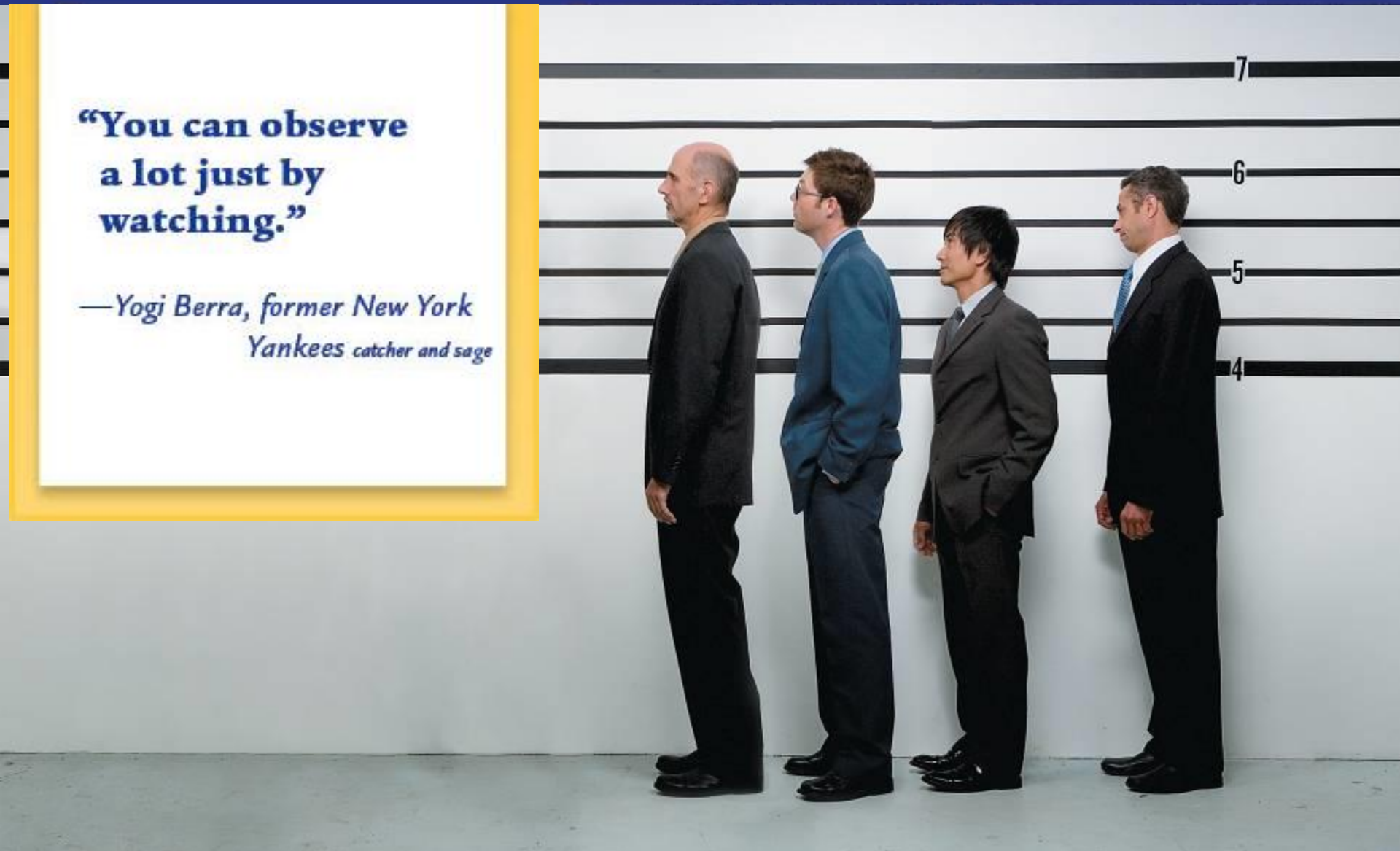
Chapter 2 Types of Evidence

"You can observe a lot just by watching."

—Yogi Berra, former New York Yankees catcher and sage



Objectives

Students will understand:

The value of indirect and direct evidence in a court of law.

That eyewitness accounts have limitations.

What physical evidence can and cannot prove in court.

That the forensic scientist's main goal is to find a unique source for the evidence.

Students will be able to:

Explain the difference between indirect and direct evidence.

Describe what is meant by physical evidence and give examples.

Distinguish individual evidence from class evidence.

Determine the significance of class evidence.

Classification of Evidence

Evidence is something that tends to establish or disprove a fact

Two types:

Testimonial evidence is a statement made under oath; also known as direct evidence or *prima facie* evidence.

Physical evidence is any object or material that is relevant in a crime; also known as indirect evidence. Examples are documents, soil, drugs, toolmarks, impressions, glass**.**

Trace evidence refers to physical evidence that is found in small but measurable amounts, such as strands of hair, fibers, or skin cells.

Reliability of Eyewitness

Factors that affect accuracy:

Nature of the offense and the situation in which the crime is observed

Characteristics of the witness

Manner in which the information is retrieved

*Crime scene too dark

*Encounter too brief

*Presence of weapon

*Time between crime and questioning

*New Information

*Stress and fear

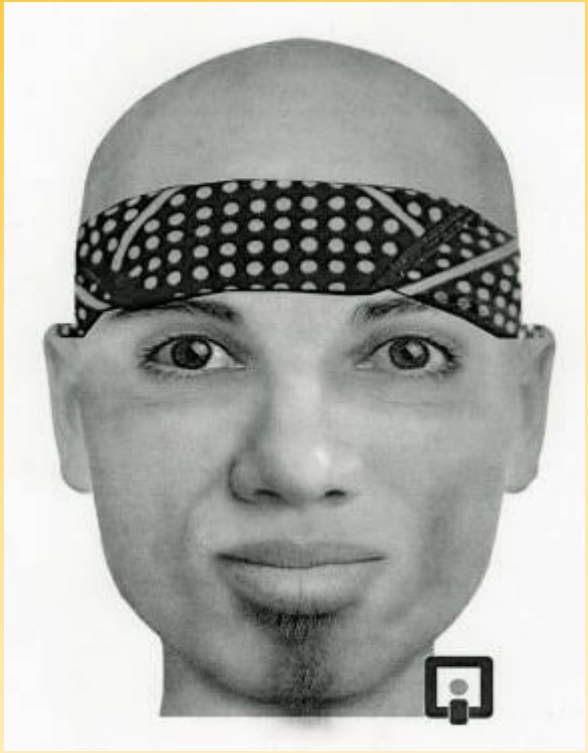
Reliability of Eyewitness Continued:

Additional factors:

- Witness's prior relationship with the accused
- Length of time between the offense and the identification
- Any prior identification or failure to identify the defendant
- Any prior identification of a person other than the defendant by the eyewitness

Eyewitness

- A police composite may be developed from the witness testimony by a computer program or forensic artist.
- "Perception is reality"
- As a result of the influences in eyewitness memory, physical evidence becomes critical.



FACES—a composite program by InterQuest

Value of Physical Evidence

As a result of the influences on eyewitness memory, physical evidence becomes critical.

Any material or object

Is generally more reliable than testimonial evidence

Can prove that a crime has been committed

Can corroborate or refute testimony

Can link a suspect with a victim or with a crime scene

Can establish the identity of persons associated with a crime

Can allow reconstruction of events of a crime

Physical Evidence continued:

- Two main classes of Evidence that show value:
  - Indirect and circumstantial

Value of Physical Evidence:

- Prove crime was committed and set crime
- Back up or prove false witness testimony
- Link suspect to victim and/or crime scene
- Determine identity of people involved w/crime
- Reconstruct a crime

Reconstruction

Physical evidence can be used to answer questions about:

- What took place at a crime scene
- The number of people involved
- The sequence of events
- How the victim was killed

A forensic scientist compares the *questioned* or unknown sample from the crime scene with a sample of *known* origin.

Types of Physical Evidence

Transient evidence is temporary; easily changed or lost; usually observed by the first officer at the scene.

Pattern evidence is produced by direct contact between a person and an object or between two objects.

Conditional evidence is produced by a specific event or action; important in crime scene reconstruction and in determining the set of circumstances or sequence within a particular event.

Transfer evidence is produced by contact between person(s) and object(s), or between person(s) and person(s).

Associative evidence is something that may associate a victim or suspect with a scene or with each other; e.g., personal belongings.

—Henry C. Lee and Jerry Labriola, *Famous Crimes Revisited,* 2001

Examples of Transient Evidence

Odor—putrefaction, perfume, gasoline, urine, burning, explosives, cigarette or cigar smoke

Temperature—surroundings, car hood, coffee, water in a bathtub, cadaver

Imprints and indentations— footprints, teeth marks in perishable foods, tire marks on certain surfaces

Examples of Pattern Evidence

Pattern evidence—mostly in the form of imprints, indentations, striations, markings, fractures, or deposits

Blood spatter
Glass fracture
Fire burn pattern
Furniture position
Projectile trajectory
Tire marks or skid marks

Clothing or article distribution
Gunpowder residue
Material damage
Body position
Toolmarks
Modus operandi

Examples of Conditional Evidence

Light—headlight, lighting conditions, lights on or off

Smoke—color, direction of travel, density, odor

Fire—color and direction of the flames, speed of spread, temperature and condition of fire

Location—of injuries or wounds, of bloodstains, of the victim's vehicle, of weapons or cartridge cases, of broken glass

Vehicles—doors locked or unlocked, windows opened or closed, radio off or on, odometer mileage

Body—position and types of wounds; rigor, livor, and algor mortis

Scene—condition of furniture, doors and windows, any disturbance or signs of a struggle

Classification of Evidence by Nature

Biological—blood, semen, saliva, sweat, tears, hair, bone, tissues, urine, feces, animal material, insects, bacteria, fungi, botanical material

Chemical—fibers, glass, soil, gunpowder, metals, minerals, narcotics, drugs, paper, ink, cosmetics, paint, plastic, lubricants, fertilizer

Physical—fingerprints, footprints, shoeprints, handwriting, firearms, tire marks, toolmarks, typewriting

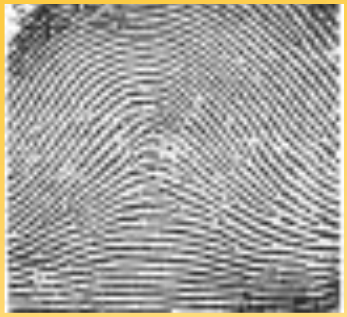
Miscellaneous—laundry marks, voice analysis, polygraph, photography, stress evaluation, psycholinguistic analysis, vehicle identification

Evidence Characteristics:

INDIVIDUAL VS CLASS

Individual—can be identified with a particular person or a single source

Fingerprints



Blood DNA Typing

Class—common to a group of similar objects or persons

Product Rule

- The goal is to narrow down class evidence to individual evidence as much as possible.

- The product rule states that multiplying together the frequency of each evidential factor will determine how common that combination of factors is in the general population.

Product Rule continued:

- For example, in the OJ Simpson murder case, a bloodstain located at the crime scene was found to contain a number of factors that compared to OJ's blood:

Blood Factors	Frequency
A	26%
EsD	85%
PGM 2+2-	2%

Product Rule continued:

- The product of all the frequencies determine the probability that any one individual possesses such a combination of blood factors:

$$0.26 \times 0.85 \times 0.02 = 0.0044, .44\%$$

Or

- Less than 1 in 200 people would be expected to have a particular combination of blood factors.

Product rule

- The bloodstain factors did not match either of the two victims, thus eliminating them as possible sources of the blood.
- The bloodstains were not individualized to OJ Simpson either.

Class vs. Individual Evidence

These fibers are class evidence; there is no way to determine if they came from this garment.

The large piece of glass fits exactly to the bottle; it is individual evidence.

Individual or Class?

1. Several pieces of torn T-shirt were found close to a homicide victim. A torn T-shirt was found in the suspect's bedroom. Can the torn T-shirt and the pieces be individualized. Explain.

2. Can very small glass fragments be individualized, or uniquely associated with a broken bottle? Explain

Individual or Class? (continued)

3. At the scene of a robbery a partial note was found on a torn piece of paper. A similar piece of torn paper, that seemed to complete the original sheet of paper and note, was found at the suspect's office. Can these torn pieces of paper be individualized to each other? Explain.

4. Can the handwriting be individualized to the same person from both sources of the torn paper? Can fingerprints on the note(s) be individualized to the person? Explain.

Evidence: Individual or Class? (continued)

5. **Several tabs from soda cans were found in a suspect's kitchen. A soda can was found at the scene of the crime that could be uniquely associated with one of the tabs. How is this possible?**

6. **A suspect was found with a book of matches (some were missing) in his pocket. At the scene of a known arson matches were found. Are the matches from the scene, individual or class evidence? Explain.**

Evidence: Individual or Class? (continued)

7. **A gun was found in a suspect's car, these bullets were retrieved from the murder scene. Can these bullets be individualized to the gun? Explain.**

8. **A piece of duct tape was used to close a victim's mouth during a kidnapping. A roll of the same brand of duct tape was found in the suspect's garage. Would this be considered class or individual evidence? Explain.**

Evidence: Individual or Class? (continued)

9. **The sports section of the newspaper was found at a robbery scene. The finance section was found at the suspect's office. Was the finance section individual or class evidence? Explain.**

10. **At a homicide scene one latex glove was found. A box of latex gloves were found in a suspect's kitchen. Can the gloves be individ-ualized to the box? Explain.**

Forensic Investigations

Include some or all of these seven major activities:

1. **Recognition**—the ability to distinguish important evidence from unrelated material

   Pattern recognition

   Physical property observation

   Information analysis

   Field testing

2. **Preservation** through the collection and proper packaging of evidence

Forensic Investigations, *continued*

3. **Identification** using scientific testing
   - Physical properties
   - Chemical properties
   - Morphological (structural) properties
   - Biological properties
   - Immunological properties

4. **Comparison** of class characteristics measured against those of known standards or controls; if all measurements are equal, then the two samples may be considered to have come from the same source or origin

Forensic Investigations, *continued*

5. **Individualization** in demonstrating that the sample is unique, even among members of the same class

6. **Interpretation**—giving meaning to all the information

7. **Reconstruction** of the events in the case

Inductive and deductive logic

Statistical data

Pattern analysis

Results of laboratory analysis

—Henry C. Lee and Jerry Labriola, *Famous Crimes Revisited*, **2001**

National Databases

- IAFIS – Integrated Fingerprint Identification System
- CODIS – Combined DNA Index System
- NIBIN – National Integrated Ballistics Information Network
- IBIS - Integrated Ballistic Identification System
- PDQ – International Forensic Automotive Paint Data Query

CLASS ASSIGNMENT

OJ Simpson Case: Examples of Mistakes with Evidence

You may work in groups up to 3 people, one paper per group. Focus on the types of evidence collected and errors that were the ***legal*** responsibilities of the crime scene investigators/detectives.

This may include items in categories such as:

Bill of Rights Amendment Violations
Chain of Custody Errors
Crime Scene Errors

Be prepared to discuss your findings with the class.