First Forensic Ltd

Briefing Note 6 - Footwear Impression Comparisons

When a person stands on a surface such as a floor or windowsill, an impression recording the detail of the sole of the footwear may be made on the surface. This mark may be photographed and/or lifted for further examination. A comparison of the impression with test impressions made with a suspect's footwear can show whether an impression recovered from a scene could have been made by that footwear.

The sole patterns of footwear vary considerably and can contain many different pattern elements. Each sole pattern is normally available in a wide range of shoe sizes.

During the manufacturing processes small defects can occur. Often called moulding defects, these can be indicative of a particular mould i.e. the size of the footwear.

General wear is the wearing down of those areas of the footwear which regularly come into contact with the ground. The nature of the wear can vary between individuals and can, in itself, be distinctive. During wear the undersurfaces of the footwear can become cut or damaged and if characteristic wear and/or damage on the undersurface of an item of footwear are reproduced in the scene mark, then a conclusive link can be established between the footwear and the impression.

The comparison, therefore, is affected by a combination of the quality and quantity of the characteristic features of the footwear and the quality of the scene mark.

In assessing the strength of footwear evidence a number of factors are taken in to account. An item of footwear is compared with the scene marks by an assessment of "class" characteristics such as pattern and pattern size, followed by specific uniquely characteristic detail.

The wide range of patterns available in all sizes gives the first basis for discrimination.

Sources such as SATRA (Shoe and Allied Trade Association) indicated that the range of footwear of size 6-8, for example, would account for approximately **30% to 40%** of all footwear (www.sizefinder.com/new_page_2.htm).

There will, therefore, be a significant number of other pairs of footwear with the same combination of pattern and pattern size. Some of these may be excluded on the basis of geography, wear difference or other features. Not all of them will show the same degree of wear as evident on the suspect footwear but some will.

The next stage, after comparing pattern, pattern size and general wear features is to compare the more specific wear and damage features.

Specific wear and damage features are acquired randomly through normal wear and tear. Consequently, if these features are present in sufficient quantity and/or quality they may be sufficient to conclusively associate a particular item of footwear to a particular mark.

When these features are not present then an assessment may, in part, be based on the occurrence of the footwear in question. One method of doing this is through a reference collection of footwear. The Forensic Science Service and other footwear providers maintain such a database. These databases provide a source of information on the identification and frequency of occurrence of a particular pattern type. It is largely based on footwear submitted in cases of burglary and is consequently dominated by training shoes. It is also susceptible to regional variation, due to marketing strategy, local fashion, diversity of retail outlets etc. It can, however, be searched and provide an indication of the popularity of a particular pattern type.

In the case of a unique identification the information provided from a database would be of no added value.