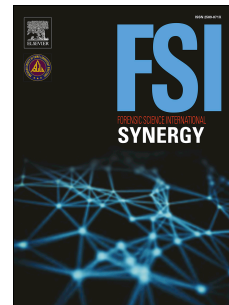


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Reply to Response to Vacuous standards – subversion of the OSAC standards-development process

Geoffrey Stewart Morrison, Cedric Neumann, Patrick Henry Geoghegan, Gary Edmond, Tim Grant, R. Brent Ostrum, Paul Roberts, Michael Saks, Denise Syndercombe Court, William C. Thompson, Sandy Zabell

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37 **Abstract:**

38 This Letter to the Editor is a reply to Mohammed et al. (2021)
39 <https://doi.org/10.1016/j.fsisyn.2021.100145>, which in turn is a response to Morrison et al. (2020)
40 "Vacuous standards – subversion of the OSAC standards-development process"
41 <https://doi.org/10.1016/j.fsisyn.2020.06.005>.

42

43 **Keywords:**

44 Forensic science; Standard; Validation; Method validation; Quality management

45

46 **Author contributions:**

47 **Geoffrey Stewart Morrison:** Conceptualization, Writing - Original Draft, Writing - Review &
48 Editing. **All other authors:** Conceptualization, Writing - Review & Editing.

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65 Standards and Technology (NIST).

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13 **Letter to the Editor:**

14 Dear Editor:

15 Mohammed et al. [1] was published as a response to Morrison et al. [2], but it does not refute any of
16 the claims or arguments presented in Morrison et al. [2]. The concerns expressed in Morrison et al.
17 [2] therefore still stand. All the authors of the present letter to the editor endorse the content of
18 Morrison et al. [2].

19 Morrison et al. [2] raised concerns about vacuous standards, i.e., standards that are characterized by
20 one or more of the following: they state few requirements; the requirements they do state are vague;
21 compliance with their stated requirements can be achieved with little effort; compliance with their
22 stated requirements would not be sufficient to lead to scientifically valid results. Rather than leading
23 to improvements in the quality of forensic-science practice, vacuous standards facilitate the
24 continuation of poor practice. If forensic practitioners or forensic laboratories are challenged with
25 respect to their practices, they can respond that they are following published standards. If those
26 standards do nothing to ensure good practice, then a court that does not know to enquire further will
27 be misled.

28 Morrison et al. [2] discussed two examples of vacuous standards, one on quality assurance
29 programs (ANSI/ASB 030 [3]) and the other on method validation (ANSI/ASB 072 [4]), and gave
30 more attention to the latter. Drawing on the U.S. President's Council of Advisors on Science and
31 Technology's report on ensuring scientific validity of feature-comparison methods [5], on the
32 England & Wales Forensic Science Regulator's guidance on validation [6],¹ and on the Australia &
33 New Zealand National Institute of Forensic Science's guideline on empirical study design [8],
34 Morrison et al. [2] listed a number of requirements that we believe are essential in order for a
35 standard on validation of forensic-science methods to be fit for purpose. None of those requirements
36 were included in ANSI/ASB 072.

37 We have received comments from some who believed that Morrison et al. [2] was an attack on the
38 Organization of Scientific Area Committees for Forensic Science (OSAC). This interpretation is
39 incorrect. As stated in Morrison et al. [2]: "The purpose of OSAC is clearly to improve the
40 scientific validity of forensic practice, and we fully support this goal." We continue to support
41 OSAC and its goal. Morrison et al. [2] was written to call attention to outcomes that do not advance
42 this goal, and to encourage efforts to improve standards-development processes so as to avoid the
43 publication of standards that are not fit for purpose. Morrison et al. [2] was not intended to be an
44 attack on the Academy Standards Board of the American Academy of Forensic Sciences (ASB-
45 AAFS) either. ANSI/ASB 030 and ANSI/ASB 072 happened to be chosen as examples because, at
46 the time Morrison et al. [2] was being written, OSAC was seeking input on whether those standards
47 should be added to the OSAC Registry of Standards.

48 We have also received comments suggesting that the concerns raised in Morrison et al. [2] should
49 have been raised exclusively internally to OSAC and ASB-AAFS. OSAC's standards-development
50 process and the published ASB standards were used as concrete examples of a more widespread
51 problem that has serious implications for the justice system and for the future of forensic-science
52 practice. This is a problem that absolutely needs to be brought to public attention, both to alert
53 courts to the problem and to encourage positive reforms in forensic-science practice.

54 Mohammed et al. [1] did not address any of the concerns of Morrison et al. [2] regarding the
55 *content* of standards. Instead it described the *process* by which ASB-AAFS develops standards

¹ Since Morrison et al. [2] was written, Issue 2 of the Regulator's guidance on validation has been published [7].

56 upon receiving documents from OSAC. This information is irrelevant to a discussion as to whether
57 the resulting standards are fit for purpose. It would be relevant from a quality-management
58 perspective, i.e., if one were attempting to ascertain whether the publication of vacuous standards
59 was due to flaws in the process, and, if so, attempting to amend the process in order to reduce the
60 probability of this problem reoccurring. This does not, however, appear to have been the reason for
61 presenting the information about the ASB-AAFS process – discussion of quality management is
62 absent from Mohammed et al. [1].

63 Mohammed et al. [1] appears to have great faith that “the consensus process” “results in more
64 robust, useful, and perhaps even more scientifically advanced standards.” The argument appears to
65 be that following the consensus process is a sufficient condition for the resulting standards to be fit
66 for purpose. This argument is backward. A standard or guideline is not scientifically valid because
67 it was developed by a consensus process. A standard or guideline developed by consensus is only
68 valid if the consensus has emerged as a result of applying scientifically-valid principles.

69 Biedermann & Kotsoglou [9] states:

70 [Replacing] ground truth in controlled experiments (e.g., validation studies or proficiency
71 tests) ... by some sort of inherently unequivocal forensic wisdom that takes the form of
72 either a *Fryesque*-consensus among independent experts, or a majority vote ... manages to
73 miss the basic lesson from *Daubert*: consensus in the respective community is simply a
74 surface feature of established and robust protocols and methods, not their core feature.
75 Methods are not sound *when* or *because* experts agree on them. On the contrary, there is
76 scientific consensus when these methods exhibit particular levels of performance. Arguing
77 otherwise confuses cause and effect by reducing scientific status and reliability to consensus
78 or decision-making rules (e.g. majority vote) rather than to methodological features.
79 (emphasis in original)

80 President’s Council of Advisors on Science and Technology [5] stated:

81 expressions of *consensus* among practitioners about the accuracy of their field is no
82 substitute for error rates estimated from relevant studies. (p. 6, emphasis in original)

83 Morrison et al. [2] argued that ANSI/ASB 030 and ANSI/ASB 072 are examples of vacuous
84 standards. If one accepts that argument, then ANSI/ASB 030 and ANSI/ASB 072 constitute
85 evidence that following a consensus process is not a sufficient condition for the resulting standards
86 to be fit for purpose. Whether these particular standards are not fit for purpose because of a failure

87 to properly follow existing standards-development procedures, because of some problem with the
88 existing procedures themselves, or for some other reason, we do not know. A quality-management
89 process would seek to determine the cause of undesirable results, and implement changes to reduce
90 the probability of their reoccurrence.

91 The aim in writing and publishing standards for forensic science is to improve the practice of
92 forensic science. Standards are not a panacea, but they are an important tool for improving forensic-
93 science practice. Writing and publishing vacuous standards subverts that aim. Particularly insidious
94 are vacuous validation standards, because the U.S. Supreme Court's ruling in *Daubert* [10]
95 identified "appropriate validation" (p. 590) and "the known or potential rate of error [of a
96 technique] ... and the existence and maintenance of standards controlling the technique's operation"
97 (p. 594)² as indicia of *scientific validity* (which it equated with *evidential reliability*), and advised
98 lower courts to consider these indicia when deciding whether scientific testimony or evidence is
99 admissible.

100 In discussing the meaning of *Daubert*, Kaye et al. [13] §8.3.2c states:

101 For a method-defining standard to contribute positively to admissibility decisions, it must
102 avoid the vice of vagueness. ... An appealing title, a complicated flow chart (sometimes
103 called a "process map"), a kitchen-sink bibliography (with no specific connections to the
104 body of the standard), and a lengthy sequence of ornately numbered sections do not ensure
105 the necessary specificity of the crucial steps. Thus, it has been argued that many of the
106 identification methods in common use are devoid of such controlling standards. Instead,
107 published standards contain circular or vacuous statements about the extent to which two
108 samples must display similarities for a criminalist to conclude that they are (or simply could
109 be) from the same source. Some courts seem to recognize that some "standards" do nothing

² Ironically, *Daubert* then indirectly cited a "standard" on the auditory-spectrographic approach to forensic voice comparison which we consider to be vacuous. Although seemingly detailed, at crucial steps its requirements were vague, and compliance with its requirements did not lead to scientifically valid results. In *Angleton* [11], admissibility of the auditory-spectrographic approach was considered under *Daubert*. It was ruled inadmissible, and there are no reported cases in which it has survived a *Daubert* challenge since. For extensive discussion, see Morrison & Thompson [12].

110 to confine discretion, but others are impressed with such unedifying directives as “Evaluate
111 the similarities, differences, and limitations. Determine their significance individually and in
112 combination” and “Form a conclusion based on results of the above analyses, comparisons,
113 and evaluations.”

114 We would encourage courts not to accept at face value claims of scientific validity based on the fact
115 that published standards have been followed. We would encourage courts to enquire further so as to
116 ascertain whether those standards are fit for purpose. We would also encourage developers and
117 publishers of forensic-science standards to monitor their processes, and, if necessary, to revise those
118 processes so as to reduce the probability that they will produce forensic-science standards that are
119 not fit for purpose.

120 Sincerely

121

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156 **Geoffrey Stewart Morrison:** Conceptualization, Writing - Original Draft, Writing - Review &
157 Editing. **All other authors:** Conceptualization, Writing - Review & Editing.

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