

(submitted but not accepted by the court)

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IN THE SUPREME COURT OF IOWA

No. 01-0653

APPEAL FROM

IOWA DISTRICT COURT FOR POTTAWATTAMIE COUNTY

District Court Case No. PCCV 073247

Decision of the Hon. Timothy O'Grady,

District Judge

<p>TERRY J. HARRINGTON,  APPELLANT,  v.  STATE OF IOWA,  APPELLEE</p>	<p><b>REPLY BRIEF OF AMICUS CURIAE DR. LAWRENCE A. FARWELL IN SUPPORT OF APPELLANT TERRY J. HARRINGTON</b></p>
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STATE OF IOWA,

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**REPLY BRIEF OF AMICUS  
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FARWELL IN SUPPORT OF  
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**TABLE OF AUTHORITIES**

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**REPLY BRIEF ARGUMENT**

This amicus reply brief deals only with Brain Fingerprinting. It offers rebuttal of the following points made by the state in its brief:

**1. THE STATE'S POSITION.** *Brain Fingerprinting "gets the same response whether the person is lying or telling the truth." Appellee's brief at 34. Brain Fingerprinting attempts "to determine whether the subject is being truthful when he or she claims to recognize or, claims not to recognize, information which the perpetrator of the crime would be expected to recognize." Id. at 39.*

**REBUTTAL:** Brain Fingerprinting does not concern itself with "truth-telling" or "lying" because it neither elicits nor evaluates statements. The algorithm used in Brain Fingerprinting simply analyzes EEG signals to determine

whether the subject's brain has recognized an item of information as being salient to the presented context.

The state uses this apparent confusion about the method and objectives of Brain Fingerprinting in an attempt to show that Brain Fingerprinting is similar to, and no more reliable than, the polygraph. Amicus refers the court to Dr. Farwell's opening amicus brief for facts and argument distinguishing Brain Fingerprinting from polygraphy.

**2. THE STATE'S POSITION.** *Brain Fingerprinting has no track record establishing its reliability and has only been used in the laboratory.* Appellee's brief at 40.

**REBUTTAL:** In uncontroverted testimony, Dr. Farwell stated that he has conducted over 100 tests in the field using real-life information, as opposed to simulations and laboratory trials. App. 273, Tr. 8, lines 13-16. Dr. Farwell also

performed a test in connection with an internal inquiry by the Alexandria, Virginia police. The test's "information absent" finding for the crime was borne out by subsequent investigation. App. 291, Tr. 26, lines 10-15.

Additionally, J.B. Grinder, an accused murderer in Missouri, underwent a Brain Fingerprinting test. App. 291, Tr. 26, line 15 to App. 292, Tr. 27, line 8. The test results were "information present" for salient details of the crime. App. 291, Tr. 26, line 25 to App. 292, Tr. 27, line 3. After being informed of the test results, the accused accepted a plea offer of life in prison without the possibility of parole, thereby avoiding capital jeopardy. App. 292, Tr. 27 lines 3-7.

**3. THE STATE'S POSITION.** *"In one Japanese study of P300 testing, researcher [sic] found P300 testimony to be accurate 44% of the time - no more accurate than a flip of a coin."* Appellee's brief at 41.

**REBUTTAL:** The cited "study" consists of Exhibit 8 to the November 14, 2001 hearing. Exhibit 8 was neither offered nor received in evidence, and Dr. Farwell has no record of the Japanese study other than his comments on cross-examination. App. 393-94, Tr. 128-29.

In its brief the state offers the purported conclusions of the Japanese study as a refutation of Brain Fingerprinting; however, when seeking to use a learned treatise as evidence, under Iowa R. Evid. 803(18) the proponent has the burden to establish that the treatise is "a reliable authority." The state made no attempt to meet this burden and Dr. Farwell did not concede that the study was reliable or authoritative. Accordingly, the Japanese study is not a part of the district court record, and the state should not be permitted to use it as evidence against the validity of Brain Fingerprinting.

Even if this court entertains the thesis of

the Japanese study as described by the county attorney at the November 14, 2001 hearing, the state has presented no evidence that the Japanese study has been peer-reviewed or published or has any connection with a qualified scientist or research institution.

Dr. Farwell's cursory review of the study during his cross examination revealed that

(a) the Japanese study used EEG responses from a scalp location that, according to the entire P300 literature, is the wrong place on the head to measure a P300. App. 393, Tr. 128, line 19 to App. 394, Tr. 129, line 2.

(b) the author of the Japanese study was said to have conducted polygraph examinations to determine truth or deception inherent in statements apparently made by a subject. App. 393, Tr. 128, lines 12-15. The Japanese author apparently measured an EEG response.

Accordingly, the Japanese study is "fundamentally different" from and "in no way related

to" the Brain Fingerprinting test. App. 393, Tr. 128, lines 12-13 and 19; App. 394, Tr. 129, lines 7-9. Brain Fingerprinting does not examine a subject's assertions but merely notes whether the subject's brain engages in context updating - a sign of recognition - in response to a stimulus presented in a context.

Dr. Farwell's testimony effectively rebutted any assertion that the Japanese study impugns the scientific validity of his work. The state offered no rebuttal of Dr. Farwell's analysis of the Japanese study.

**4. THE STATE'S POSITION.** *Memory loss, second-hand exposure to details of events, false memory, substance abuse and certain types of mental illness render memory unreliable. Brain Fingerprinting is, therefore, unreliable.* Appellee's brief at 41.

**REBUTTAL:** P300 science as applied in Brain Fingerprinting does not attempt to determine

whether the subject's recognition or non-recognition of probes is influenced by memory loss, second-hand exposure to details of events, false memory, substance abuse or mental illness. As with eyewitness testimony and any other memory-based evidence, these factors must be examined in light of what is known about the subject at the time of the test, at the time of the events being examined, and during any intervening period.

The state has not presented any evidence, such as mental illness or substance abuse on the part of Harrington, that would raise an issue whether Harrington has a distorted memory of, or has forgotten, salient features of a crime scene that he is alleged to have once known. The state concedes that Harrington retains detailed memories of the alibi concert that occurred on the night of the murder (Appellee's brief at 45-46), though it is not possible to determine from Brain Fingerprinting whether Harrington's

memories of the alibi circumstances were acquired 24 years ago on the night of the concert, or 23 years ago during his trial. As a result, the state cannot plausibly argue that (a) Harrington's memory is intact regarding events of the concert, even as (b) his memory of the murder, once fresh, has disappeared.

P300 testing reliably establishes whether a person's memory contains a given item in context. Whether the person has forgotten the item, or whether his memory has been degraded by drugs or mental illness, are separate inquiries that in no way diminish the scientific validity of the P300 test or its value to the trier of fact attempting to determine whether the subject has "guilty knowledge."

**5. THE STATE'S POSITION.** *"The unreliability of the P300 test in general, and in this case in particular, is demonstrated by the fact that Harrington had no P300 response to the probes relating to the murder scene despite that*

*fact that he was given that information at his trial.*" Appellee's brief at 44.

**REBUTTAL:** This assertion in the state's brief is false. The state cites numerous references to "weeds" in the trial transcript and exhibits, but the state does not show any instance in which Harrington could have been exposed to the probe stimulus "weeds and grass" in its context.

The probe was "weeds and grass." The irrelevant alternatives were "concrete and blacktop" and "sand and gravel." The probe context was "[w]hat was on the ground the perpetrator ran over after he shot the victim and ran behind the building back towards the car." App. 511.

Nothing in the trial could have taught Harrington which of the three stimuli (the 2 irrelevants or the probe) matched this context. Indeed, everyone knows what weeds are, but an

observer at the trial could not learn from the testimony and exhibits that weeds and grass were "[w]hat was on the ground the perpetrator ran over after he shot the victim and ran behind the building back towards the car."

Similarly, the state cites the trial court's discussion of "ditch:"

A ditch is mentioned during Harrington's original trial, and is depicted in some of the scene photographs. . . . Harrington did not show a P300 response to that stimuli despite having been present at the trial and presumably reading transcripts of the trial."

App. 764 (Ruling); Appellee's brief at 47 (citation to transcript omitted).

In this passage, the court is referring to the probe "drainage ditch," which (in the test) was presented to Harrington with the irrelevant, "wire fence" and "concrete wall," in the context of "[a]n obstacle that the perpetrator had to get across to get to the road where the getaway car was parked." App. 511.

The court concludes erroneously that the trial transcript could teach the Brain Fingerprinting subject which of the three alternatives (the 2 irrelevant or the probe) matched this context.

Additionally, in its brief the state, ignoring its own expert and the court's extensive findings that the science underlying P300 testing is reliable, argues that the mention of a ditch at the trial should have supplied the probe and context sufficiently to cause Harrington to register a P300, if the P300 effect were valid. Noting that no P300 response was obtained, the state asserts that Brain Fingerprinting is unreliable. Appellee's brief at 47.

To argue in this fashion, the state must ignore the conclusions of its expert, Dr. Donchin: "[T]he science says if you get a P300, [the probes] are discriminated, they are recognized. If you don't get a P300, they are not recognized." App. 483, Tr. 217, line 24 to App.

484, Tr. 218, line 1; App. 484, Tr. 218, line 22  
to App. 485, Tr. 219, line 1.

Accordingly, Harrington's "information  
absent" finding in relation to the crime scene  
probes means that, during the Brain Fingerprin-  
ting test, Harrington did not engage in context  
updating when exposed to the crime scene probes  
in their contexts. The scientifically valid and  
reliable inference to be drawn from his failure  
to engage in context updating is that Harrington  
had no memory of certain particulars of the  
crime scene, as revealed by the probe stimuli in  
their contexts.

February 28, 2002

Respectfully submitted,

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CERTIFICATE OF SERVICE OF REPLY BRIEF OF AMICUS

CURIAE DR. LAWRENCE A. FARWELL

IN SUPPORT OF APPELLANT TERRY J. HARRINGTON

I, undersigned, certify that on the 1<sup>st</sup> day of March, 2002, I caused the within and foregoing document to be served on all the parties to this action by sending copies thereof by depositing the same in the U.S. Mail, postage pre-paid in an amount sufficient to reach the addressee by first class mail, addressed as set forth below:

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March 1, 2002

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Michael G. Rikard

CERTIFICATE OF FILING OF

REPLY BRIEF OF

AMICUS CURIAE DR. LAWRENCE A. FARWELL

IN SUPPORT OF APPELLANT TERRY J. HARRINGTON

I, undersigned, certify that on the 1<sup>st</sup> day of March, 2002, I caused the within and foregoing document to be filed by sending eighteen copies thereof by depositing the same in the U.S. Mail, postage pre-paid in an amount sufficient to reach the addressee by first class mail, addressed as set forth below:

Clerk of the Iowa Supreme Court  
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March 1, 2002

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Michael G. Rikard