OSAC PROPOSED STANDARD 2022-S-0034
Standard for the Expression of Source Opinions in Forensic Document Examination

Forensic Document Examination Subcommittee
Physics/Pattern Interpretation Scientific Area Committee (SAC)
Organization of Scientific Area Committees (OSAC) for Forensic Science

OSAC Proposed Standard

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Foreword

Forensic document examiners (FDEs) may be asked to give opinions on the source of an item(s), such as whether a disputed handwriting sample was written by a particular person or whether an impression was made by a specific device. There is ongoing debate as to how examiners should communicate these opinions, but the trend is toward giving a statement of the relative degree of support the evidence (as per the examiner's observations) provides for a pair of competing, mutually exclusive propositions relevant to the case.[1][2][3][4][5][6][7] To promote consistency within and across jurisdictions, this standard prescribes a framework to be used by FDEs in reports and testimony that address such pairs of propositions.

[1] Strengthening Forensic Science in the United States: A Path Forward. Washington, DC: The National Academies Press, (2009) page 186. https://doi.org/10.17226/12589

[2] American Statistical Association Position on Statistical Statements for Forensic Evidence, American Statistical Association, Jan 2, 2019

[3] Alex Biedermann, William C. Thompson, Joëlle Vuille & Franco Taroni, After Uniqueness: The Evolution of Forensic-Science Opinions, 102(1) Judicature 19 (2018), https://judicature.duke.edu/articles/after-uniqueness-the-evolution-of-forensic-science-opinions/

[4] David H. Kaye, Likelihoodism, Bayesianism, and a Pair of Shoes, 53 Jurimetrics: The Journal of Law, Science, and Technology 1-9 (2012), ssrn.com/abstract=2269088

[5] Colin Aitken and Franco Taroni, *Statistics and the Evaluation of Forensic Evidence for Forensic Scientists, 3rd ed.* (England: John Wiley & Sons, Ltd., 2021)

[6] Bernard Robertson, G.A. Vignaux, and Charles E.H. Berger, *Interpreting Evidence: Evaluating Forensic Science in the Courtroom, 2nd Ed* (John Wiley & Sons, Ltd., 2016)

[7] Colin Aitken et al., Fundamentals of Probability and Statistical Evidence in Criminal Proceedings: Guidance for Judges, Lawyers, Forensic Scientists and Expert Witnesses (2010), http://www.rss.org.uk/Images/PDF/influencing-change/rss-fundamentals-probability-statistical-evidence.pdf [https://perma.cc/NV7K-VJ9C] (committee of the Royal Statistical Society)

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Standard for the Expression of Source Opinions in Forensic Document Examination

1 Scope

1.1 This standard provides a framework for opinions that can be reached by a forensic document examiner when performing comparisons relating to source determination. It prescribes the use of statements of relative support provided by the evidence for the propositions in question in lieu of statements about the examiner's degrees of belief about these propositions either before or after examining the evidence. It applies only to subjective judgments based on the observed features when comparing submitted items. Thus, it does not attempt to regularize inferences based on automated systems or statistical models. Neither does it cover the terms and definitions for reporting opinions with respect to other types of forensic evidence, and those terms and definitions may differ from the ones presented here.

1.2 This standard presupposes that (1) other standards will govern the underlying methods for analyzing items, and (2) studies to demonstrate the ability of forensic document examiners to reliably and accurately make the statements of support prescribed here will be conducted.

2 Normative References

None.

3 Terms and Definitions

3.1
findings
Outcome of any forensic examination(s) that includes observations, measurements, or classifications. The terms “evidence,” “observed combination of characteristics” or another phrase of similar intent may also be used.

Note: In comparative handwriting examinations the findings can often be categorized as similarities, divergences, or “not assessed” features. The absence of information may also be a finding.

3.2
proposition (forensic)
A statement or assertion about the origin or nature of the materials under examination, and which is either true or false.

Note: Any pair of propositions to which a statement of support applies must be mutually exclusive, meaning that both propositions cannot be true (although some mutually exclusive propositions are such that both could be false).

3.3
support
A relative measure of the likelihoods of observing the evidence under different propositions relevant to the case.

Note: For a set of features observed (the findings), if the likelihood of observing these features if proposition X is true is larger than the likelihood of observing these features if proposition Y is true, then the findings support proposition X over proposition Y. If the likelihood of observing these features is about the same under both propositions, the findings provide approximately equal support for each proposition.

4 Requirements

4.1 Significance and Use

4.1.1 At the time of publication, no standardized opinion scale with associated validation data exists for source determinations.

4.1.2 When this standard is used to create an opinion scale, the necessary types, quality, and possibly approximate quantities of data required to form an opinion for each level used in the scale shall be defined by the examiner/laboratory.[8] Generally, however, verbal scales used to communicate the degree of support for FDE opinions are not linked to objective thresholds. As such, the differentiation of levels (e.g., limited, moderate, strong) is subjective. There is currently no agreement on the optimal number of levels using qualitative opinion scales.

4.1.3 A validation statement describing the accuracy and consistency of opinions using the scale shall be provided. The statement must reference any known empirical studies of such, for the applicable type and quality of evidence for which the scale's use is intended. In the absence of relevant validity studies, the validation statement shall explicitly state that no such studies exist.

4.2 Opinion of Insufficient Basis for Meaningful Examination

4.2.1 When the submitted item(s) does not provide the quantity and/or quality of data to support a meaningful examination that can speak to the specific request associated with these items, language similar to the following should be used:

> "The submitted item(s) does not provide a sufficient basis for a meaningful examination to address the specific request."

[8] Possible ways to define the scale include (1) following the model set forth in the ENFSI or NIFS Guideline or (2) basing the strength of support in terms of examiner certainty and/or examination limitations, where stronger levels of support follow from more certainty or fewer limitations.

4.2.2 This outcome means the evidence does not contain adequate useful information for the examiner to form a meaningful opinion.

4.2.3 An explanation for why the evidence provides an insufficient basis for meaningful examination shall be given when this opinion is rendered.

4.3 Source Opinions

4.3.1 Opinions are reached after the examiner compares items to evaluate whether they have a common or different source. These opinions are currently subjective in nature and are based on observations regarding characteristics or features of the item(s) that have been examined and evaluated using the knowledge, education, training, and experience of the examiner. The examiner evaluates the quality, clarity, quantity, specificity, persistence, rarity, and extent of dissimilarities and similarities of the observed characteristics, taking into account any limitations.

4.3.2 The examiner must assess the support provided by the evidence by considering the likelihood of finding the observed combination of characteristics if the items came from the same source, relative to the likelihood of finding the observed combination of characteristics if the items came from different sources. The opinion provides an assessment of the relative strength to be attached to the findings in the context of the specified propositions, the item(s) provided, and any task-relevant information.[9] If the information or item(s) change, or should different propositions be of interest, then the opinion(s) may also change.

4.3.3 Examiners shall express their assessments of the support provided by the evidence as a statement of support for different sources, equal support, or support for same source. The opinion shall include a statement of factor(s) affecting the strength of opinion.

4.3.3.1 Support for common source is the examiner's opinion that the observations are more likely if the items came from the same source (or an item(s) came from a specified source) than if the item(s) came from a different source (or an item(s) did not come from a specified source). Support for different sources is t*he examiner's* opinion that the observations are more likely if the items came from different sources (or an item(s) did not come from a specified source) than if the items came from the same source (or an item(s) came from a specified source). The degree of support may range from limited to extremely strong. See Section 4.4 below.

4.3.4 Support for common/different source should be worded as follows:

"The findings provide <modifier>[10] support for proposition X relative to proposition Y",
or by using one of the following alternative formats:

"<modifier> support for X over Y"

[9]For information on task-relevant and task-irrelevant information in handwriting examinations, see Expert Working Group for Human Factors in Handwriting Examination, "Forensic Handwriting Examination and Human Factors," https://doi.org/10.6028/NIST.IR.8282

[10] See Section 4.4.

"<modifier> support for X rather than Y"

"more support for X than for Y, and the degree of that relative support is <modifier>"

4.3.5 Opinions of Equal Support should be worded similarly to either of the following:

"The findings provide approximately equal support for proposition X relative to proposition Y"

"The observations are equally likely to arise when either proposition X or proposition Y is true"

4.3.6 Examiners/laboratories should ensure appropriate procedures are in place to promote consistent application of their opinion scale.

4.3.7 The full opinion scale shall be provided or made available.

4.4 Source Opinion Categories

Examiners should use the following opinion categories. However, if required to use fewer gradations of opinion, they may combine adjacent levels and use the terminology associated with the lower level opinion. For example, the limited and moderate support for common source may be combined and expressed as limited support for common source.

4.4.1 **Extremely Strong Support for Common Source**: The findings extremely strongly favor the items are from the same source rather than from different sources.[11] There are virtually no examination limitations.

Example: "The findings provide extremely strong support for the questioned document having been produced by the submitted typewriter relative to it having been produced by a different typewriter."

[11] In other words, the findings are exactly as expected if the items/samples are from the same source and completely divergent from expected if they are from different sources. As an example, in the "ideal" handwriting case, the following would be expected:

- The questioned document(s) has a large amount or high complexity of writing (e.g. a page of writing or highly intricate signature)
- The questioned writing is fluently and naturally executed
- The writing is original or scanned at a high resolution to allow for observation of details
- There is a large amount of writing in the samples being compared, with the same combination of characters and in the same writing style
- At least some of the writing in the samples being compared is written contemporaneously
- There are similarities in all features of the writing being compared (e.g. all of the features in the questioned writing fall within the range of variation found in the known writing)

The basis for this opinion is that the examiner assesses (1) it is highly unlikely to observe the same combination of handwriting characteristics in such a large amount or high complexity of questioned writing in more than one writer and (2) there is excellent correspondence in similarity of features between the samples being compared.

4.4.2 Strong Support for Common Source: The findings strongly favor the items are from the same source rather than from different sources. The examiner assesses the limitations[12] as minor.

4.4.3 Moderate Support for Common Source: The findings moderately favor the items are from the same source rather than from different sources. The examiner assesses the limitations as moderately impactful.

4.4.4 Limited Support for Common Source: The findings slightly but discernibly favor the items are from the same source rather than from different sources. The examiner assesses the limitations as considerably impactful.

4.4.5 Equal support: The findings do not provide a sufficient degree of support for the items being from the same source or from different sources. This is effectively an inconclusive opinion.

4.4.6 Limited Support for Different Sources: The findings slightly but discernibly favor the items are from different sources rather than from the same source. The examiner assesses the limitations as considerably impactful.

4.4.7 Moderate Support for Different Sources: The findings moderately favor the items are from different sources rather than from the same source. The examiner assesses the limitations as moderately impactful.

Example: “The findings provide moderate support for the questioned torn document Q1 having come from a different notepad than K1 rather than from K1.”

4.4.8 Strong Support for Different Sources: The findings strongly favor the items are from different sources rather than from the same source. The examiner assesses the limitations as minor.

Example: “The findings provide strong support for someone other than the K1 writer having written the Q1 signatures relative to the K1 writer having written Q1.”

4.4.9 Extremely Strong Support for Different Sources: The findings extremely strongly favor the items are from different sources rather than from the same source. There are virtually no examination limitations.

4.4.9.1 Exception: A categorical opinion of source exclusion may be justified in the comparison of physical items with differences in class characteristics. This opinion means that the probability of observing the finding given the items are from the same source is zero. It shall only be expressed if there is a logical impossibility that the items came from the same source (e.g., an ink jet printer can be definitively excluded as the source of a document printed with toner). This

[12] See examination-specific standards for a detailed list of limitations (or “interferences”).

exception shall not be used for handwriting examinations, as source elimination of writers based on class characteristics alone is not supported in the literature.

5 Qualification and Limitations

5.1 Verbal scales utilized to communicate the strength of support for FDE opinions have not been tested for accuracy, repeatability, and reproducibility.

Annex A
(informative)

Bibliography

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3) Association of Forensic Service Providers, "Standards for the formulation of evaluative forensic science expert opinion," *Science & Justice*, vol. 49, no. 3 (September 2009): 161-164.

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