

CASE REPORT

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Interpretation of Shoe Wear Patterns in a Personal Injury Case

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ABSTRACT: In the course of a personal injury case, a shoe having a broken sole was examined to determine if the sole was broken when its wearer suffered a serious fall or if the sole had been broken prior to the fall (and therefore could have caused the accident). The analysis of scratches and other manifestations of wear, as well as the presence of waterstaining in the shoe's lining, indicated that the broken sole had not resulted from the wearer's fall but had existed for some time previous to that accident.

KEYWORDS: criminalistics, footwear

Forensic scientists are occasionally called on to examine footwear evidence. Most commonly, the forensic scientist is asked to state an opinion as to whether a particular shoe made a particular impression or left a particular residue shoeprint [1,2]. Less commonly, forensic scientists are asked to interpret marks on shoes. For example, the forensic scientist may be asked to determine whether the driver of an automobile involved in a collision was applying the foot brake at the moment of impact [3]. The following case illustrates an unusual use of wear patterns on footwear evidence.

Case Report

During a period of inclement winter weather, an elderly woman suffered a serious fall while ascending an exterior flight of steps at the residence where she was a tenant. She was hospitalized for the injuries sustained in the fall, which she alleged was the result of the icy conditions of the steps. The landlord strenuously denied this assertion and countered with the claim that the woman's fall was the result of her wearing a shoe with a broken sole which had caused her to trip. The landlord had found the woman's right shoe at the bottom of the flight of steps after the injured woman had been taken to the hospital by emergency personnel: its sole was broken across its width in the region of the ball of the foot. The injured woman explained this crack as being the result of the force of her fall and denied that the crack existed prior to her fall.

When the injured woman lodged a claim in excess of one hundred thousand dollars with

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the landlord's insurance company, the insurance claims adjuster asked this author to determine whether the crack could have been caused by the woman's fall. The claims adjuster envisioned performing mechanical tests to determine the force required to break the shoe sole or analyzing particulate material from the crack for the presence of sand and salt (used to clear streets and sidewalks of snow and ice).

A careful examination of the sole of the shoe revealed a number of apparently random scratches on either side of the crack (Fig. 1). While most of these scratches appeared to be continuous across the crack, others (indicated by arrows in Fig. 1) terminated at the crack. A small, tongue-like projection (circled in Fig. 1) was found to have a surface distinctly beveled by abrasion.

In this type of shoe a sheet of plastic is placed between the sole and the upper as a moisture barrier. As shown in Fig. 2, a small hole was found in the moisture barrier. Corresponding to this hole was a waterstained area in the lining (Fig. 3).

Discussion

The scratches on the sole that are continuous on both sides of the crack were clearly made before the crack occurred. However, the fact that some of the scratches terminate at the crack suggests that the shoe was worn for some period after the crack appeared. The pronounced beveling of the small projection is very strong evidence that this was the case: it is difficult to imagine how such beveling could have occurred before the crack appeared or

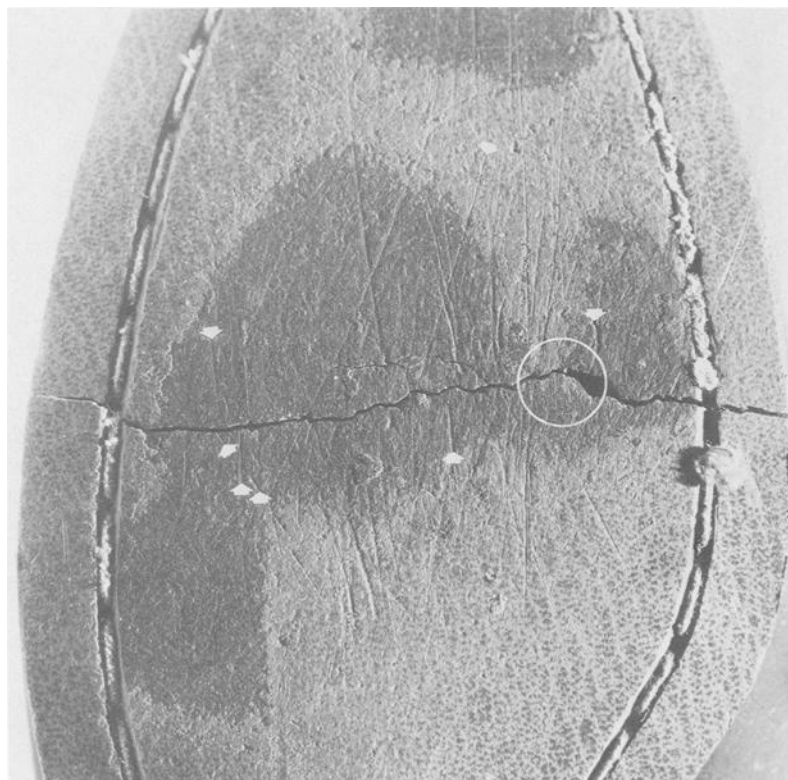


FIG. 1—Sole of shoe in the vicinity of the crack. Arrows indicate that scratches terminate at crack. Circle indicates distinctly abraded projection.



FIG. 2—View of crack in sole. Arrow indicates hole in moisture barrier.

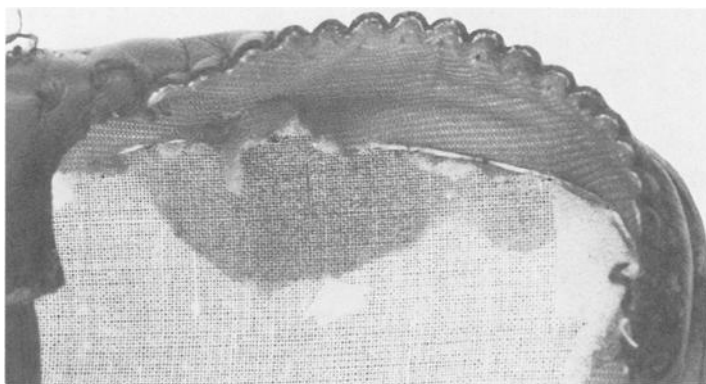


FIG. 3—Lining of shoe. Arrow indicates extensive water-stained area corresponding to hole in moisture barrier.

during a fall down a flight of stairs. The waterstained lining further indicates a period of wear after the appearance of the crack: rain water or slush would readily pass through the crack and the hole in the moisture barrier and stain the shoe lining.

In conclusion, the wear patterns on the sole of the shoe and the staining of the lining strongly support the conclusion that the shoe in question was worn for some period before its wearer fell down the flight of stairs. Not only does the evidence contradict part of the claimant's version of the accident, but it also provides a basis for a showing of contributory negligence on the part of the claimant.

The claimant subsequently accepted a sharply reduced sum in an out-of-court settlement.

Acknowledgment

The author wishes to thank Mr. Rick Johnson for preparing Figs. 1 to 3 and other photographs in this case.

References

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