

CASE REPORT

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Association Between Victim's Clothing and Fabric Impressions in Grease

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ABSTRACT: A child was killed by a truck which left the scene. Recovered evidence included a chunk of grease which displayed cloth rib and fabric weave impressions that did not precisely match those of the victim's pants. Various methods of reproduction were attempted before a positive conclusion was drawn regarding the source of the impressions.

KEYWORDS: criminalistics, impressions, fabrics, comparative analysis, fabric impression, inked impression, weave pattern, photographic enhancement

Case Report

A two-year-old boy wandered away from his parents onto a busy highway and was struck and killed by a vehicle that left the scene. Witnesses identified the vehicle as being a particular type of semi-trailer truck. A similar truck was stopped by the Highway Patrol a short time later; the driver denied any involvement in a hit-skip incident, but did admit to "striking something" that he thought was an animal or other obstruction near the scene of the accident. A search of the underside of the vehicle revealed, in addition to other items, grease removed from a ball joint which displayed parallel impressions. The chunk of grease was approximately $\frac{7}{16}$ by $\frac{5}{8}$ in. (1.0 by 1.5 cm) in size, and, using photographic enhancement, revealed not only cloth rib spacing but a fabric weave impression (Fig. 1).

Discussion

The victim's shirt, a chain-link weave, could be immediately eliminated as a possible source of the impressions; his corduroy pants (Fig. 2) displayed gross similarities, but the rib spacing and the angle of the weave (Fig. 3) did not correspond to that impressed in the grease. After a thin layer of black ink was applied to the pants, a variety of methods was utilized to obtain inked impressions, including constant pressure, rolled pressure, and sudden shock, using a rubber mallet to simulate vehicular impact [1]. None of these methods was successful in recreating a similar impression. A closer examination of the seams of the pant leg revealed slightly pulled and separated areas, possibly caused by impact. As a result

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FIG. 1—The chunk of grease recovered from the truck ball joint. Each measuring unit equals $\frac{1}{8}$ in. (3 mm).

of this observation, the fabric of the pants was stretched at an angle, pulling at the upper left and lower right, and then tacked onto a board. The pulling process drew the fabric ribs into closer proximity and subsequently caused the angle of the weave to become more acute. Inked impressions and photographs made of the skewed fabric then more closely corresponded to the impression in the grease (Fig. 4, with the negative reversed). It was concluded that the corduroy pants (or a similar fabric) could have made the impression found in the ball joint grease.

Conclusions

Determinations made in this case underscore the importance of critically analyzing evidence from every perspective, not restricting oneself simply to the obvious or to the initially apparent. Oftentimes, evidence such as clothing or bed linens become entangled, folded over, or stretched during the commission of a crime, leaving behind mixed stains, misaligned holes, or confusing impressions for the criminalist to interpret. In the course of either associating or disassociating a suspect or evidence or both to a particular crime, individual initiative may be required to untangle the obfuscating web and to explore thoroughly *all* possibilities, not just the convenient or the expected. As the patron saint of forensic science, Arthur Conan Doyle, once said, "When you have eliminated the impossible, whatever remains, however improbable, must be the truth" [2].



FIG. 2—*The victim's corduroy pants. Measurements are in inches.*

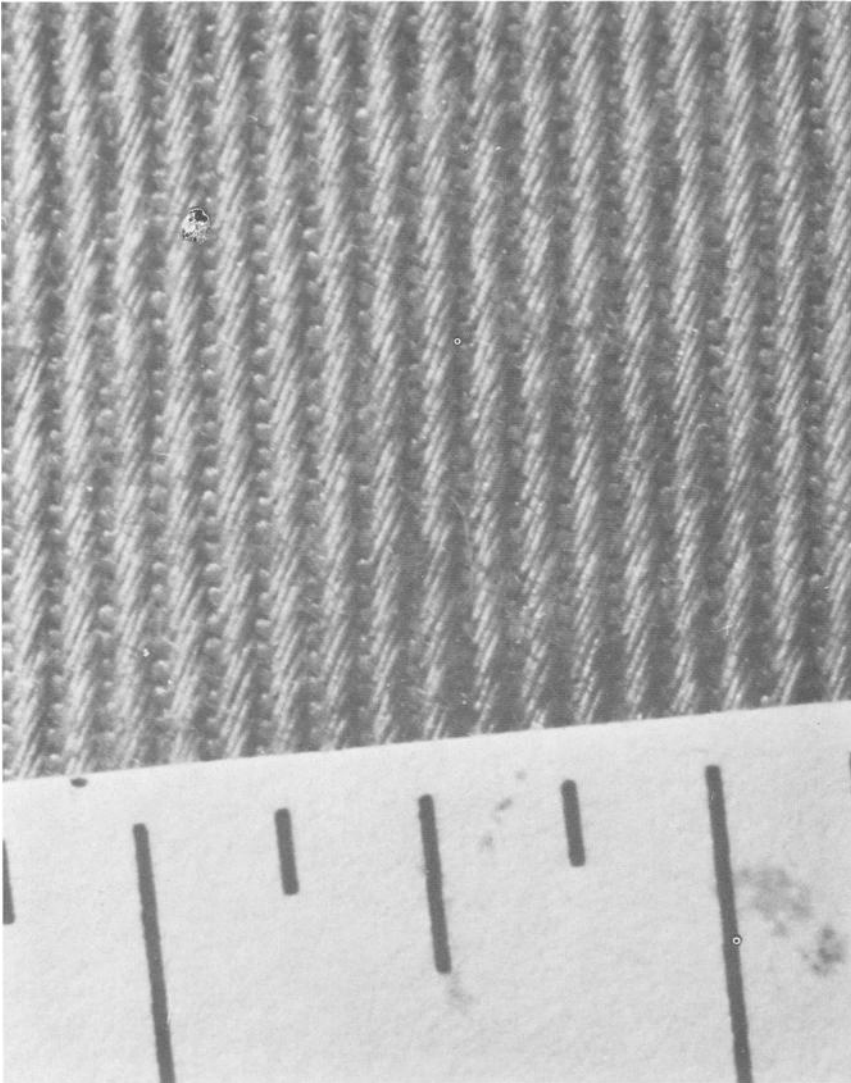


FIG. 3—*The rib spacing and angle of weave of the pants. Each measuring unit equals $\frac{1}{8}$ in. (3 mm).*

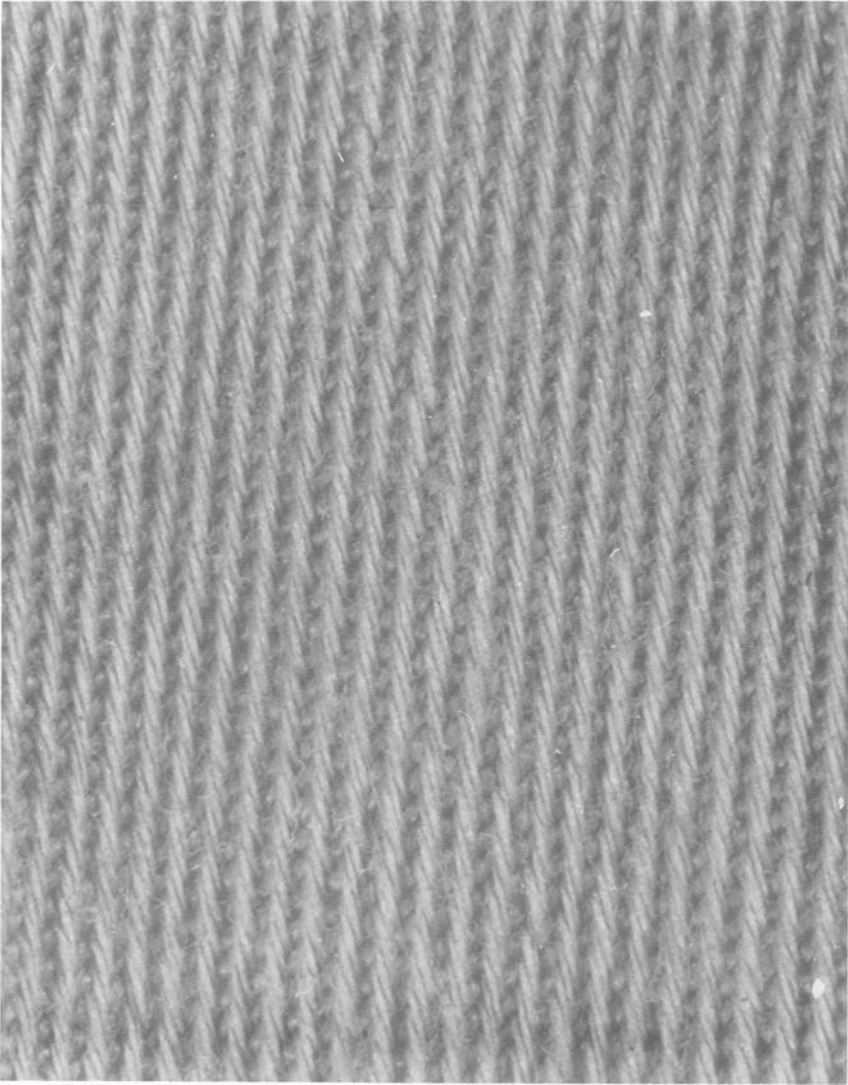


FIG. 4—Altered fabric and weave patterns after pulling process. Photo negative was reversed to enhance comparison to impression in grease. Each measuring unit equals $1/8$ in. (3 mm).

Acknowledgments

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References

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