

# Module 5

## Non-original handwriting

### Overview

*Non-original handwriting is commonly encountered in the forensic environment. FDEs are required to take into account a number of limiting factors when expressing opinions regarding the significance of apparent similarities and/or dissimilarities between non-original samples of writing. This module overviews the rationale for the special treatment afforded to non-original handwritten images.*

### Discussion

Document examiners may be requested to perform handwriting examinations on non-original documents. Non-original handwriting refers to images appearing on documents that are not produced directly by the interaction between the human movement system, the writing implement and the writing surface. Examples of processes producing non-original images include photocopying, microfilm, software-generated print-outs and facsimilies. As reproduction processes produce images that contain less feature information than original handwriting, many examiners are hesitant to express authorship opinions on this type of material. However, a number of authors (Hilton, 1982; Ellen, 1989; Morton, 1989), while strongly emphasising major restrictions when expressing opinions regarding non-original writings, consider that fruitful comparisons can often be made. Hilton (1982, 384), regarding the examination of non-original writing, wrote that "...general handwriting can often be tentatively and sometimes be positively identified" and that this condition also holds for signatures. This author does, however, recognise that "Some workers refuse to examine all copies, but the practical examiner recognises that it is necessary to rely on copies at times" (Hilton, 1982, 385). Along similar lines Ellen (1989, 62) has written "Although some of the detail will not be apparent, in many examples of good quality

photocopies there will be adequate material for a useful comparison to be made”, and that “It is possible to identify photocopied writing as having been made by a known writer”. Morton (1989, 464) in another study on non-original documents concluded that “most of the copiers reproduced the signatures, genuine and forged, well enough for a fruitful examination”.

A detailed study regarding experts’ assessments of line quality features in non-original signatures was presented by Dawson and Lindblom (1998). These authors investigated the extent to which the photocopying process inhibits the ability of experts to assess a variety of line quality features and whether the non-original features impacted on the assessment of overall line quality. They found that although not all line quality features could be correctly identified by FDEs, this did not result in significant inaccuracies in the overall assessment.

A study by Found, Rogers and Herkt (2001) compared the accuracy of examiners’ opinions on 260 original questioned signatures and on the same signatures that had been photocopied. It was found that no errors regarding authorship were made for original or photocopied signatures, and there were no instances where an identification/elimination opinion was reversed between a photocopy and its original. Only 2.3% of opinions relating to an original signature differed in any way from that offered for its photocopy. The high correct rates for questioned genuine signatures were similar for original (100%) and photocopied signatures (98%). The correct opinion rate regarding the process of production of original and photocopied, simulated, questioned signatures combined was 99.7%. A follow-up study by Found and Rogers (2005) showed that there was strong evidence to support that examiners were able to express accurate opinions on photocopied signatures. These studies provide strong evidence that examiners are able to express valid opinions on handwriting with the same accuracy and similar sensitivity when using either originals or photocopies.

When undertaking an examination of non-original handwriting the examiner must be aware that almost all reproduction processes result in a loss of fine detail which may make features such as striation marks, pen lifts, pen stoppages, retouching and line quality indeterminable or ambiguous (Dawson & Lindblom, 1996). Indicators of a

tracing process such as traced guidelines, pencil guidelines and indented impressions may also be undetectable on the copy (Ellen, 1989). In addition artifacts of the copy process (trash marks for example) may be difficult to differentiate from the handwriting being examined. In many instances handwriting comparisons can be made on non-original documents as letter formations and their connections, size and height relationships, spacing and slant can often be extracted from good quality images. Additional information is available from non-original handwriting generated from indented impressions, carbon and non-carbon receipts as these are dynamic (direct) forms of reproduction as opposed to machine-generated images.

Compounding the difficulty associated with potential modifications of the original handwriting by the copying process itself, is that documents, and the images that appear on them, can be intentionally manufactured or manipulated from a genuine original document. Examiners must be aware of this reality as the validity of their opinions regarding the authorship of handwriting appearing on questioned documents may be unrelated to the validity of the questioned document itself. This section of the method aims to frame the possible limitations associated with these types of documents for the remainder of the examination process.

### **Manipulations to non-original documents**

Production of non-original modified documents can be broadly divided into those that have been manually produced and those that have been electronically produced (Metz & Black, 1994).

#### Manually produced non-authentic documents

Techniques used to manually produce documents are commonly referred to as 'cut-and-paste' methods (for example a genuine signature appearing on one document is physically cut out and placed onto another document, from which a copy is made).

Types of features that may be observed that would indicate this process include:

- Shadowing caused by the 'cut-and-paste' insertion of words or characters (Figure 5.1)
- Isolated entries which have no overlap with neighboring entries
- Unusually cramped or orientated entries (Figure 5.2)

- Incorrect syntax within a word or paragraph
- Traces or smudges in the vicinity of the questioned entry that could indicate the presence of the artifacts of previous entries
- Poor quality writing trace images when compared to the quality of surrounding entries

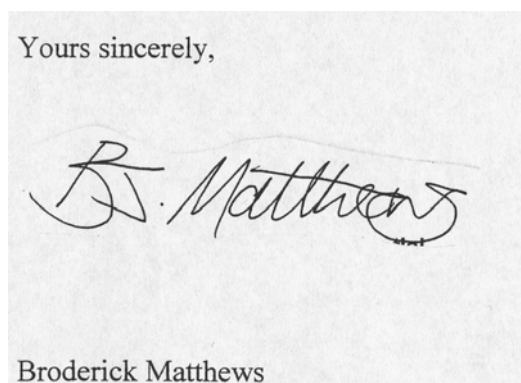


Figure 5.1 Shadowing around the top of the signature caused by ‘cut and paste’ insertion and traces of original printed text overlapping the terminal portion of the inserted signature.

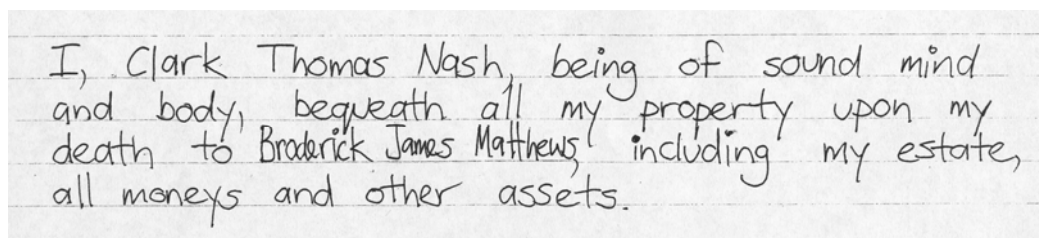


Figure 5.2 Unusually cramped entries “Broderick James Matthews”.

### Electronically produced documents

Detection of electronically produced fraudulent non-original documents has become more difficult as the technology of the reproduction machinery continues to develop. Already operators of various types of electronic equipment (mainly computers with associated image capture and printing devices) can capture, manipulate (in terms of size, orientation, position, slant, insertions, deletions and distortions) handwriting on a particular document and print a new document. Figure 5.3 shows a genuine signature that has been digitally manipulated into ten new non-original signatures. These signatures could then be digitally transferred onto a questioned document and printed.

It is not uncommon to find genuine non-original signatures (mainly photocopied) appearing on genuine documents (e.g. cheques). In addition it is possible that a non-original questioned signature is super-imposable onto, and identical with respect to line quality features, an original specimen or another questioned signature that has been submitted with the case. Under these circumstances it may be possible to express the opinion that the signature is a ‘machine generated simulation’ (see flow diagram).



Figure 5.3 Computer generated manipulations of a genuine signature into ten new (non-original) signatures.

### **Considerations regarding the reporting of the results of non-original handwriting**

Two schools of thought exist when it comes to the reporting on the examination of non-original documents. In both cases the examiner draws the attention of the reader to features of comparison, which illustrate similarities or dissimilarities within the handwriting or associated with the documentation. Some examiners offer the opinion that one sample of handwriting is pictorially similar or dissimilar when compared to another sample. The significance of the similarities and dissimilarities with regards to authorship is left unanswered.

Other examiners do offer an “opinion” to the client. These opinions are however preceded by a statement that the opinion expressed is based on the assumption that ‘the non original(s) examined are a true and accurate representation of the original document, and that if this assumption is proven, by whatever means, not to be true then their opinion should be reviewed’.

## **Conclusion**

There are limitations associated with comparing non-original documentation for the purpose of establishing issues associated with authorship. The standard basic criteria related to the quantity of material available for comparison and issues of complexity of material still remain relevant. In general the examiner may be able to show that a non-original document has been altered in some way (i.e. insertions or deletions), or that the non-original document may be a composite or fabricated document (Hilton, 1982). In addition an authorship opinion may be expressed. In these cases the assumptions made and the limitations of the examination should be stated. When communicating opinions as to the authorship of non-original questioned handwriting, (refer to Module 11), examiners must be careful to explain that although the handwriting may or may not indicate the involvement of the specimen writer, the document itself, or the message communicated by the handwritten text, may not be authentic. When the examiner is dealing with non-originals produced by dynamic reproduction processes (such as is evidenced on carbon paper or through imaged indentations) it may be possible to express stronger opinions about a documents authenticity than that which would be given for a machine generated non-original.