**Footwear Impressions**

***Case History: The O.J. Simpson Trial – Who left the impressions at the Crime Scene?***

On the night of June 12, 1994, Nicole Brown, ex-wife of football star O.J.Simpson and her friend Ron Goldman were brutally murdered on the grounds outside her home in Brentwood, CA. O.J. Simpson was arrested for their murders, but maintained his innocence. The bloody crime scene revealed bloody shoe impressions along the concrete walkway up to the front door of her condominium. These shoe impressions were of extremely high quality and of intricate detail. The news media broadcast countless images of these bloody shoeprints on television, making it obvious to the killer that those shoes would surely link him to the crime.

William J. Bodziak, the famed FBI shoeprint examiner, investigated the footwear evidence from the scene. His first undertaking was to identify the brand of shoe that made these marks. Since the pattern was very clear and distinct, with complete associated toe-to-heel detail, this seemed a simple task at first. Bodziak compared this pattern to the thousands of sole patterns in the FBI’s database. None matched. He then went to his reference collection of books and trade show brochures with no success. His experience told him these were expensive, Italian-made casual dress shoes with a sole made from a synthetic material. He shopped the high-end stores for a similar pattern, but he was still unable to identify the shoes. Then he drew a composite sketch of the sole and faxed the image to law enforcement agencies and shoe manufacturers and distributors worldwide. The owner of the American distributing company for Bruno Magli shoes was the only one to respond.

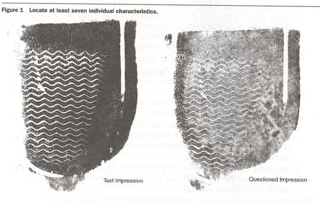
Further exhaustive investigation revealed these were extremely rare shoes. There were two styles of shoe bearing this exact sole design. They were available for only 2 years, and from a mere forty stores in the United States and Puerto Rico. The *Lorenzo* style shoe had a boot-like upper that came to the ankle. The *Lyon* style shoe had the lower, more typical dress shoe cut. Since the impressions were made by a size 12 shoe, it was later determined that only 299 pairs of size 12 with this trend pattern were sold in United States. Simpson flatly denied ever owning these shoes, adding he would never wear anything so ugly. However, he was known to wear a size 12.

Photographs taken almost 9 months prior to the murders show Simpson wearing a pair of black leather Bruno Magli *Lorenzo* shoes. These shoes were available in several colors so this narrows the number of shoes matching Simpson’s pair of *Lorenzos* (this size, color, and style) sold in the U.S. to 29 pairs.

Proving Simpson owned a pair of shoes that had the exact pattern found printed in blood at the crime scene was an essential component of the case, but it was not done in time to be used for the criminal prosecution. The photographs of Simpson in his Bruno Magli shoes were released after the culmination of the criminal trial, so the jury never heard the direct evidence that Simpson owned these shoes. This proved to be an important link uniting Simpson with the crime scene in the civil trial. O.J. Simpson was acquitted of the murders of Nicole Brown and Ron Goldman in the criminal trial but found to be responsible for their murders in the civil court case.

Shoeprints and impressions may be found at any type of crime scene, and can provide a primary means to identify or exclude a suspect. The distinction drawn between prints and impressions is an important one: prints are two-dimensional, while impressions are three dimensional. Thus, the preferred methods of collection are quite different. In the first part of this experiment, you will make an impression and collect it as evidence by casting it-that is, making a mold and preserving it for analysis in the lab. In the second part of this experiment you will analyze the cast and compare it to a footwear sample. Prior to lab, take a look at the following images so you can have a good idea what kind of imperfections in a footwear can make it unique and therefore identifiable.

Compare the paired images below. For each pair of footwear impressions, note individual characteristics. This means that you should look for a cut, gouge, tear, imbedded pebble, or pattern of wear which is unique to that shoe. Indicate this unique characteristic on each of the paired images. Turn this in with your completed pre-lab. For the first figure try to identify seven individual characteristics that are present on both parts of the pair and for the second figure locate at least four individual characteristics that are present on both parts of the pair.



Part 1: Making a cast

1. Fill a shoebox half-way with dry dirt. Tap lighly and level the surface with your ruler.
2. Place your left shoe onto the soil and push down to make an impression approximately ½ inch deep.
3. Carefully lift the shoe out of the soil, trying not to knock any loosened pieces of soil into the impression.
4. Holding the can of hairspray about 8 inches from the soil, apply an even layer to the impression using a sweeping motion. Be sure that even the deepest edges of the impression receive the same amount of coverage. More is not necessarily better. Do not overapply.
5. Allow to stand for 10 minutes to allow the hairspray to dry.
6. Add ½ of a 5 pound bag of Plaster of Paris to a large mixing bowl. Add enough water to the bowl to produce a pancake like consistency. No lumps, please!
7. Pour the plaster into the impression using a paint stirrer to broadcast the stream so it does not destroy the fine details of the impression. Pour to reach at least ½ inch in thickness.
8. Place some craft sticks horizontally and vertically on the surface of the wet plaster. These will serve to reinforce the cast.
9. Prepare a second mix of Plaster of Paris in the same way and apply it over the first to a total thickness of at least 1 inch.
10. Keep the impression and the exemplar together so they can be labeled by your instructor.
11. Let your impression dry until Wednesday.
12. Take your partner’s left shoe and “walk it” in a trick box. Brush off any extraneous dirt and leave it with your instructor to tag as evidence.

Part 2: Cast/ Footwear Comparison

1. Collect your cast prepared on Monday and rinse any soil from it under the tap. Do not scrub or pick off anything! Pat dry with paper towels.
2. Turn in your impression to the instructor and sign out a box of evidence along with an impression. You may not consult with other students about whose shoe it might be you may only talk to your lab partner..
3. Survey the evidence. Your group will have to dvise a numbering scheme which assigns unique identifiers to each piece of evidence. Make sure that you are able to refer to an item in your report without confusion.
4. List each item in your notebook under its unique identifier and write a brief description. Include manufacturer, size (if indicated), color, and condition.
5. Measure the dimensions of the cast in centimeters and record this in your notebook. Do the same for each exemplar.
6. Position an adjustable light source over the cast to make the depth and details more apparent. Rotate the cast and examine all sides for unique features. Look for cuts that interrupt the pattern on the sole, wear or rub marks on the outer edge, or even apparent manufacturing defects.
7. Make a note of each feature and refer to each in your notebook and report. You may choose to identify each feature with a unique number or letter. You make take a photograph of your evidence to use in your report as well. On the photograph, indicate each feature using its identifier.
8. Next examine each of the exemplars in the same manner.
9. By comparing length, width, sole pattern, and unique features, you should be able to deduce which exemplar is the most likely mold for the impression found at the “crime scene”. Outline your findings in your report using explicit examples.

Footwear Impressions  
Lab report sheet to be turned in for grading (Also turn in your shoe figure from pages 2-3 for pre-lab.)

Name 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Name 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Pre-lab:**

What are the safety concerns for dealing with Plaster of Paris? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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What is the goal of this experiment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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What are the major steps to be taken to meet these goals? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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There is a difference forensically between prints and casts. Which was used in the O.J. case? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Which will you be doing here? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Pre-lab completed on time Instructor’s signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Turn in your notebook pages with lab notes from Days 1 and 2 of the experiment.

Which shoe matched your cast? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What supporting evidence do you have to reach this conclusion? Include digital photograph if helpful. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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In what circumstances can you imagine a footprint impression be enough to definitively convict a suspect? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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How can you imagine a footprint impression excluding an suspect? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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