

Digital Technology for Forensic Footwear Analysis and Vertebrate Ichnology

Fossil footprint experts work with police to track criminals



Modified from: Rideau Sur La Semaine August 2018

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 Springer

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Additional material to this book can be downloaded from <http://extras.springer.com>

ISBN 978-3-319-93688-8 ISBN 978-3-319-93689-5 (eBook)
<https://doi.org/10.1007/978-3-319-93689-5>

Library of Congress Control Number: 2018947797

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

To
Tilman Bennett
(1997–2015)
and
Magdalena Majchrzyk
(1983–2006)

Preface

There is no branch of detective science which is so important and so much neglected as the art of tracing footsteps.

Sherlock Holmes, *Study of Scarlet*.

Despite the fictional nature of Sherlock Holmes, this statement rings true today. The study of footwear is *neglected* in modern forensic practice and *does* have much to offer. What it needs is an injection of technology and associated modern analytical tools. These tools are emerging from the digital revolution currently transforming vertebrate ichnology. Ichnology is the discipline of earth science which focuses on the study of trace fossils such as footprints. This book draws upon both disciplines (geology [ichnology] and forensic science) to show how the two have much to learn from each other especially with regard to the digital capture and analysis of footprints and footwear evidence.

Matthew started on this journey over a decade ago studying fossil footprints and pioneering the application of optical laser scanning to vertebrate traces. He quickly realised that a 3D model looked very cool but to really make an impact one needed to use this quantitative data analytically and to do so one needs to explore and develop new analytical tools and approaches. This called for new software and the partnership with Marcin, a talented and young computer scientist, was born. Through various iterations—Foot Processor, Foot Viewer and Transformer—together they developed software dedicated to the analysis of fossil footprints. In 2015 they were awarded a NERC Innovation Award to translate this research software and knowledge into tools for forensic practice as well as to continue to serve vertebrate ichnologists. In this way, DigTrace was created and launched in 2016. This book is based around this freeware which can be downloaded from www.digtrace.co.uk, but even if you don't wish to explore our software, there is still much to learn from

the interdisciplinary exchange of information between ichnology and the study of forensic footwear. Don't be put off by the juxtaposition of fossil and criminal traces; both are examples of ichnology which this book celebrates.

Poole, UK
May 2018

Matthew R. Bennett
Marcin Budka

Acknowledgements

Much of this research has been undertaken with the financial support of the Natural Environment Research Council (NERC) via several awards including NE/H004246/1 and NE/M021459/1. We would also like to acknowledge the support of Knowledge Transfer Partnership awarded to Bournemouth University and Bluestar Software Ltd and the continued financial support of Bournemouth University. Rashid Barkov coded much of DigTrace, and Peter Falkingham provided input in the early stages of developing our approach to photogrammetry. We would like to thank our students, in particular, Samantha Underhill and Hannah Larsen. Hannah is currently working for her doctorate using DigTrace and contributed important case studies and examples to this book. We would like to thank DCI Julie Henderson, Selina Reidy, David Kanaras and colleagues for their support. The advice and friendship of Alun Mackrill and his colleagues at Bluestar Software are gratefully acknowledged, as is the support of Foster and Freeman Ltd. We would like to pay particular tribute to Professor John Fletcher, PVC Research and Innovation, and Julie Northam, Bournemouth, who have believed in this project and supported it financially wherever possible. We would like to thank Igor Paratte a talented artist for permission to reproduce his witty cartoon as our frontispiece. We would also like to thank Matteo Belvedere for an insightful review of this book prior to submission.

Professor Bennett would like to thank Matteo Belvedere and David Bustos for their company and friendship both in the field and beyond. A particular debt is also owed to Sally Reynolds and Samuel Bennett who have endured many ‘mad-cap schemes’ over the years to collect footprint data and have put up with so much. Neither will ever forget the day I dropped a bucket of plaster on the kitchen floor while casting footprints! Professor Budka would like to thank his wife Dominika and daughter Weronika for continued support in all his endeavours, no matter how crazy they might seem (at first). Special thanks also go to his parents for always trying to gently push him in the right direction (we were all young once!), which worked out quite well!

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