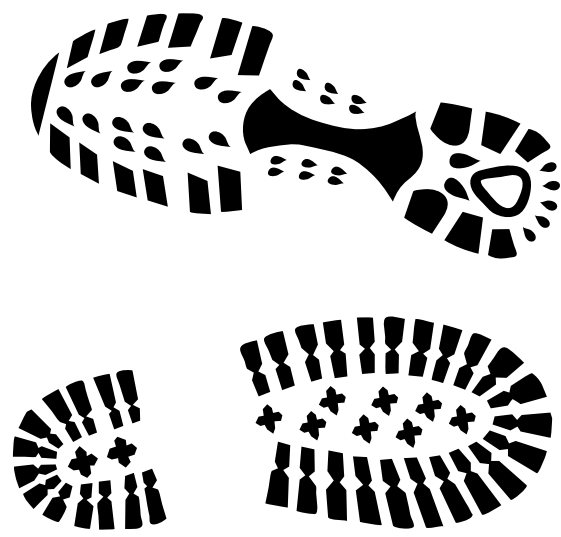




Bournemouth University



Forensics

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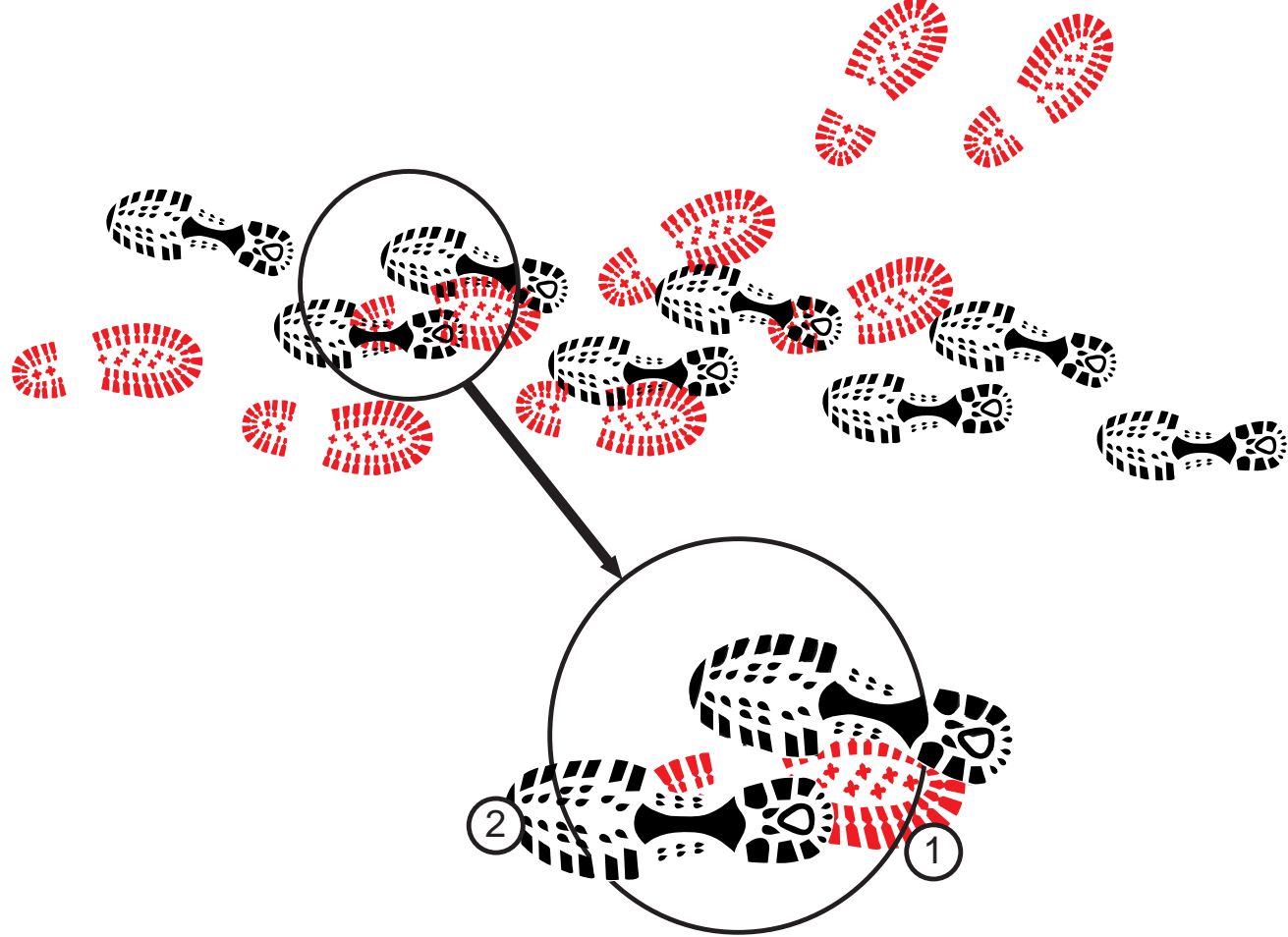
ABSTRACT

Footprints can provide evidence at a crime scene. It is possible to reconstruct the sequence of events and the movement of people around a scene from their tracks. Traces may be left as true three-dimensional tracks, at outdoor scenes, or alternatively as two-dimensional traces associated, for example, with blood tracked about on the soles of the foot. Traditionally three-dimensional tracks are preserved via photography and by casting the tracks in plaster. It is possible however to use the techniques developed at ancient footprint sites by Professor Bennett and his colleagues to digitally capture the tracks either using an optical laser scanner, or via soft-copy photogrammetry. Professor Bennett and his colleagues are pioneering the application of geoarchaeological principles to the collection of footwear evidence at crime scenes. The wear patterns on shoes reflect the individual characteristics of a persons gait and may be unique to them allowing them to be linked to a crime scene. Barefoot impressions are important in large parts of the World where for either climatic or socio-economic reasons a large portion of the populace are still habitually unshod.

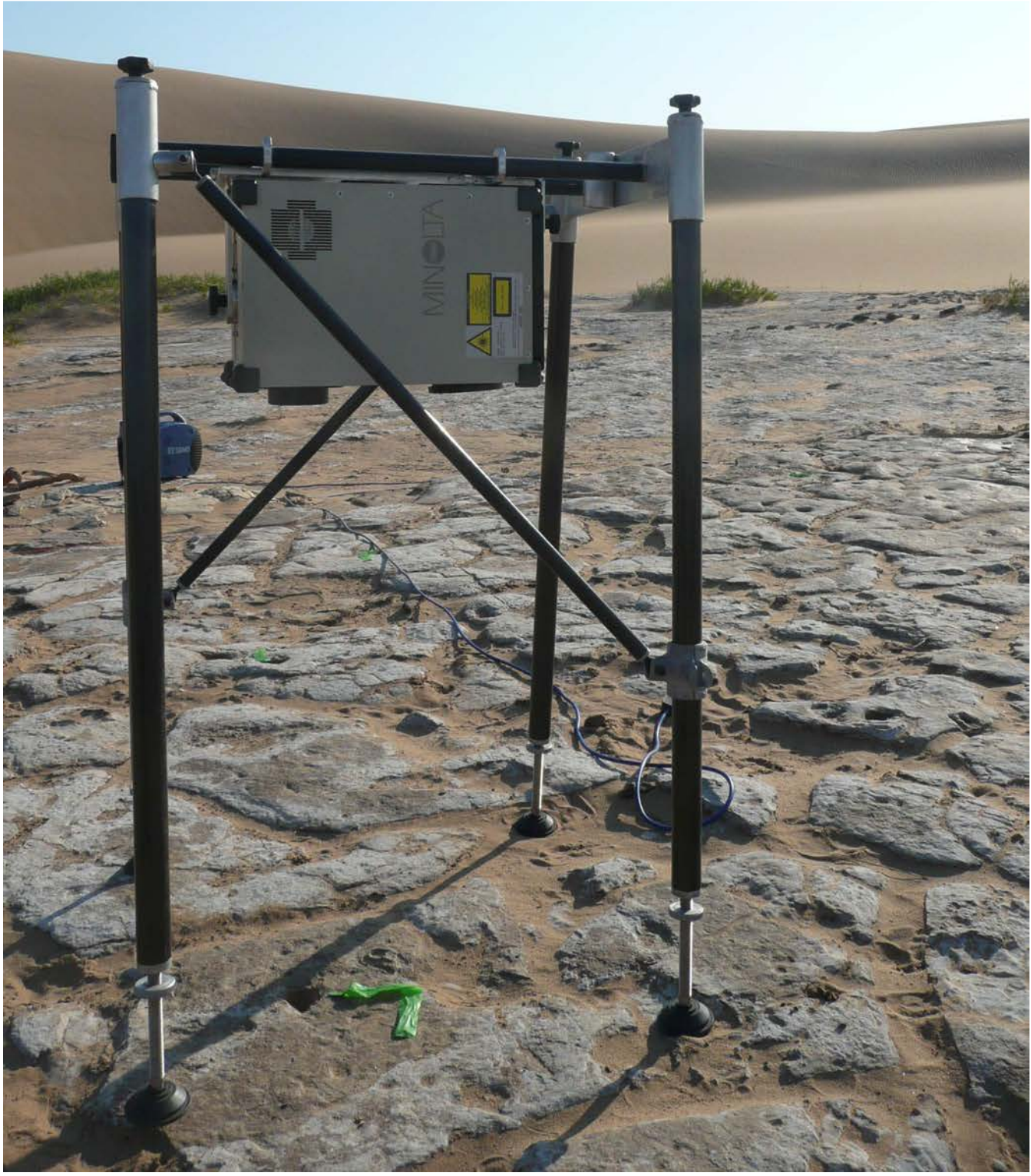
Bennett MR and Morse SA (2014). *Fossilised Locomotion: What can footprints tell us?* Springer.

Methods

The sequence of tracks at a crime scene can be deduced from the cross-cutting pattern of tracks as shown below: which came first (1) or (2)?



Traditional methods of forensic data capture involve photography and casting of tracks. However it is possible to use an optical laser scanner like the one shown below in order to capture a digital image. Digital images can also be obtained by photogrammetry and such techniques are set to be common place at the crime scene of the future.



Which boot made the track?



?



Application

In the application below a series of tracks have been scanned. In some cases the shoes are identical but can be separated by the wear characteristics upon them. These characteristics are specific to an individual and allow their shoes (and them) to be linked to a crime scene.



How unique is a human track?

We all walk in a slightly different way and our gait is 'unique' to an individual to some degree. But is it sufficient for our tracks to give us away? Research is ongoing and Professor Bennett and his colleagues hope to be able to determine just how unique our tracks are in time. The Foot Lab is just one part of this research.

