal Courts. Acted as consultant to numerous TV documentaries and drama series. Have presented numerous training seminars in forensic firearms & ballistics to law enforcement, private investigators, attorneys, law students, and forensic science students. These seminars have been approved for CLE credit. Certified as a firearms & personal protection instructor, and range safety officer.

Academic Qualifications

1997 Henley Management College, Brunel University, London, United Kingdom.
Masters Degree in Business Administration (MBA: - with A+ grading)
1990 University of Greenwich, London, United Kingdom.
Bachelor's Degree in Mechanical Engineering (BEng: - with First Class Honors).

Questions