JOURNAL OF FORENSIC SCIENCES

J Forensic Sci, September 2012, Vol. 57, No. 5
doi: 10.1111/j.1556-4029.2012.02218.x
Available online at: onlinelibrary.wiley.com

BOOK REVIEW

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Review of: *Mechanics of Impression Evidence*

REFERENCE: Pierce DS. Mechanics of impression evidence. Boca Raton, FL: CRC Press/Taylor & Francis, 2011, 221 pp.

Never has the maxim "You cannot judge a book by its cover" been more appropriate to describe this reviewer's evaluation. The title is attractive for the forensic practitioner who is involved in what has been categorized as "impression evidence" within the field of specialties in Forensic Science. Typically, the term is used to include the evidence derived from footwear, tires, tools (in all their forms), firearms, and latent prints. Add the word "mechanics" and the study of how the evidence is produced by forces on matter or material increased my interest that underlying processes that produce such evidence would be described and categorized. Opening and reading the book's preface and introduction helped increase these expectations.

However, those expectations were dashed with the first chapter titled "Forensic Analysis of Wood DNA." I had to stop and go back to read the table of contents to check whether this was possibly a book printer's error of placing the wrong cover on the book. This very short chapter described the technical advances and challenges in extracting DNA from wood. The author proposed a scenario of tools used to force wood objects and the wood debris, and the resulting wood DNA might serve as a useful adjunct to the impression evidence (toolmark) in the case. This tenuous link is the basis of the chapter that was "purposely set apart by the comparison of specimens rather than markings" and further "helps to set the tone" for the rest of the book.

The following chapter "Signs of Evolution" initially relays the most recent NAS report and then provides the reader a thorough underlining thesis or "tone" of the book. The author uses mechanics to help describe what he hopes is a more intuitive and unconventional approach to evidence and research into new and evolving evidentiary methods and expertise. The thesis is developed further in the next chapter entitled "Ivory Tower Syndrome." The contents of this chapter primarily focus on the resistance to change scientific practice, the "forensic ivory tower." This tower consists of justifying a conclusion based on inductive and deductive reasoning. What follows is a treatise on the forensic profession, its disciplines, scientific change, deductive in comparison with empirical and statistical approaches, and the concept of uniqueness.

The chapters "Fluids" and "Potential of Electrostatics" are additional examples of where the content stretches the definition of impression evidence. "Fluids" in its own right is a very interesting chapter more fitting as an AAFS Journal article. In the same vein, relevance was not apparent when reading about a new but not validated use of electrostatics on latent print impressions.

The chapter "Bias" is a short and concise discussion of cognitive bias in forensic science examinations, and the negative effects that may be a predisposition to error. The chapter leads to "Exhibits to Evidence" that more closely describes the examination process of the evidence to include issues in observation, preconceptions, condition and creation theory, comparison, conclusions, and the transformation of these observations into opinion evidence.

When encountering topics that are more relevant to mechanics and impressions, content was usually thoughtful in presentation and context. "The Ground We Walk On" returns to mechanical and materials concepts where soil as a matrix for impression evidence is described. However, it was too brief in content and only comprised eight pages including photographs and references. "Measurement" outlines the issues of scale accuracy, photometry, and the limits to accuracy and precision and emerging impression evidence recording technology.

"Surface Pairings" is an in-depth review and should have been placed at the beginning of the book, as it dealt with a number of concepts and definitions of processes that are the framework of the book. The surfaces and the material composition and make-up are conditional variables that must be understood prior to, during, and after the surfaces come in contact. The author underlines the fact that understanding these concepts in the hypothesis formation and in observation is fundamental.

"Validation Study of 3D Striations from Outsoles" comprises an extensive 26-page description of a controlled experiment, which, although being very instructive and could be a Journal manuscript in its own right, reads as a separate contribution.

The book ends with "Toward Development of a Unified Theory." The author supports the concept of a "unified theory regarding the mechanics of forensic impressions…" (p. 197) that would involve evidence domain scope, technological design paths, and modeling.

The potential reader of this book should understand that the title and descriptions of this book may not fulfill expectations of mechanics and impression evidence. However, many topics are interesting thought provoking discussions. I would advise the reader to first review the book to determine whether it fulfills a need prior to purchasing it.

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