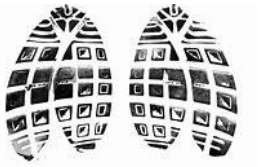
Footwear and Tire Overview

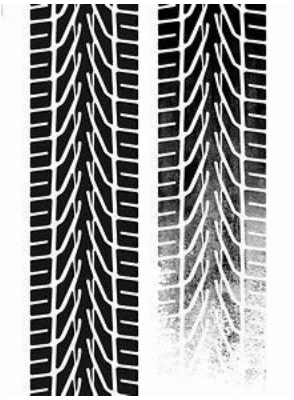
Footwear and Tire evidence is the most overlooked evidence in the forensic sciences, yet every perpetrator must get to the crime scene in some manner. Whether it's from walking, driving a vehicle, or riding a bike, the potential of footwear or tire evidence being at the crime scene is significant. When properly collected, this type of evidence can be vital in including or excluding a potential suspect as being at the crime scene.

A form of footwear comparison actually started with early humans. Our ancestors utilized tracks of animals to either hunt or avoid, depending the which type of animal left the track. As rudimentary as it may seem, the process is starkly similar to how forensic footwear and tire evidence is examined today. One of the earliest known cases to utilize forensic footwear analysis is the Richardson Trial of 1786 in Scotland involving the murder of a young girl. At the crime scene, the suspect left his footwear impression, which detectives used to compare to shoes of people in the area. In this particular instance, the heel of the footwear impression had distinct patches and nails from a repair. The detective utilized those distinct characteristics to link the shoe to the crime scene impression, thus solving the case.

Examiners still utilize the same practices to compare footwear and tire impressions to known sources. First, the evidence is examined for the presence of footwear or tire impressions. If footwear or tire impressions are noted or developed, the analyst will look for the correspondence of class characteristics and randomly acquired characteristics. Class characteristics are produced when the footwear or tire is manufactured. These characteristics include the design and size of the tread of the tire and bottom of the shoe (outsole). Shoe outsoles and tires that are produced from the same mold are indistinguishable from each other coming off the assembly line. Footwear and Tire is one of the very few forensic comparison disciplines where randomly acquired characteristics are solely produced during the process of wear. Randomly acquired characteristics are random nicks, cut, scrapes, other damage, stone holds, nails, and foreign material that adheres to the bottom of the shoe or tire. This means that in order for the footwear or tire to become unique, they have to be used. A person must wear the shoe and walk in those shoes or install the tire and drive on them, to produce these characteristics. These are the characteristics that make the shoe or tire unique from other shoes and tires.



The comparison process is conducted by comparing the questioned impression to a known shoe or tire. In the laboratory, the examiners receive "question" impressions from the crime scene along with "known" shoes or tires from a subject. The question impressions are examined to note the class characteristics along with any observable randomly acquired characteristics. The known shoes or tires that are submitted to the laboratory are also examined in the same way. Test impressions are made with the shoes or tires to demonstrate how the tread design elements reproduce on a surface. Using both the actual shoe and tire along with the test impressions that are made, they are compared to the question impression at the crime scene. During this phase of the examination, the examiner is looking for any correspondence in the class and randomly acquired characteristics. Once the comparison phase is done, the examiner than will form an opinion based



on the information that was gathered from the comparison. The opinion that is rendered is whether or not the shoe or tire made the impressions from the crime scene. If there is objective and sufficient correspondence of the class and randomly acquired characteristics, the examiner may conclude that the impression from the crime scene was made by the shoe or tire that was used for comparison. On the contrary, if there is a difference in class characteristics the examiner may conclude that the impression from the crime scene was not made by the shoe or tire that was used for comparison. In some circumstances, the examiner is able to determine that a relationship or association exists between the impression at the crime scene and the shoe or tire used for comparison based on a correspondence of general class characteristics, such as design. This will serve to include the shoe or tire used for comparison but will not rise to the same level as an identification, which can be expressed in a range of conclusions.