



# Forensic Science



FS = Evidence



- Why are you here?

- ~~■ What do you expect to learn in this class?~~


- Tell me, what is your definition of  
**Forensic Science?**

- Want to hear mine?

- Simply, it is the application of science to law.

- What sciences are we talking about?


- Biology, chemistry, physics

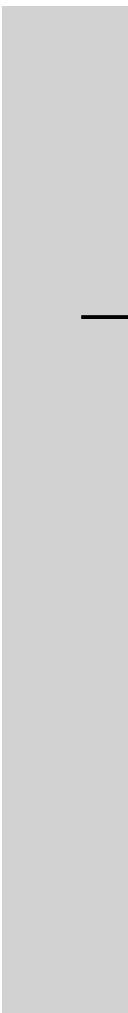
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- Anything else?
  - History, English, Writing and Civics
  - My Goal:
  - To make you an informed juror and a better citizen

# What is reasoning?

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- Inductive vs. deductive
- Observation vs. inference
- Okay, tell me this....
- A farmer needs to carry three things across a river. He has a boat, and he can only carry one thing at a time. But, he has:
  - A chicken
  - Grain
  - A fox

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- The fox will eat the chicken, if left alone,
  - and the chicken will eat the grain if left alone.
  - So how does he get everything across the river?
  - I am waiting.....

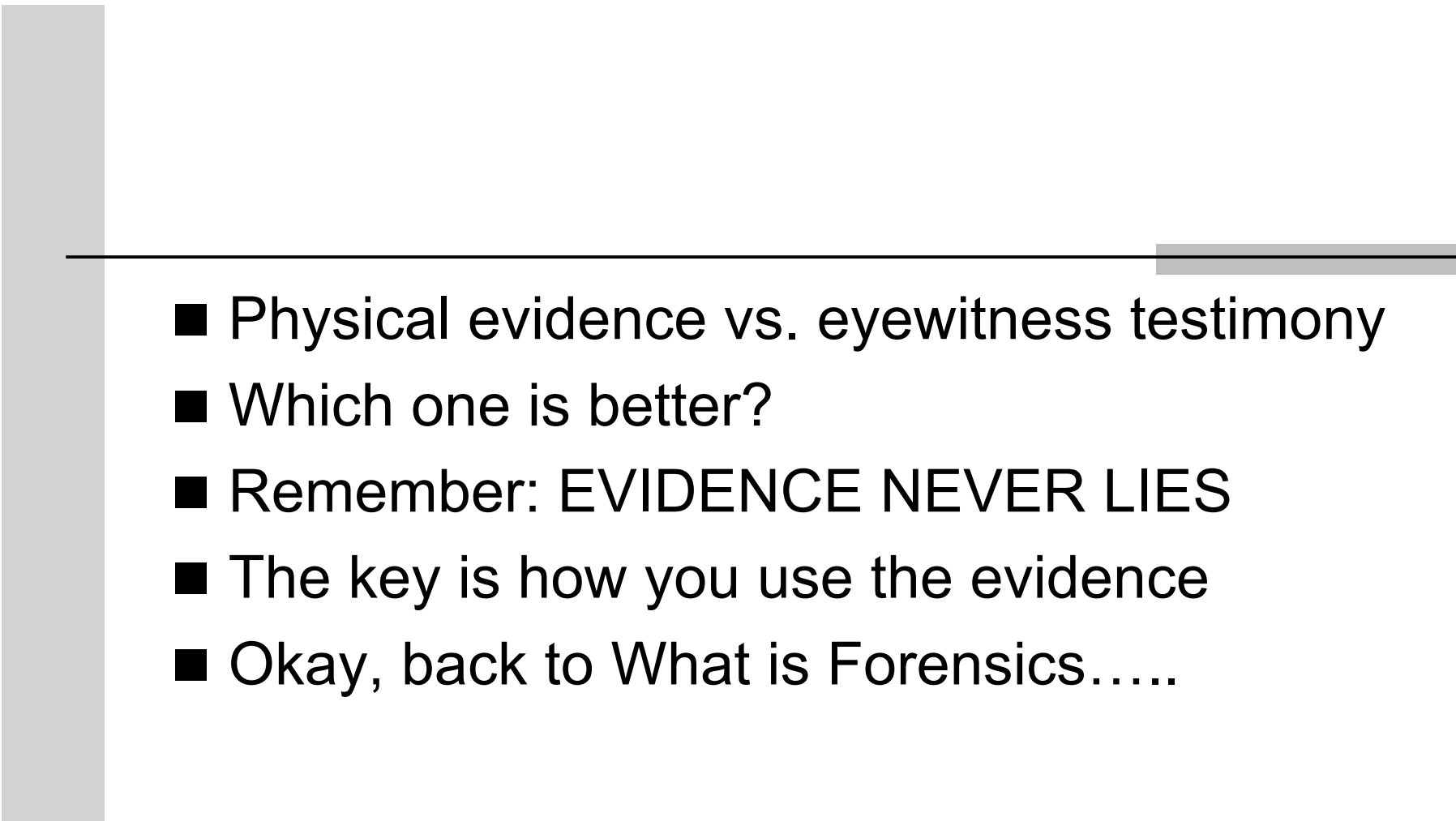
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- Okay, look at the following picture
  - I mean really look at the picture
  - Really, really look at the picture
  - Tell me , who is the odd man out and why?



How good is your memory? Which penny is correct?





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- Physical evidence vs. eyewitness testimony
  - Which one is better?
  - Remember: EVIDENCE NEVER LIES
  - The key is how you use the evidence
  - Okay, back to What is Forensics.....

# What is Forensics again?

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- Again, the application of science to law
- We want to establish or exclude association between a suspect and a victim or a crime
- How?
- We search for trace material
- But, what is trace material?

# Okay, but what are some examples of trace material

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- Blood
- Saliva
- Semen
- Body fluids
- Paints
- Glass
- Footprints
- Tire impressions
- Flammable material
- Hair
- Fibers and drugs

# Forensics= About the evidence


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- Crime scene investigation is the beginning point for successful use of physical evidence
- So, what is physical evidence used for?
- Criminal Investigation

# Basic Crime Scene Procedures

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- Physical Evidence recognition
- Documentation
- **PROPER COLLECTION AND CHAIN OF POSSESSION**
- Remember- this is where OJ's team tore the case apart- they could not beat the evidence, so they showed how the collection of the evidence was compromised

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- Packaging
  - Preservation
  - Scene reconstruction
  
  - Once this is done, a written report is made of your conclusions- yes, the scientific method strikes again!!

# Classification

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1. According to location- primary or secondary

2. Size

- For example: **Macroscopic**- GSW victim dumped in a field- what are the crime scenes?
- The body, the body's wounds, the ground around the body



■ **Microscopic** trace evidence on the body

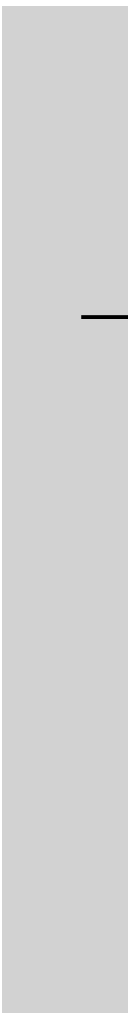
■ GS residue around the wound, tire tread marks

### 3. Type of Crime committed

■ Homicide, robbery, sexual assault, shooting, stabbing, hit and run, arson-

■ Gives us an idea of what to expect, but does not allow us to expect the unexpected



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4. Crime Scene condition- organized or not
  - ~~5. Physical location- inside or outside~~
  6. Type of crime associated with the scene- do they match
  7. Composition of material
  8. General nature of evidence- physical, biological, chemical
  9. Physical nature of physical evidence- solid, liquid, gas
  10. Type of question to be resolved

## 11. How was the evidence produced

- Position/ geometric
- Imprint/ indentations
- Striations
- Tears- breaks- cuts
- Mutual transfer of material- Locard
- Deposits, dispersals, residues
- Cannot determine

What does the information obtained from the physical evidence tell us?

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## I. **Corpus Delicti**

determination of the essential facts- is the blood in the middle of the road human or animal

## II. **Modus Operandi**

mode of operation- their signature- criminals repeat their behavior



### **III. Linkage of persons, scenes and objects**

#### **■ Locard's Exchange Principal-**

- Whenever two objects come into contact with each other, a mutual exchange of materials will take place between them



IV. Proving or disproving a witness statement

~~V. Identification of suspects-~~

recognition

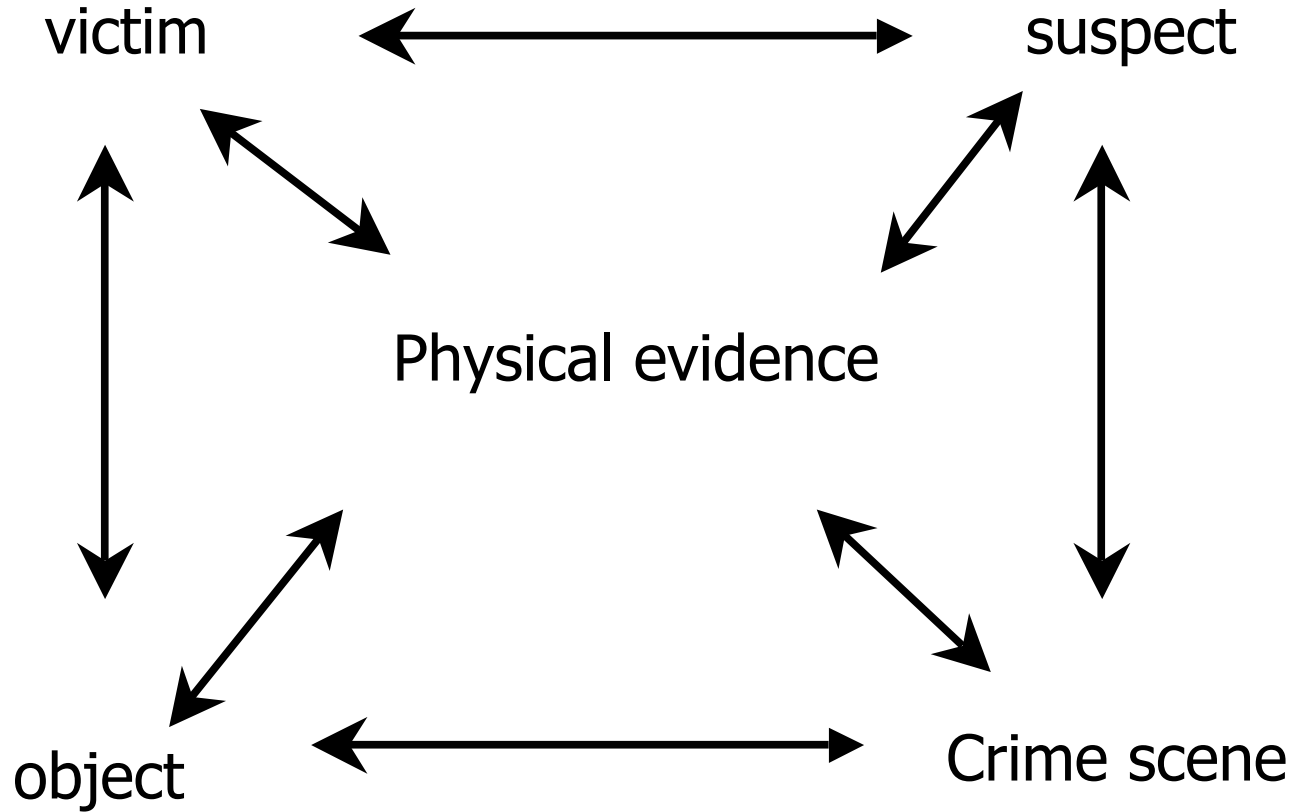
Identification

individualization AFIS

VI. Identification of unknown substances

VII. Reconstruction of the crime- the how is more important than the who

VIII. Providing investigative leads





## ■ Recognition

- Scene survey
- Documentation
- Collection and preservation

## ■ Identification

- Comparison testing

## ■ Individualization

- Evaluation
- Interpretation

## ■ Reconstruction

- Reporting and Presentation



Why?

Why do all this work?



# Why Do We Process The Crime Scene?

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- What is the purpose?
- Who are the people involved?
- What is the role of:
  - Investigator
  - Lawyer
  - Juror
  - Judge



- Okay, we are dealing with the law, remember?

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- We have some Constitutional Issues

- 4<sup>th</sup> Amendment- What is it?

- Search and Seizure

- 2 famous cases

- Michigan v. Tyler

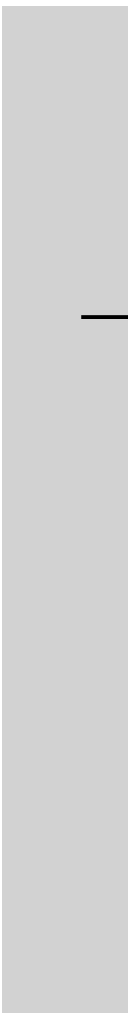
- Mincey v. Arizona

# Michigan v. Tyler

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- In summation, we hold that an entry to fight a fire requires no warrant, and that once in the building, officials may remain there for a reasonable time to investigate the cause of the blaze. Thereafter, additional entries to investigate the cause of the fire must be made pursuant to the warrant procedures governing administrative searches.

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- Evidence of arson discovered in the course of such investigations is admissible at trial, but if the investigating officials find probable cause to believe that arson has occurred and require further access to gather evidence for a possible prosecution, they may obtain a warrant only upon a traditional showing of probable cause applicable to searches for evidence of crime. *United States v. Ventresca*, 380 U.S. 102

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- Once fire is out, you can search, but if you leave, you need a warrant
  - May seize evidence in plain view
  - Imminent destruction

# Mincey v. Arizona

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- All unreasonable search and seizures
- Murder scene exception
- Ripping the place up
- Kept going back to the scene

# Okay, so.....

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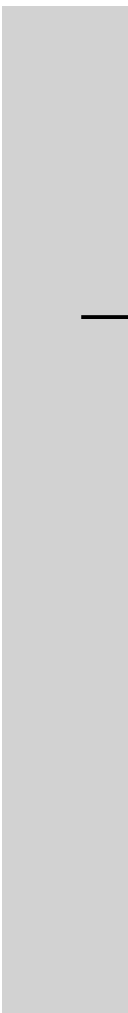
- What if a fire breaks out in my classroom
- Can the arson investigator search my room?
- Can he/she come back tomorrow to search my room?
- What can the investigator do while they are waiting for the warrant?

# 5<sup>th</sup> Amendment

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- Miranda Rights
- 1. You have the right to remain silent and refuse to answer questions.
- 2. Anything you do say may be used against you in a court of law.
- 3. You have the right to consult an attorney before speaking to the police and to have an attorney present during questioning now or in the future.



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- 
- 4. If you cannot afford an attorney, one will be appointed for you before any questioning if you wish.
  - 5. If you decide to answer questions now without an attorney present you will still have the right to stop answering at any time until you talk to an attorney
  - 6. Knowing and understanding your rights as I have explained them to you

# Rules of Evidence

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- “Best Evidence Rule”
- Tests are NOT the means to the end, original writing must be made as to support what the evidence says
- Is the evidence relevant and reliable
- What is its probative value

# Daubert Decision-

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- Can say characteristics are the same, but NOT that they came from them
- Has the sci. theory been tested
- Has it been peer reviewed
- What is the rate of error
- Are controls in existence and maintained
- Is the theory generally accepted in the sci. community

# 4 distinctive components of Crime Scene Management

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- 1. Information Management
- 2. Manpower Management
- 3. Technology Management
- 4. Logistics Management

# First Responders- Police/Fire/EMT

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- 1. Assist victims
- 2. Search for/ arrest suspect
- 3. Detain witnesses- keep them separate- Why?
  - Preserve objectivity
- 4. Protect crime scene- record names of all who enter/leave
- 5. Record ALL movements and alterations to the crime scene

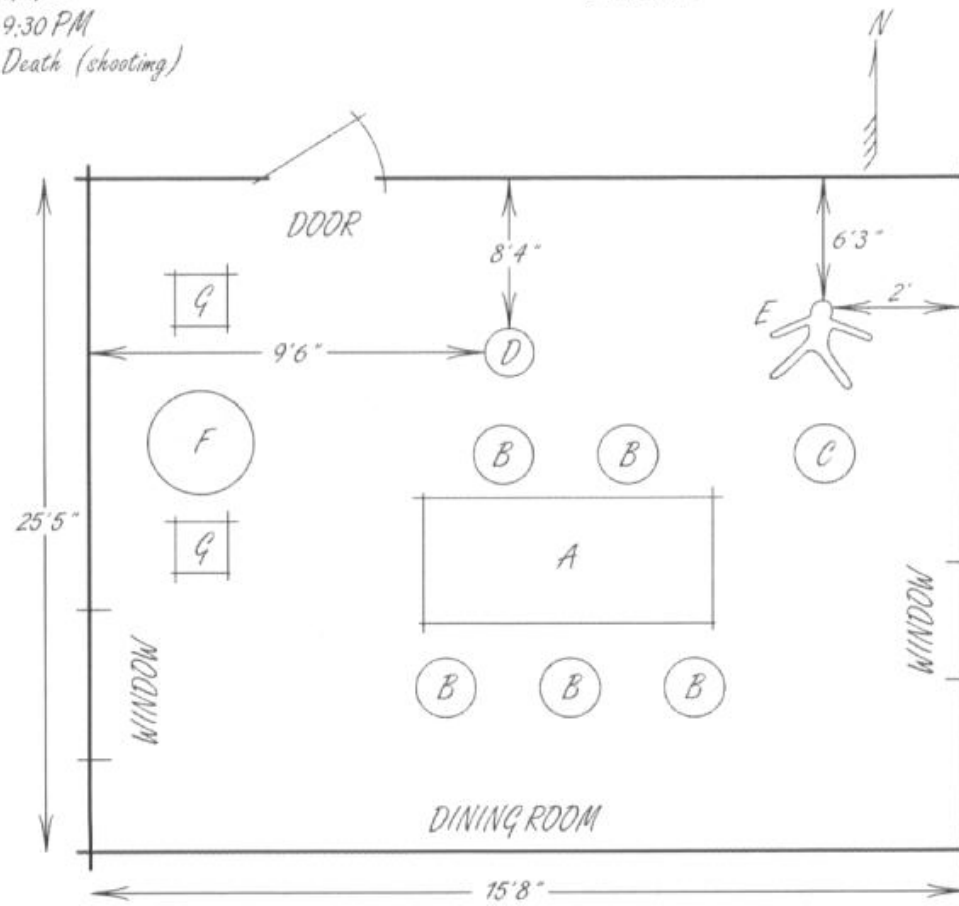
# Crime Scene Survey

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- 1. Preliminary walk through
  - Helps mental reconstruction
  - Any condition requiring immediate attention
  - Weather conditions- So what?
- 2. Document
  - Note taking
  - Video
  - Photo
  - sketch

2741 Aragon St.  
6/7/81  
9:30 PM  
Death (shooting)

Sketch by Officer  
John Smith



A - Dining room table

B - Chair

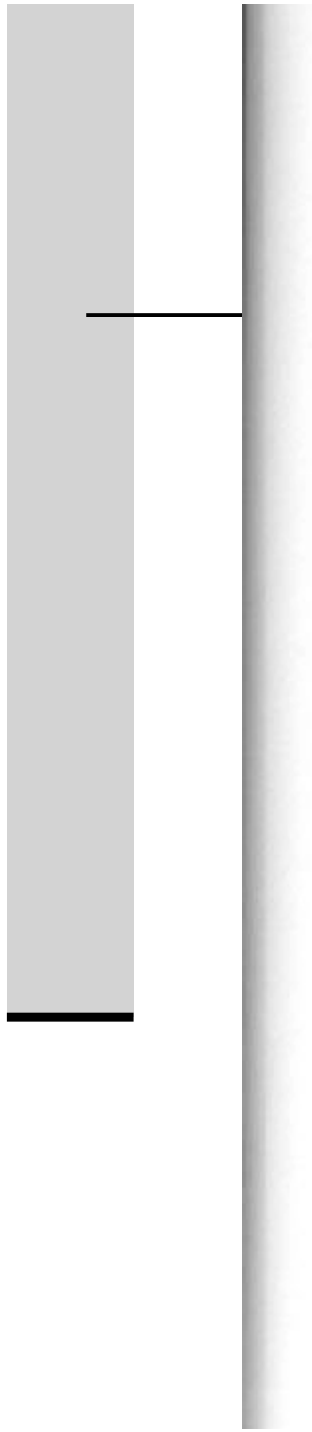
C - Overturned chair

D - 0.38 Revolver

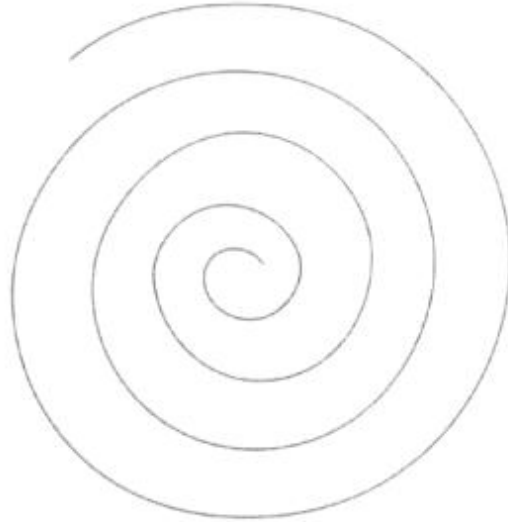
E - Male body

F - Table

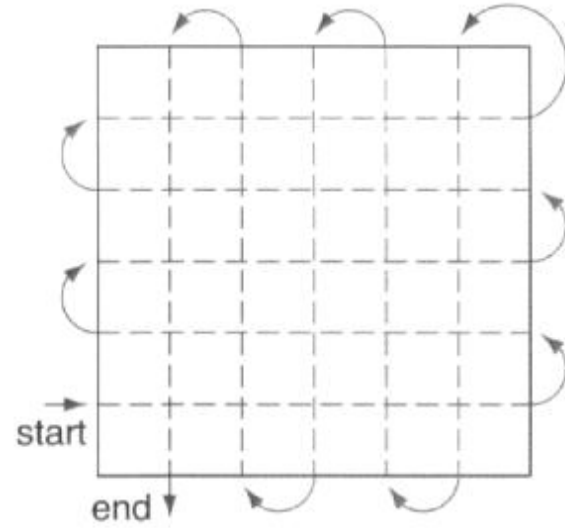
G - Chair



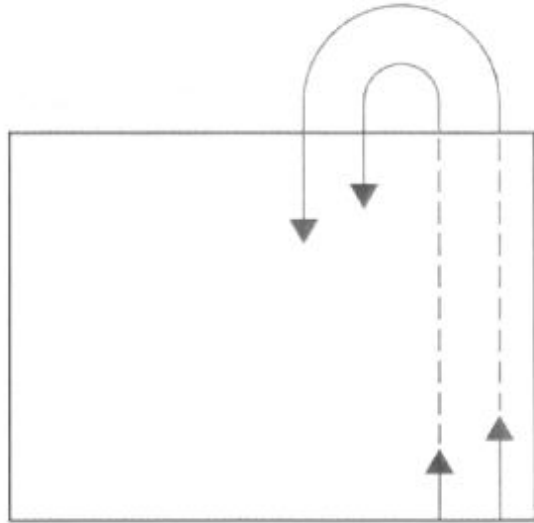
Spiral search method



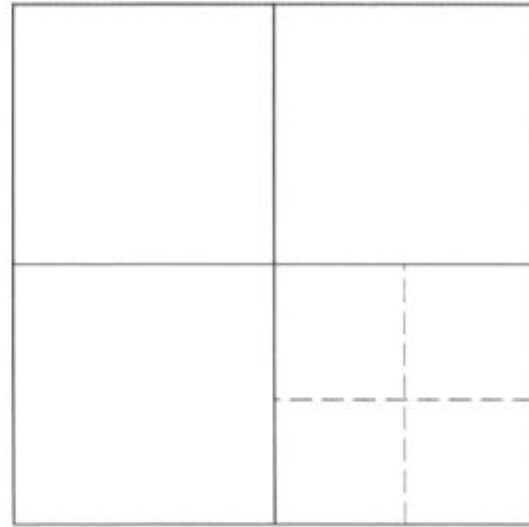
Grid method



Strip or line search



Quadrant or zone search





# Chain of Possession

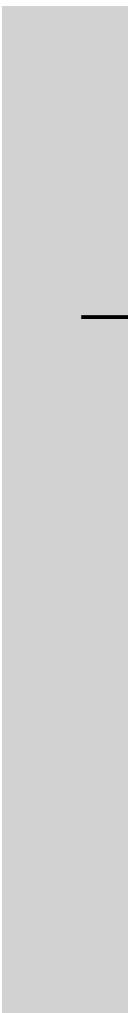
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- ALL evidence packed in a primary container, seal, then place in secondary container
- Seal with tamper resistant tape
- Mark items collected, who collected them, where they were collected, date, time, description
- IF given to anyone else, they write down who they received it from and the date, time again.
- Okay.....

# The Simpson Matter

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- Why did he win?
- No, he was not innocent
- Tactile and procedural issues
- Like what?
- They protested how things were collected
- Newbie was helping them collect
- Some evidence was over 3 weeks old when they collected it
- They claimed negligence in collection and handling

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- They claimed testing and contamination problems
  - They made big deals out of small issues
  - The race card
  - The rhyme- it stuck

111

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O SIMPSON

111 111 111 111

#13 SOCK



(LARGE)  
1/2 IN

111 111 111 111 111 111

1/2 IN

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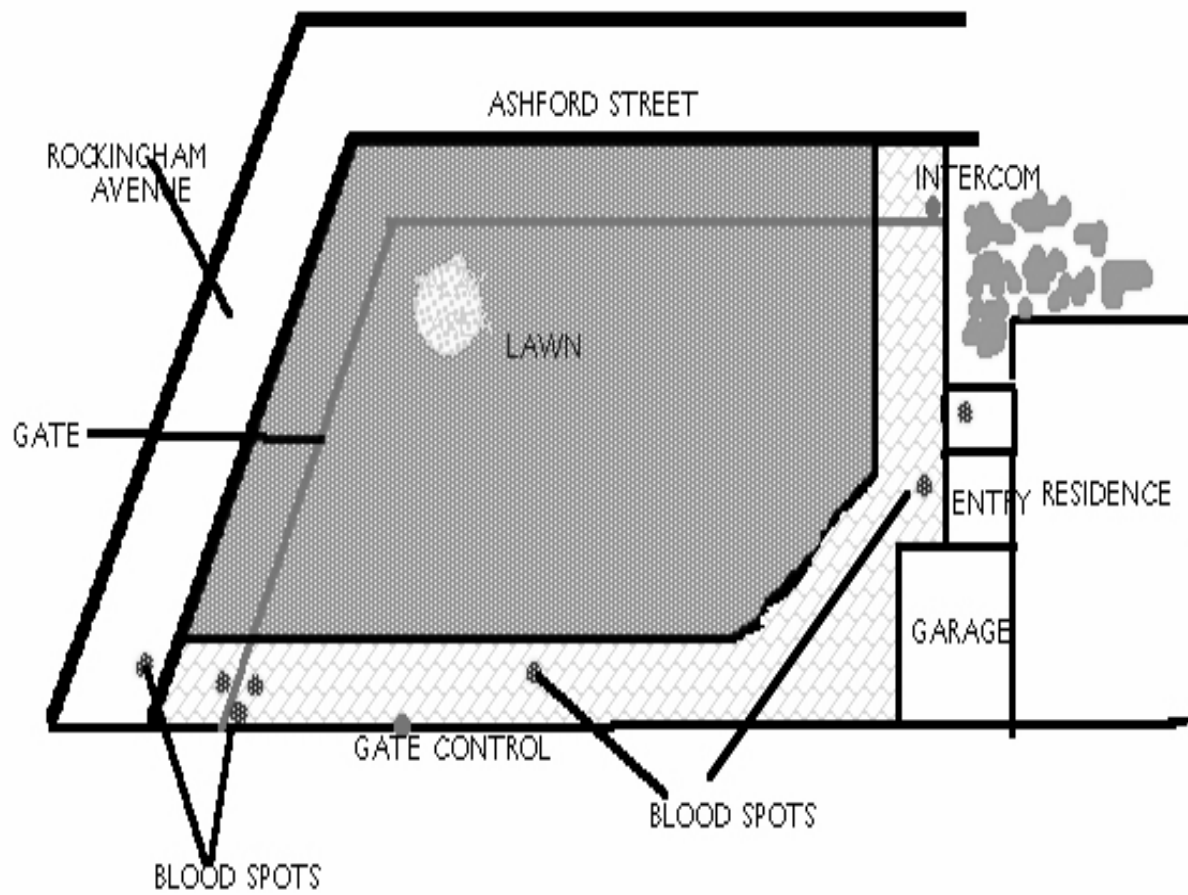
N BROWN

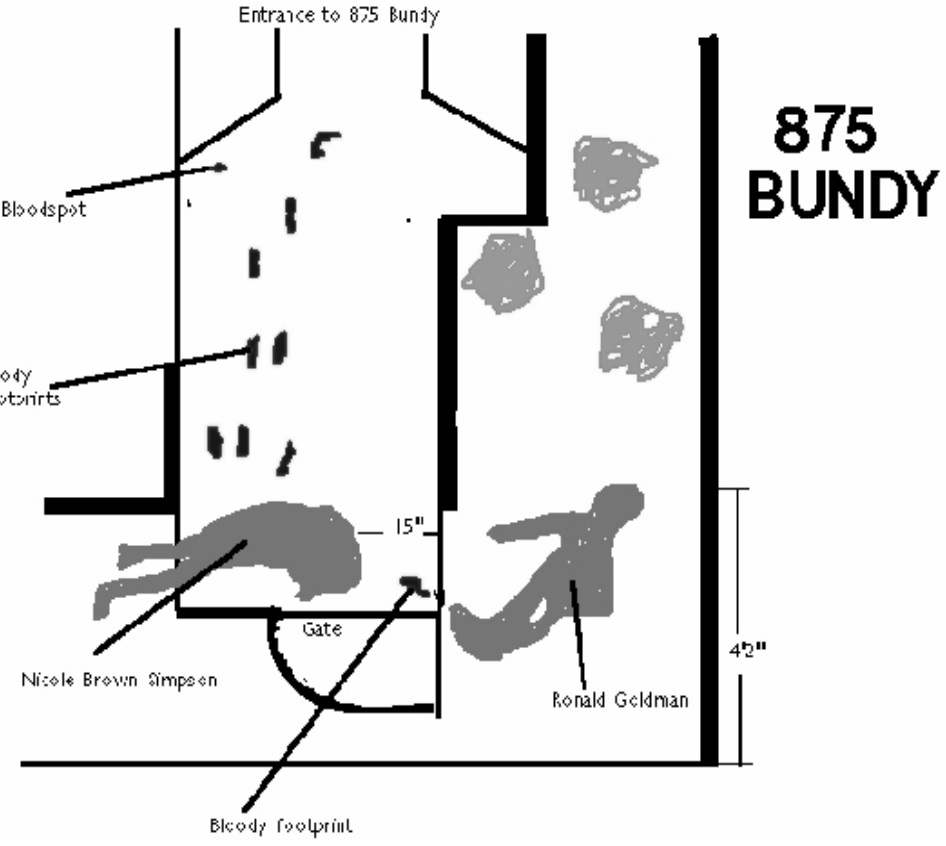


R GOLDMAN

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(LARGE)  
1/2 IN





# Inside Simpson's Vehicle

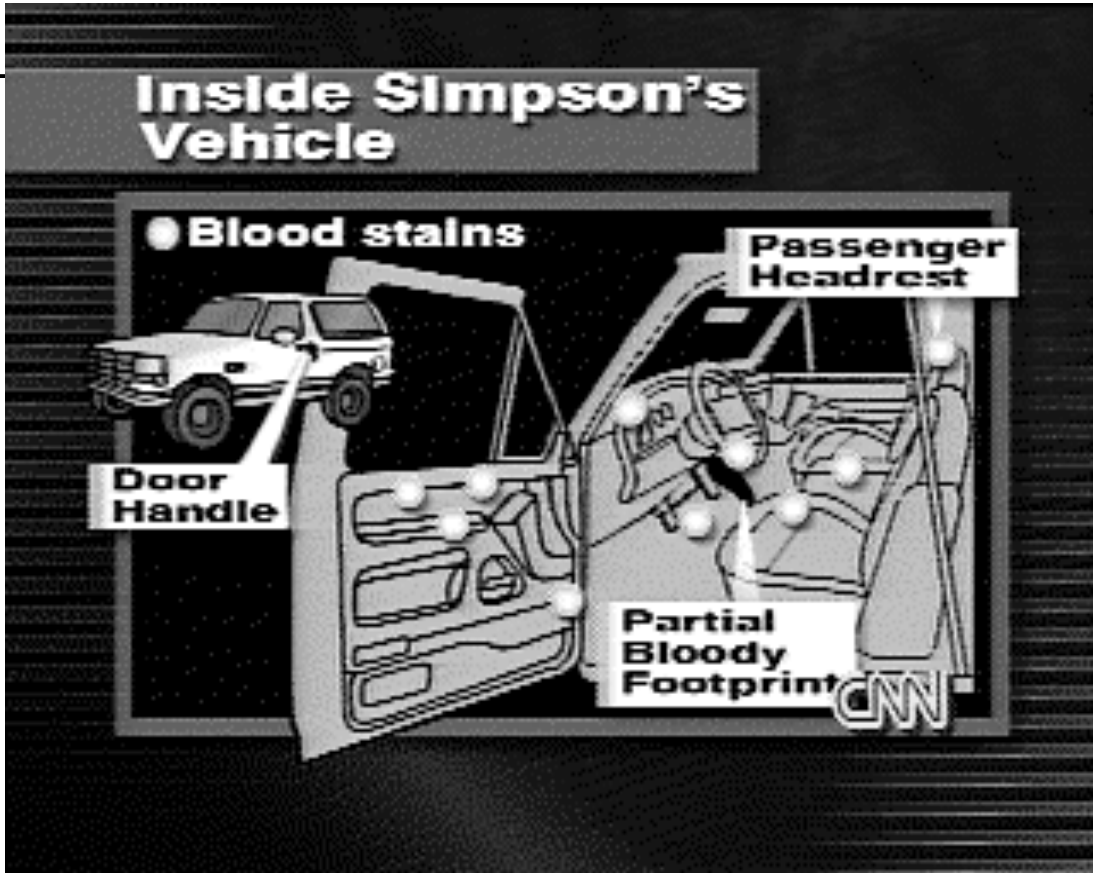
● Blood stains



Door Handle

Passenger Headrest

Partial Bloody Footprint















Ron Goldman's butchered corpse sprawls against the fence of Nicole's condo, his tattered shirt covering wounds to his upper torso and blue jeans stained crimson with

## WAY TO DIE'



Nicole's legs protrude under the gate leading to her front door, a restaurant take-out menu under her right foot. At left, police survey the bloody path leading to her condo



**FIGURE 1**

