STATE OF WISCONSIN
SUPREME COURT

STATE OF WISCONSIN,

Plaintiff-Respondent-Petitioner,

v. Appeal No. 2010AP1952

BRIAN K. AVERY,

Defendant-Appellant.

REVIEW OF A DECISION OF THE COURT OF APPEALS, DISTRICT I, REVERSING AN ORDER OF THE CIRCUIT COURT FOR MILWAUKEE COUNTY, DENNIS R. CIMPL, JUDGE

AMICI CURIAE BRIEF OF:

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INTRODUCTION

Amici are distinguished academics and forensic science practitioners who have a longstanding interest in the effect of biasing information on the integrity of forensic science examinations. Many have published scholarly articles on the subject. Each is identified at the end of this brief; specifics about their professional backgrounds, expertise and relevant publications are detailed in their motion for permission to file this brief.

Amici submit that the "non-blind" methodology used by the prosecution's expert materially undermined the reliability of his opinions. The different approaches taken by the two experts in this case illustrate the proper and improper way to perform unbiased forensic testing. The defense expert was given no information in advance of his analysis concerning Brian Avery's actual height or the evidence introduced at his trial. By contrast, the State's expert worked backwards. Before starting his testing, he was told that Avery is 6'3" tall and was given both the defense expert's opinion that the robber in the video was only 5'10½" and extensive evidence from Avery's trial having nothing to do with the videos or the height of the perpetrator. After being infected with that biasing information, he then was told by the

State that prosecutors hoped he would provide an opinion that didn't rule out the possibility that the subject in the video might possibly have been 6'3". Not surprisingly, he did so.

For the reasons discussed below, the amici respectfully submit that the State's expert's opinions are therefore unreliable and not entitled to any weight.

I. WHY PROPER SCIENCE REQUIRES BLIND EVALUATIONS IN FORENSIC SCIENCE SETTINGS

Among the best-established and supported general propositions of modern cognitive psychology are the following:[1]

1. Any information unnecessary to the exercise of expertise can potentially distort results involving human judgment.

[1] The relevant empirical literature is vast. It is summarized in D. Michael Risinger, Michael J. Saks, William C. Thompson and Robert Rosenthal, *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 Cal. L. Rev. 1, 6-27 (2002). More recent literature includes, e.g., Karl Ask and Par Granhag, *Motivational Sources of Confirmation Bias in Criminal Investigations: The Need for Cognitive Closure*, 2 J. Investigative Psych. and Offender Profiling 43 (2005), and Emily Balcetis and Rick Dale, *Conceptual Set as a Top-down Constraint on Visual Object Identification*, 36 Perception 581 (2008).

2. The more such domain-irrelevant information engages emotions and desires, the stronger potential distortion will be.

These well-established principles have led to great methodological improvements in scientific research and practice.[2] Their methodological implications can be generalized into what can be called Rosenthal's Rule: any process using a human as a perceptor, rater, or interpreter should be "as blind as possible for as long as possible."[3]

Blinding to prevent the effects of such domain-irrelevant information has become the "standard of care" for science in the conduct of research and other studies (for instance, the double blind study design utilizing placebos in medical research).[4] Such task-irrelevant information is best seen as an infectious agent that should be eliminated to the greatest extent feasible.

Despite claims by some forensic practitioners that their training gives them immunity to the biasing effects of

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[2] Risinger et al., *supra*, note 1, at 47.

[3] Robert Rosenthal, *How Often Are Our Numbers Wrong?* 33 Am. Psychologist 1005, 1007.

[4] See Christopher T. Robertson, *Blind Expertise*, 85 NYU L. Rev. 174, 204-206 (2010).

domain-irrelevant information, there is good evidence that they are no more successful in guarding against such distortions by willing them away than any other group of humans ever studied. In fact, quite the opposite is likely, given the institutional context of forensic practice.[5] Forensic scientists' desire to help solve crimes, authority-subordinate relationships, law-enforcement 'team' identification, and pressures relating to significant individual crimes all combine potentially to increase the dangers posed in this setting.

Indeed, there are many well-authenticated examples indicating the peculiar vulnerability of forensic practice in this regard.[6] Perhaps the most notorious example is the Brandon Mayfield case.

After the 2002 Madrid train bombing, Spanish authorities lifted a latent print from a plastic bag associated with the bomb. That print was submitted to the FBI Latent Print Unit.[7] An IAFIS search returned twenty rank-ordered

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[5] The National Academy of Sciences Report STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009) identifies context bias a serious problem that needs to be addressed. See Recommendation 5, page 24.

[6] *See* Risinger et al., *supra,* note 1, at 27-42.

[7] U.S. Dept. of Justice Office of the Inspector General, A REVIEW OF THE FBI'S HANDLING OF THE BRANDON MAYFIELD CASE 30-34 (2006) (hereinafter DOJ IG's Mayfield Report) 29-30.

candidates from its criminal database.[8] The fourth-ranked set of prints belonged to Portland, Oregon attorney Brandon Mayfield,[9] who happened to be a convert to Islam associated with a mosque near Portland, where some members of a group of convicted Islamic terrorists (the so-called Portland Seven) had worshipped, and who had represented one of them in a child custody matter. Several qualified examiners attributed the Madrid print to Mayfield, both initially and during review. This turned out to be wrong. A special international review committee led by Robert Stacey, who was then chief of the FBI laboratory's quality assurance and training unit, concluded:

[8] The Integrated Automated Fingerprint Identification System (IAFIS) is the FBI's computerized fingerprint search system. It makes no "identifications" by itself. It sorts out prints with sufficient similarity to a latent print to be considered proper candidates for further analysis. *See id*. at 30-34.

[9] Mayfield's prints were in the database because of a 1985 arrest for burglary when he was 19, a charge later dismissed. DOJ IG's Mayfield Report, *supra*, note 7, at 31.

> [t]he power of the [computer-aided selection of candidate prints], coupled with the inherent pressure of working on an extremely high profile case, was thought to have influenced the examiner's initial judgment and subsequent examination. This influence was recognized as confirmation bias (or context effect) and describes the mind-set in which the expectations with which people approach a task of observation will affect their perceptions and interpretations of what they observe.[10]

Further investigation by the DOJ Inspector General concluded that the information about Mayfield's faith and links to terrorists caused the FBI examiners to be unwilling to reconsider their judgments when Spanish police disagreed with them.[11]

There is a growing record of formal testing of the effects of such biasing information in the context of forensic practice, with robust results. There are published studies based on experiments involving handwriting identification,[12]

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[10] Robert B. Stacey, *Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, 54 J. Forensic Identification 706 (2004).

[11] DOJ IG's Mayfield report, *supra* note 7, at 12.

[12] Larry S. Miller, *Bias Among Forensic Document Examiners: A Need for Procedural Change*, 12 J. Police Sci. and Admin 407 (1984).

visual hair comparison,[13] fingerprint identification,[14] and characterization of DNA mixtures.[15] All were well designed, and all yielded results one would have predicted from our knowledge concerning the way humans process information, and the vast research upon which it is based.

Perhaps the most dramatic of these is a 2006 study was by Dr. Itiel Dror and his colleagues, which demonstrated the vulnerability of even that most hallowed of traditional forensic identification techniques, fingerprint comparison, to

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[13] Larry S. Miller, *Procedural Bias in Forensic Examinations of Human Hair 11 Law and Human Behavior* 157 (1987).

[14] Itiel E. Dror, David Charlton and Ailsa E. Peron, *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 Forensic Sci. Int. 74 (2006). Other pertinent studies by Dr. Dror and others include Dror & Charlton, *Why Experts Make Errors 56 J. Forensic Identification* 600 (2006), Dror and Robert Rosenthal, *Meta-analytically Quantifying the Reliability and Biasability of Forensic Experts*, 53 J. Forensic Sci. 4 (2008), Glenn Langenburg, Christophe Champod, and Pat Wertheim, *Testing for Potential Contextual Bias Effects During the Verification Stage of the ACE-V Methodology when Conducting Fingerprint Comparisons*, 54 J. Forensic Sci. 571 (2009); Dror et al., *Cognitive Issues in Fingerprint Analysis: Inter- and Intra-Expert Consistency and the Effect of a "Target" Comparison*, 55 Forensic Sci. Int. 208 (2011); Dror et al., *The Impact of Human-Technology Cooperation and Distributed Cognition in Forensic Science: Biasing Effects of AFIS Contextual Information on Human Experts*, 57 J. Forensic Sciences 343 (2012).

[15] Itiel E. Dror and Greg Hampikian, *Subjectivity and Bias in Forensic DNA Mixture Interpretation*, 51 Science and Justice 204 (2011).

substantial distortion by exposure to domain-irrelevant context information.[16] In this study, five experienced fingerprint examiners were asked by a colleague to evaluate the Mayfield prints after it was known that the FBI had misidentified them. In reality each was given, not the Mayfield prints, but prints they themselves had previously found to match in actual cases. Four of the five now reached a different conclusion. One now said that the latent was too small and smudged to render a conclusion. And three now concluded that the latent didn't match the known (when they had come to the opposite conclusion in the real case).

The FBI Laboratory in particular has a mixed record in regard to controlling the use of irrelevant biasing information. The Inspector General concluded in his investigation of the FBI Lab explosives unit in 1995 that such biasing information was a serious problem. Perhaps the single most egregious example was the testimony in the first World Trade Center bombing case by David Williams. Mr. Williams identified the main charge as a urea nitrate bomb, not based upon residues found at the scene, but "on speculation based on

[16] Dror, Charleton and Peron, *supra*, note 14. The other studies listed in note 14 reach consistent results.

evidence linking the defendants to that explosive."[17] As the IG's report says:

> Williams portrayed himself as a scientist and rendered opinions as an explosives expert. As such, he should have limited himself to conclusions that logically followed from the underlying data and the scientific analyses performed . . . . He should not have based his opinions, in whole or in part, on evidence that was collateral to his scientific examinations, even if that evidence was somehow connected to the defendants . . . . By basing his urea nitrate opinion on the collateral evidence, Williams implicitly accepted as a premise the prosecution's theory of guilt. This was improper.[18]

In a similar vein, in the Psinakis case, which involved a claim that the defendant produced a large amount of explosive by stripping it out of detonating cord,[19] examiner Terry Rudolf

> [a]cknowledged that his identification of PETN on the tools was based in part on the fact that stripped detonating cord was found in the defendant's garbage. In his interview with the OIG, Rudolph observed that given this information, he presumed the material on the knife was PETN . . . . Rudolph failed to distinguish between the separate and distinct

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[17] Office of the Inspector General, U.S. Dep't of Justice, *The FBI Laboratory: An Investigation into Laboratory Practices and Alleged Misconduct in Explosives-Related and Other Cases* 11 (1997) (U.S. Doc. J 1.14/2:L 11/2). [DOJ IG's Explosives Report].

[18] *Id*. at 128-129.

[19] *Id*. at 24.

> roles of an investigator and a forensic scientist.[20]

It is clear from this IG's Report as a whole that domain-irrelevant information was routinely available to examiners in the FBI laboratory at the time of that report in 1997. The IG was hopeful that accreditation by the American Society of Crime Laboratory Directors would solve the problems the report identified. But as the Mayfield case illustrates, this was not to be. In response to the Mayfield debacle, the FBI Lab initiated truly blind confirmatory review processes for fingerprint identifications. But, as the present case shows, irrelevant case information is still allowed to be submitted to and considered by FBI examiners in other areas in ways that undermine the reliability of their scientific conclusions.

[20] *Id*. at 30.

II. THE RADICALLY NON-BLIND EVALUATION MADE BY FBI EXAMINER RICHARD VORDER BRUEGGE IN THIS CASE UNDERMINED THE RELIABILITY OF HIS CONCLUSIONS

In the present case, the contrast between the submissions to the defense expert and the prosecution expert show the right way and the wrong way of testing, if your goal is scientific accuracy and the discovery of the truth. The defense expert Gene Grindstaff was given no information concerning the height of the defendant. Thus, even if he had been inclined to help the party consulting him, he would not have been able to know what result would do that. He did not know the defendant's height, and thus could not know what would constitute an incriminatory result and what would constitute an exculpatory result.

By contrast, the prosecution expert, FBI Laboratory Questioned Photographic Evidence Examiner Richard Vorder Bruegge, was given much task-irrelevant information. A proper submission would have looked essentially like that made to Mr. Grindstaff. Instead, Examiner Vorder Bruegge admitted that he was given the results of Grindstaff's analysis, and asked to determine if he could do an analysis in

which the height of 6'3" was not excluded.[21] In addition, Vorder Bruegge admitted that he was supplied with and read judicial opinions and court briefs in the case.[22] Exactly why such documents were supplied to him is unclear, but they certainly contained renditions of the evidence against the defendant at his original trial, such as his confession and the identifying testimony of the putative co-perpetrator, which were irrelevant to the proper exercise of Vorder Bruegge's expertise. It is very clear that such information might easily induce in Vorder Bruegge a belief in Brian Avery's guilt, independent of and in advance of the results of his scientific testing, and therefore lead him to believe, explicitly or implicitly, that a proper result had to include 6'3" because that was defendant's height, and defendant was obviously guilty. This is precisely the kind of extraneous information that numerous studies show can improperly bias an examiner, even if the examination is then conducted in all good faith.

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[21] Vorder Bruegge testimony, Day 2, p.m. (R.19:21):

Q. (Mr. Findley): So basically you know going in that the State wanted—was hoping that your conclusions would include the possibility that the subject was 6 foot 3?

A. (Examiner Vorder Bruegge): Yes, I did."

[22] Vorder Bruegge testimony, Day 2, p.m. (R.19:19-21).

The improper way in which this task was presented to Examiner Vorder Bruegge was likely to have substantial impact on how he conceived of his task, unconsciously, consciously or both. For example, he selected different frames to analyze than did Mr. Grindstaff, whereas he might very likely have selected the same frames if he had been doing the task blind to the previous test and the previous results. Second, he selected frames that, because they were in the course of movement, and because they did not show as much of the body of the subject being analyzed, yielded less relevant data for determining height and introduced more uncertainty variables than those selected by Grindstaff. More uncertainty variables yield a broader rather than a narrower margin of error, and therefore a higher likelihood that the upper tail of that margin would including 6'3". Finally, when the application of his measurements and algorithms failed by an inch and a half to include 6'3" as a measure within his standard way of computing the margin of error, he stretched his testimony beyond his usual margin of error to say that 6'3" could not be "definitively" excluded,[23] at least in part

[23] This is the operative testimony: "Based on my knowledge of the uncertainties associated with these out of plane errors, the variations associated with stride posture, all of these
(footnote continued on following page)

because of the uncertainty variables that he himself had introduced into his methodology by his selection of frames for analysis (and which should have been accounted for in his original margin of error).

We have referred above to "Rosenthal's Rule." Here we suggest a corollary: when faced with results from blind and non-blind evaluations, all other things being equal, the blind results should be strongly preferred. This case illustrates why. Given that Examiner Vorder Bruegge did not take rudimentary steps to protect his own objectivity, it is difficult to conclude that his testimony is the product of "reliable principles and methods," as required by Wis. Stat. § 907.02. "Double-blind testing is not required for reliability although it is indicated, especially where it is possible, not terribly burdensome, and reasonably inexpensive." *Libas, Ltd. v. U.S.*, 193 F.3d 1361, 1369 (Fed. Cir., 1999). Examiner

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factors that we have gone through, I do not believe that there is sufficient evidence to permit one to definitively conclude that those factors exist so that the subject cannot be excluded. I am saying you can't determine absolutely that it can't be this person. That is the bottom line of my examination." Vorder Bruegge testimony, March 9, 2010 (R.118:46). One cannot help wondering whether this testimony would have been the same had the issue been whether a 6'3" person, urged by the defense as an alternate candidate for the perpetrator in the video, could be excluded as a result of Examiner Vorder Bruegge's measurements.

Vorder Bruegge gratuitously exposed himself to information that undermined the reliability of his own opinions.

Finally, this conclusion is not so far from everyday common sense. In that regard, we offer the following cartoon which appeared in the popular Sunday supplement cartoon series Laugh Parade. To avoid any implication of copyright abuse, we merely describe it thus: A little girl is standing next to her father's easy chair with a troubled look. The father has lowered his paper and is leaning forward to listen. The caption is: "But it doesn't count as a second opinion if I tell you first what Mommy said." Neither does Examiner Vorder Bruegge's testimony characterizing 6'3" as not "absolutely" excluded count as a proper second opinion, or first opinion, for that matter, given the radically non-blind nature of his evaluation. Any rational factfinder should give it little weight, and it certainly should not be treated as dispositive in this case.

Dated this 14th day of May, 2012.

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I hereby certify that this brief conforms to the rules contained in WIS. STAT. § 809.19(7) for a brief produced with a proportional serif font (Times New Roman, 13 point). The length of this brief is 2,987 words (as counted by MS Word).

I certify that this appeal is not taken from a circuit court order or judgment entered in a judicial review of an administrative decision and no part of the record is required by law to be confidential.

I further certify that the text of the electronic copy of this brief is identical to the text of the paper copies of the brief.

Dated this 14th day of May, 2012.

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