

The Case Against *Daubert*: The New Scientific Evidence "Standard" and the Standards of the Several States

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ABSTRACT: In June of 1993, the U.S. Supreme Court, in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, rejected the *Frye* "general acceptance" rule under which evidence proffered as scientific had long been evaluated for admissibility by Federal Courts and most state courts. In the body of the following paper, we argue that *Daubert* was a disastrous decision and one reflecting a general lack of understanding of the scientific/technical enterprise. We argue that, far from achieving the goal of excluding bogus expert testimony, *Daubert* invites it. We also argue that the bad result that is *Daubert* arose from addressing a non-question: whether the Federal Rules of Evidence superseded *Frye*. In the section on **The Scientific Evidence Standards in the States in the Wake of *Daubert*** to the paper we provide an annotated listing of the scientific evidence standards governing the courts of the 50 states one year after *Daubert* issued, by which time many state high courts had had an opportunity to enunciate their respective states' approach to scientific evidence with the guidance of *Daubert*. That summary indicates as of that time which state courts were governed by *Frye* and which ones by *Daubert*. It also shows that many state high courts show a confusion that is traceable to the phrasing of *Daubert*. More happily, this summary also shows that a number of state high courts have a very good grasp of scientific evidence and have enunciated readily-applied rules by which their trial courts are to evaluate it. It is to be fervently desired that these state decisions or the thought processes producing them lead to widespread judicial rules for evaluating would-be scientific evidence, rules which will readily exclude "junk science" from the courtroom while not raising unreasonable barriers to valid expert testimony.

KEYWORDS: jurisprudence, scientific evidence, *Frye*, general acceptance, judges, lawyers, expert testimony, computer-generated evidence

On June 28, 1993, in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 113 S.Ct. 2786, 61 U.S.L.W. 4805 (1993), the Supreme Court of the United States (the Court) handed down a new standard for determining the admissibility of scientific evidence in the Federal courts of the United States, a standard that is being rapidly adopted by the various state jurisdictions. Unfortunately, the words the Court chose—in a case widely touted as being one in which "junk science" was finally to be confronted—have the potential to open the proverbial floodgates: *Daubert* is a giant step backwards in the judicial attempt to enunciate what constitutes admissible scientific

evidence, a step with the potential of opening courts to "scientific" testimony antithetical to all things scientific. Those whose concern about "junk science" led them to contribute to the 14 *amicus* briefs submitted to the Court arguing for a *stricter* scientific evidence standard should be especially chagrined: the Court used some of their own words to justify dismantling the reasonable standard that had existed for the past 70 years and replacing it with what can be characterized as a nebulous standard at best.

Scientific Evidence Before *Daubert*

The "Frye Test"

In 1923, in rejecting polygraph ("lie detector") evidence, the Court of Appeals for the District of Columbia enunciated the *Frye* standard for determining whether testimony proffered as "scientific" should be admitted into evidence. *Frye v. United States*, 293 F. 1013 (App. D.C. 1923). Even though this ruling served as precedent only for lower courts in the D.C. Circuit, it eventually was adopted by all of the Federal Circuits and by most of the individual states. (See the Section on **The Scientific Evidence Standards in the States in the Wake of *Daubert*** for a listing of—and commentary on—the various state high court decisions adopting or rejecting *Frye*.)

The *Frye* Court stated that the "scientific principle or discovery . . . from which [a] deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs." *Id.* at 1014. For example, testimony may be offered in court regarding the initial speed of a motor vehicle based on the distance it traveled in skidding to a stop. The deduction regarding speed is traceable ultimately to Newton's Laws, scientific principles which have general acceptance in the field of physics—and all other scientific fields. This testimony passes *Frye* and under that standard should be admitted into evidence. Consider as another example testimony seeking to exonerate a defendant based on the conclusion that his behavior was caused by the full moon. This is a deduction that depends critically upon the principle that human behavior is affected by phases of the moon. Although there may be some dispute as to which particular scientific community to look to in applying the "general acceptance" test, we would argue that it is that group of researchers capable of doing a statistical analysis of human epidemiological data. Since there appears to be no general acceptance—to say the least—within that field for the principle of moon-phase/human-behavior coupling, any testimony relating to a deduction traceable back to that principle would not pass the *Frye* test.

It can be seen immediately that while applying *Frye* to the underlying principle may be *necessary*, it is not *sufficient* to ensure that the "scientific" testimony represents valid scientific analysis.

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General acceptance of Newton's Laws does not ensure that the *technique* the expert witness relied upon to apply Newton's Laws was valid. To take another example, general acceptance of the principle that modern electronic computers can carry out motor-vehicle-accident reconstruction calculations does not resolve the question of whether the particular accident reconstruction program used by the expert witness is valid.

A number of state high courts have addressed this matter and have devised an enhanced *Frye* test, one where the scientific technique relied on by the expert witness must itself have general acceptance within the appropriate scientific or engineering³ community. Applied to the simple skid-to-a-stop example, this would mean that the expert would have to be able to point to general acceptance among the accident reconstruction field of the use of skid distance to determine the initial speed of a vehicle skidding to a stop. Moreover, it would have to be made clear which parameters were required to be known in order to apply the technique. In light of this, we have characterized the *Frye* test as comprising a Frye-1 test as to general underlying principle and a Frye-2 test as to the technique used to apply the underlying principle.

Many state courts have required both Frye-1 and Frye-2 tests of expert testimony proffered as scientific. (See below for a breakdown of the state caselaw in this matter.) In doing so, many of these courts have set out excellent analyses of the problem, in spite of the fact that the nature of the problem seems to have eluded in its entirety the high courts of other jurisdictions.

It should be clear from the above that there remains to be addressed a third level associated with scientific testimony. The fact that the proffered evidence passes Frye-1 and Frye-2 leaves unanswered the question as to whether the particular expert witness *applied* the technique correctly. Should there be a Frye-3 test to see if there is general acceptance of this particular work of this particular expert witness? A few courts think so, even though a moment's reflection should show how wrong such a standard is as a general premise. Must it be "generally accepted" that the testing laboratory involved conducted a particular assay—for example, a blood-alcohol level—correctly on a given occasion before the results can be attested to? Must the accident reconstructionist publish and achieve general acceptance for his skid mark measurements up on Route 3 in Maine and for his subsequent calculations as a precondition for testifying about his measurements and about his opinion regarding vehicle speed? Most courts—correctly in our opinion—have concluded that this final level of expert testimony evaluation is best left to the trier of fact in the context of the adversarial system, with objections to the expert's specific work going to the weight, not the admissibility, of the expert's testimony.

The following is a summary of the terminology defined previously:

What must be "Generally Accepted" under the three Frye tests we define

Frye-1 Fundamental Scientific Principle or Discovery

³ Although these questions are nearly always discussed in terms of "scientific evidence," in reality many if not most of the issues are engineering issues. For example, it is one thing to say that it is generally accepted scientifically that motor vehicle speed can be measured with radar; it is quite another—though an equally important—question (indeed, one that subsumes the first) as to whether a practical device has been made to actually carry out such a measurement.

Frye-2 The Technique Used for Applying the Fundamental Scientific Principle or Discovery

Frye-3 The Technique's Specific Application on which the Expert Testimony is to be based

The Federal Rules of Evidence

The Federal Rules of Evidence (FRE) were adopted in 1975. Subsequently, most states (at last count 37) have adopted their own codified rules of evidence modelled closely on the FRE. For scientific evidence, the most relevant of the Rules are found in Article VII of the FRE (Opinions and Expert Testimony) including:

Rule 702. Testimony by Experts—If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Rule 703. Bases of Opinion Testimony by Experts—The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

Rule 705. Disclosure of Facts or Data Underlying Expert Opinion—The expert may testify in terms of opinion or inference and give reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.

These Rules from Article VII need to be read in conjunction with the Rules on relevance:

Rule 401. Definition of "Relevant Evidence"—"Relevant evidence" means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.

Rule 402. Relevant Evidence Generally Admissible; Irrelevant Evidence Inadmissible—All relevant evidence is admissible, except as otherwise proscribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible.

Rule 403. Exclusion of Relevant Evidence on Grounds of Prejudice, Confusion, or Waste of Time—Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

Of all the rules cited, Rule 702 speaks most directly to the admission of scientific evidence. It clearly reflects the intent of the FRE drafters to introduce a more relaxed approach to the admission of evidence. The FRE were intended in part to remedy what was seen as a tendency of the common-law evidence rules

to elevate form over substance in determining the admissibility of evidence.

FRE Versus Frye

For many years prior to *Daubert*, a scientific-evidence debate existed over whether FRE 702 had superseded *Frye* in setting out the terms for the admission of scientific evidence. It was undisputed that Rule 702 governed scientific evidence admissibility, though it was not universally believed that a conflict existed between *Frye* and FRE 702. Nevertheless, those who thought *Frye* overly restrictive asked "Where in 702 is 'general acceptance' mentioned?" For reasons to be set out and discussed in the conclusion, we believe that pitting FRE 702 against *Frye* set up the most spurious of dichotomies. The U.S. Supreme Court obviously thought otherwise. In *Daubert*, it accepted the *Frye*-versus-FRE formulation of the question on appeal and held explicitly that FRE 702 supersedes the *Frye* general acceptance standard.

The *Daubert* Proceedings

In the District Court

At the trial court level, *Daubert* was the consolidation of two actions against Merrell Dow Pharmaceuticals, Inc. (Merrell) based on the claim that the drug Bendectin, marketed by Merrell, caused birth defects in children born to women who had taken it.⁴ The District Court granted defendant Merrell's pre-trial motion for summary judgment on the ground that plaintiffs did not have admissible evidence establishing causation. Indeed, the District Court found that they did not have evidence that Bendectin *can* cause birth defects. For the District Court it was not a matter of plaintiffs having a paltry amount of causation evidence in contrast to defendant Merrell's score or more of published epidemiological studies showing no causal link: the District Court held that plaintiffs had *no* acceptable causation evidence at all.

Plaintiffs had eight expert witnesses ready to testify in support of the thesis that Bendectin causes or can cause birth defects in humans. Plaintiffs did not dispute the claim that there was no single human epidemiological study supporting this claim. They were ready, however, to introduce *in vivo* (animal) studies, *in vitro* (test tube) studies, and they were prepared to introduce reanalyses of data already published in a diversity of human epidemiological studies.

Citing earlier cases applying *Frye*, the District Court said that it was "generally accepted" that only human epidemiological studies could determine whether a causal link existed between a particular drug and a particular effect. In particular, it ruled out animal studies, *in vitro* studies, and theoretical arguments based on Bendectin's molecular structure. This knocked out most of Plaintiffs' proposed expert witnesses. It appears, in fact, that it left them with only a Dr. Gross, who had done the reanalysis of an earlier epidemiological study and was prepared to testify that his reanalysis showed "to a reasonable degree of professional certainty" a statistically-significant causal link not perceived by the original authors.

Whereas the trial court recognized that data reanalysis *per se* has general acceptance within all relevant scientific communities, it nevertheless held that Dr. Gross' testimony would not be admissi-

⁴ It was prescribed for—and appeared to be very effective in—the amelioration of "morning sickness." Nevertheless, by the late 1980s, hundreds of actions had been filed against Merrell based on the same general claims as were advanced in *Daubert*, namely that Bendectin was a teratogen (literally "maker of dragons"), i.e., that it caused birth defects.

ble at trial or if it was admitted would not constitute sufficient evidence by itself to get the case to the jury.

The plaintiffs claim that Dr. Gross performed a new epidemiological study on Bendectin, but this is false. He simply recalculated a previously published study and tried to show that there actually was a significant relation between Bendectin and birth defects. . . . Dr. Gross' 'study' was apparently never published or subjected to peer review, and nowhere does it state that Bendectin sales increased the relative risk of limb reduction defects to a [level of statistical significance]. Dr. Gross alleges that this 'study' shows 'a statistically significant association that is highly significant,' but his allegation and this evidence is insufficient to take this matter to a jury.

Id. at 575.

In excluding Dr. Gross' testimony based on this reasoning, the District Court was applying a *Frye*-3 test and concluding that the testimony did not pass. From the language it used, however, it is not clear whether the Court based its conclusion on its judicial notice that Dr. Gross' results did not pass statistical muster or on the fact that Dr. Gross' reanalysis had not been subject to peer review and thus did not pass the general acceptance *Frye* standard. (Note the District Court's reference to Dr. Gross not having published his reanalysis, which it denigrated by saying that it had only been prepared for trial.)

At the Court of Appeals

The U.S. Court of Appeals for the Ninth Circuit affirmed the Summary Judgment below, reiterating and giving greater emphasis to the District Court's observation that Dr. Gross' re-analysis had not been published. *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128 (9th Cir. 1991).

Reanalysis of epidemiological studies is generally accepted only when it is subjected to verification and scrutiny by others in the field. . . . Plaintiffs' reanalysis[is] does not comply with this standard; [it was] unpublished, not subjected to the normal peer review process, and generated solely for use in litigation.

Id. at 1131.

As the court below had done, this Court rejected the Gross testimony on what was effectively a *Frye*-3 test, a hurdle which is not part of the traditional application of *Frye* in the Federal courts.⁵ Neither publication nor peer review is necessary to determine whether a technique has been properly *applied* on a particular occasion.⁶ In stating the contrary, the appellate court was simply, factually wrong. Furthermore, in moving from *that* point to the

⁵ As stated earlier, the traditional *Frye* standard requires only that the underlying principle (or discovery) and the technique applying that principle be generally accepted. In this case the technique was reanalysis of data published by others.

⁶ In any event, both courts misconstrued what Gross had done. The District Court complained that he had not done a "study"; he'd just used the data of others. We doubt that this would have been the reaction to these facts by any research scientist. It is well-known and generally accepted for researchers to test the conclusions of others by looking more closely at the data on which those conclusions are based. This approach is particularly familiar in the field of epidemiology where even the first researcher to analyze the data generally will have obtained it from others, such as the agencies maintaining vital records. Epidemiology is not an experimental science where drugs are tested for suspected teratogenic effects.

conclusion that the Gross testimony was rightly excluded, the Court's reasoning was logically flawed within the context of *Frye* (which has nothing to say about the particular application of a technique). In any event, the Summary Judgment was upheld by the Court of Appeals under *Frye*, which it treated as the governing rule of scientific evidence.⁷

At the U.S. Supreme Court

When the U.S. Supreme Court agreed to hear *Daubert* on appeal from the 9th Circuit, great interest was generated among many disparate groups. There were, in effect, two camps among those who were interested in—but disinterested in the outcome of—the specific dispute regarding Bendectin. One otherwise disinterested camp saw *Daubert* as the vehicle by which the issue of bogus expert testimony could be addressed at the highest level. The other disinterested camp had been chafing under what it perceived as the overly-restrictive standard for expert testimony prevailing under *Frye*.⁸ A total of twenty-two *amicus* briefs were submitted to the Court by groups and individuals: six⁹ supported Petitioners (the *Dauberts et al.*), arguing in part for a less restrictive scientific evidence standard; fourteen¹⁰ supported the Respondent (Merrell) and argued in part for a stricter standard or the retention of the *Frye* standard; two supported neither party.¹¹

Petitioners' central argument to the Supreme Court was that *Frye* had been superseded by the enactment of the Rules of Evidence (FRE), and therefore that the basis on which the Court of Appeals had upheld the exclusion of Dr. Gross' testimony was not valid. The Supreme Court agreed both with Petitioners' formulation of the question and with the answer which they urged. Justice Blackmun, writing for the 7-2 majority, concluded that "general acceptance" was too demanding a requirement and inconsistent with the 1975 FRE, which were intended to liberalize admission criteria. Based on its interpretation of the FRE, the *Daubert* Court listed six (some say four)¹² factors in an attempt to flesh out the standard by which Federal judges are to henceforth gauge evidence proffered by an expert.

⁷ Note the change in emphasis as the case moved from the District Court to the Appellate Court. The latter was fairly explicit in using the lack of publication as grounds for excluding Dr. Gross' testimony. The District Court had not stated its reasoning this way, but it had left open the possibility that Dr. Gross' testimony was not enough to overcome a Summary Judgment motion because of the numerous published epidemiological studies that were unanimous in rejecting a causal link between Bendectin and birth defects.

⁸ To the extent that some Federal courts had excluded expert testimony on a *Frye*-3 test, requiring the specific testimony to have received previous peer review, these people had a valid point. The fact was, of course, that very few courts engaged in this approach under *Frye*.

⁹ These were submitted by, among others, (a) The American Society of Law, Medicine, and Ethics, (b) the American Trial Lawyers Association, (c) a group labelling itself Physicians, Scientists, and Historians of Science, (d) the four states of Texas, Montana, Idaho, and South Dakota.

¹⁰ These included, among others, (a) The American Insurance Association, (b) The Pharmaceutical Manufacturers Association, (c) The American Association for the Advancement of Science (AAAS), (d) the National Academy of Sciences (NAS) (AAAS and NAS submitted a joint brief which will be identified in the text as the AAAS brief), (e) The Chamber of Commerce of the United States of America, (f) The American Tort Reform Association, (g) The United States, (h) what appears to be every medical association in the U.S., and (i) a group of scientists headed by Nicolaas Bloembergen, most of whom are Nobel Prize laureates.

¹¹ These two "neutral" parties were captioned, respectively, as (a) A Group of American Law Professors and (b) The Carnegie Commission on Science, Technology, and Government.

¹² See Table 1.

Observations

Justice Blackmun reasoned that part of FRE 702 goes to the question of foundation (that is, that proffered evidence must be what it claims to be) and that part of FRE 702 goes to the question of relevance. But this analysis hardly seems necessary, since the requirements of relevance and foundation apply to *all* evidence.¹³ The question of whether something is "scientific" applies only to scientific evidence, and thereon the analysis should have focused. A simpler question would be "Is this evidence 'scientific?'" The FRE allow scientists to testify *because* there are some issues that *require* scientific explanation. And the most fundamental—or should we say foundational—question is whether something *is* science. *Frye* merely provided judges the test for determining in a non-technical manner whether the underlying foundation requirement had been met. Stated another way, *Frye* created no new requirements; it codified then- and still-existing foundation requirements, and thus *Frye* could have been abandoned by the Supreme Court without any effect.

Justice Blackmun misapprehended the problem when he stated that *Daubert* will occasionally "prevent the jury from learning of authentic insights and innovations." The real problem is that the jury will learn of "insights and innovations" that are *not* authentic, because the *Daubert* factors (with the exception of what amount to the *Frye* prong) do not accurately measure scientific validity. To calm our fears, Justice Blackmun stated that safeguards such as cross-examination, presentation of contrary evidence, careful instruction on the burden of proof, and directed verdicts are the "appropriate means of attacking shaky but admissible evidence." But these safeguards are for *insufficient* scientific evidence, and (like "relevance") apply to all evidence. The rules for scientific evidence are different: *Frye* and the FRE are concerned with excluding *non*-scientific opinion evidence altogether.

The *Daubert* Court stated that *Frye* did not survive the enactment of the FRE, but the Court failed to see that, far from *Frye* and the FRE being mutually exclusive, *Frye* provided a means of *complying* with FRE 702. *Daubert* will almost certainly lead to bogus evidence being admitted as scientific. It calls for trial judges to determine whether proffered scientific evidence was obtained using the "scientific method." So that they will know the scientific method, *Daubert* then gave them a collection of criteria, none of which appears to go to determining whether the scientific method has been used. For laypersons, judges, and scientists alike, the best means for determining whether something is scientific knowledge is to first look to the practitioners of that science.

Conclusions

We believe that the *Daubert* standard for scientific evidence will prove to be a disaster and that the *Daubert* Court has deprived us of a simple objective standard which, when applied as intended, serves everyone's best interest regarding the admissibility of scientific evidence. In particular, the *Daubert* test is circular ("scientific evidence" must be "scientifically valid"), unnecessary to resolve this specific case,¹⁴ and unnecessary in general. Only one of the six¹⁵ factors—essentially the old *Frye* test—places the proper emphasis on the underlying foundation requirement applying to

¹³ Indeed, one of the ways in which courts and commentators get into trouble in analyzing expert testimony is by throwing into the mix criteria about which there never has been any doubt, either under common law or under the FRE. These criteria include competence, relevance, and adequate foundation, and must be satisfied for all evidence admitted, not just scientific evidence.

all evidence. The other five factors invite significant mischief. In part, this is because there is little or no guidance to judges as to which of the six factors is most important, or how many must be satisfied.

The only example the Court gave of how the new standard should be applied does not provide much solace. Justice Blackmun referred to evidence involving the phases of the moon, saying that if scientific evidence of the moon's phase on a particular night is to be introduced for the purpose of showing the brightness of that night, this would be certainly admissible, because the correlation between the moon's phase and the light the moon reflects to earth is well known. On the other hand, said Justice Blackmun, if the purpose of the moon-phase evidence is to explain why a person behaved the way he did, then the evidence would not be admitted in the absence of a supporting scientific study establishing a moon-phase/human-behavior coupling. We wonder how other judges might approach a problem like this. We know many well-educated attorneys who will swear that human behavior becomes strange under the light of the full moon, and one must assume that there are even some judges in this category, judges who might not be so quick as Justice Blackmun in recognizing evidence requiring further support. We have no doubt that a study may be devised with the *appearance* of a scientific study which does indeed find that certain humans are affected by the light of the full moon. Under *Daubert*, this would be sufficient to get that moon-phase testimony regarding the defendant's lessened competence admitted into evidence.

Justice Blackmun stated that "[l]aw . . . must resolve disputes finally and quickly." *Daubert* did not resolve the dispute over scientific evidence; on the contrary, it ensures that the dispute will endure into the next century.

The Scientific Evidence Standards in the States Following *Daubert*: Some Confusion, Some Wisdom

Our Federal system's nature is such that the fact of the U.S. Supreme Court's having spoken regarding scientific evidence implies nothing about state law. It is state law and state judicial rules that govern most trials. Nevertheless, the states are often influenced greatly in their holdings by what the Federal courts—and in particular the U.S. Supreme Court—have to say about a particular rule of law. In the following pages we set out the scientific evidence admissibility standards as they existed one year following the appearance of *Daubert*. As at the Federal level, these standards usually rely on a combination of codified rules and judge-made guidelines. For each of the 50 states we identify the

¹⁴The case could have been decided for Petitioners on the ground that the objection to the specific work of the would-be expert witness, Dr. Gross, should have only gone to weight and not to admissibility. Conversely, it could have been decided for Respondent on the ground that Dr. Gross' statistics were so egregiously bad—apparently the District Court's view—that his testimony was correctly excluded.

¹⁵Other commentators have counted differently, some seeing four: (1) Is the theory or technique "falsifiable"—i.e., the Karl Popper test of whether something is science, a "test" that has been largely discredited, or at least seen to have very limited meaning, in the wake of Thomas Kuhn's writings starting with *The Structure of Scientific Revolutions* (1962, Univ. Chi. Press); (2) Has the theory or technique been subjected to publication and peer review? (This is somewhat of a false dichotomy in itself and ambiguous. Does this refer to the peer review by referees as a condition of publication, or does it refer to the inchoate reaction of the relevant community when the work appears in print?) (3) Does the technique yield a reasonably low level of false conclusions? (4) Has the theory or technique achieved general acceptance within the relevant scientific community? (The Frye-1/Frye-2 test.)

governing high court ruling regarding the admissibility of scientific evidence.

In the year following *Daubert*, high courts in ten states had the opportunity to affirmatively respond to it,¹⁶ and nine others have commented on it in *dicta*.¹⁷ Of the ten states that re-evaluated their approach to scientific evidence in light of *Daubert*, eight¹⁸ explicitly or implicitly adopted *Daubert*, two¹⁹ explicitly or implicitly rejected it, while one stated that it adopted *Daubert* while apparently doing the opposite.²⁰ Of all the state high courts that ruled on the admissibility of scientific evidence within a year after *Daubert*, only three²¹ changed their rule of law from that of *Frye* to that of *Daubert*.²²

Many of the states have their own codified evidence rules. More often than not, they track the FRE closely; as a consequence, the high courts in those states tend to adopt for their codified state rules those interpretations given to the FRE by the Federal judiciary. Nevertheless, and as we have argued, the fact that a state has enacted codified evidence rules does not necessarily mean—in spite of the *Daubert* Court—that *Frye* is done away with as a guide. Fifteen states²³ continue to apply *Frye* in spite of the enactment of codified evidence rules, though only three²⁴ of these states seem to recognize that supersession of *Frye* is a non-issue. Three other states²⁵ with codified rules recognize the *Frye* "general acceptance" requirement as a foundational issue, whereas three others states²⁶ hold that foundation itself was not an issue.

Throughout the body of this paper, we have argued that *Daubert* is seriously flawed in its major thrust, and that it is phrased in a way that will lead to confusion in its implementation at (Federal) trials. Not surprisingly, it has already induced confusion among many of the state courts seeking guidance from it. Just to mention one example here, at least one state court²⁷ has concluded that *Daubert* makes it *more* difficult to introduce scientific evidence—in spite of the *Daubert* Court's stated intention of loosening the rigid requirements that scientific evidence had to meet under the *Frye* rule, and its belief that it had done so.

In contrast to the confusion of many state courts—both pre- and

¹⁶That is, during this period the high courts in these ten states were confronted with scientific-evidence-admissibility appeals that forced them to enunciate or re-enunciate state rules regarding such admissibility.

¹⁷"*Dicta*" is the name given to utterances contained within a judicial opinion which, while indicating what the judges were thinking, do not have the rule of law since their presence in the opinion is not required for the decision in question to be rendered. As such, they bear less weight and are not regarded as what the judicial opinion "stands for." In the present context, this means that the respective high courts referred to *Daubert* in rulings that did not require those courts to decide their respective state scientific evidence rules.

¹⁸Delaware, Iowa, Louisiana, Montana, South Dakota, Vermont, West Virginia, and Wyoming.

¹⁹Arizona and Washington.

²⁰Louisiana.

²¹New Mexico, South Dakota, and West Virginia. Louisiana's "adoption" of *Daubert* functions as a rejection of it. See discussion above.

²²This number includes more than the twenty-one states referenced immediately above; a number of state high courts have dealt with scientific evidence standards since *Daubert* without mentioning that Supreme Court opinion.

²³Alaska, Arizona, Colorado, Florida, Hawaii, Idaho, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New Hampshire, North Carolina, Utah, and Washington.

²⁴Arizona, Florida, and Washington.

²⁵Indiana, Oklahoma, and Tennessee.

²⁶California, Idaho, and New York.

²⁷Louisiana. (*State v. Foret*, 628 So. 2d 1116 (LA 1993).) Its reasoning is that evidence proffered as scientific must now pass a six-prong test, one of which is the "*Frye* prong" of general acceptance.

post-*Daubert*—regarding scientific evidence, some states appear to have articulated a far better understanding of scientific evidence (and of the scientific undertaking) and of what *Frye* means than did the U.S. Supreme Court in *Daubert*. See, in particular, *Ex Parte Perry*, 586 So.2d 242 (AL 1991), the governing case on scientific evidence in the State of Alabama. *Perry* breaks the evaluation job to be done on expert testimony into its three natural levels—that of the underlying theory, that of the general technique applying the theory, and that of the specific expert witness' application of the technique. These three levels are not only enunciated, but the means of implementing them are set out.²⁸ See also the governing Mississippi case, *Polk v. State*, 12 So.2d 381 (MS 1992), for a clear statement of what the "general acceptance" standard precludes during a hearing on admissibility of expert witness testimony.

In Table 2, we indicate (1) which if any of the three *Frye* prongs the state has adopted (first three columns), (2) whether a state has adopted codified evidence rules based on the FRE (fourth column), and (3) whether a state has adopted *Daubert* (fifth column). A blank in the fifth column indicates that the state's high court had not spoken on the matter.²⁹ An entry of "*dicta*" in the fifth column

indicates that the state high court has commented on *Daubert* only in *dicta*. The numbers following each state name, both in the chart and in the discussion that follows, indicate which of the following four categories we believe that state falls into with respect to its governing scientific evidence standards:

"{1}" means that the state's standard is clear, that each addressed principle (that is, the three *Frye* prongs, *Daubert*, and codified state rules) has been explicitly adopted or rejected, and that comments in *dicta* are consistent with that adoption or rejection.

"{2}" means that the state's standard is fairly though not completely clear, that is, that some principles or rules have been implicitly adopted or rejected, but that comments in *dicta* are not consistent with that action. In other cases, the state high court has enunciated a standard inconsistent with prevailing precedent in the state without addressing the earlier opinion establishing that precedent.

"{3}" means that the state's standard is fairly unclear, that is, that each principle has been only *implicitly* adopted or rejected.

"{4}" means that the state's standard is completely unclear, that the state either failed to set out its standard clearly or that it supported one scientific evidence standard while apparently adopting another.

In the following list of the states, we have placed in bold italics those comments which are strictly our opinions, as opposed to factual information regarding the various courts' opinions.

Alabama{1}

In 1991, Alabama explicitly adopted *Frye*. *Ex Parte Perry*, 586 So.2d 242 (AL 1991) (jury criminal trial). In holding that the trial court admitted DNA evidence by applying the wrong legal standard (and remanding for application of the correct standard), the *Perry* Court stated: "[W]e hold that the following three-pronged test, substantially similar to that announced in *People v. Castro*, 545 N.Y.S.2d 985 (Sup. Ct. 1989), is the test by which to determine the admissibility of the contested evidence:

- I. Is there a theory, generally accepted in the scientific community, that supports the conclusion that DNA forensic testing can produce reliable results?
- II. Are there current techniques that are capable of producing reliable results in DNA identification and that are generally accepted in the scientific community?
- III. In this particular case, did the testing laboratory perform generally accepted scientific techniques without error in the performance or interpretation of the tests?" *Ibid.* at 250.

Alaska{2}

In 1970, Alaska explicitly adopted *Frye*. *Pulakis v. State*, 476 P.2d 474 (AK 1970) (jury criminal trial). In holding that the trial court should not have admitted the results of polygraph examinations (but not overturning the conviction, because the issue was not preserved for appellate review), the *Pulakis* Court stated: "We think the systolic blood pressure deception test has not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development, and experiments thus far made." *Ibid.* at 478.

In 1994, Alaska cited *Frye*, the Alaskan Rules of Evidence, and *Daubert*. *Mattox v. State ex rel. Neeson*, 875 P.2d 763 (AK 1994).

TABLE 1—*Frye versus Daubert—a side-by-side comparison.*

Admissibility tests for testimony that is ostensibly scientific	
The basic <i>Frye</i> rule: The "scientific principle or discovery" on which the testimony is based must be "sufficiently established to have gained <i>general acceptance</i> in the particular field in which it belongs."	The basic <i>Daubert</i> rule: "[T]he reasoning or methodology underlying [the] testimony [must be] <i>scientifically valid</i> ."
What does the test involve?	
The classic <i>Frye</i> test involves: 1) a <i>pretrial ruling</i> 2) on whether the basic <i>principle</i> on which the testimony is ultimately based 3) has been <i>generally accepted</i> within the relevant community.	The <i>Daubert</i> test involves: 1) a <i>preliminary ruling</i> based on FRE 104(a) 2) on whether the <i>theory or technique</i> 3) is <i>scientifically valid</i> .
What factors are involved?	
Though there may be some dispute as to what comprises the relevant technical community, " <i>general acceptance</i> " within that community is the beginning and end of the inquiry. No examination is made of whether the community is <i>correct</i> in accepting or rejecting the principle or discovery.	Indicia of "scientific validity" to be examined include: 1) " <i>widespread acceptance</i> " 2) <i>peer review</i> 3) <i>publication</i> 4) <i>testing</i> 5) <i>rates of error</i> 6) <i>the existence of standards</i> No particular one of these is essential under <i>Daubert</i> .

²⁸ We have defined "Frye-1" as requiring the theory underlying the proffered evidence to have "general acceptance," "Frye-2" as requiring that the technique used have "general acceptance," and "Frye-3" as requiring that the specific application of the technique have "general acceptance."

²⁹ All of this data refers to the state of the state rules as of a year after *Daubert* issued, that is, as of 23 June 1994.

TABLE 2—*The state of the states.*

State	Frye-1	Frye-2	Frye-3	FRE	Daubert
Alabama{1}	explicitly adopted	explicitly adopted	explicitly adopted	proposed	
Alaska{2}	explicitly adopted	explicitly adopted		adopted 1979	
Arizona{1}	explicitly adopted	explicitly adopted		adopted 1977	implicitly rejected
Arkansas{1}	explicitly rejected	explicitly rejected		adopted 1981	<i>dicta</i>
California{1}	explicitly adopted	explicitly adopted	explicitly adopted		
Colorado{2}	explicitly adopted	explicitly adopted	explicitly rejected	adopted 1980	<i>dicta</i>
Connecticut{2}	explicitly adopted	explicitly adopted			<i>dicta</i>
Delaware{1}	explicitly rejected	explicitly rejected		adopted c. 1985	implicitly adopted
Florida{1}	explicitly adopted	explicitly adopted		adopted 1983	<i>dicta</i>
Georgia{4}	explicitly "rejected"	explicitly "rejected"	implicitly adopted		
Hawaii{4}	explicitly "adopted"	explicitly "adopted"		adopted 1981	
Idaho{4}	implicitly "rejected"	implicitly "rejected"		adopted 1985	
Illinois{1}	explicitly adopted	explicitly adopted		adopted c. 1985	
Indiana{1}	implicitly adopted	implicitly adopted		adopted 1994	
Iowa{1}	explicitly rejected	explicitly rejected		adopted 1983	implicitly adopted
Kansas{1}	explicitly adopted	explicitly adopted			
Kentucky{1}	explicitly rejected	explicitly rejected		adopted 1992	
Louisiana{4}	explicitly adopted	explicitly adopted		adopted 1993	explicitly "adopted"
Maine{4}	explicitly "rejected"	explicitly "rejected"		adopted 1976	
Maryland{1}	explicitly adopted	explicitly adopted		adopted 1994	
Massachusetts{1}	explicitly adopted	explicitly adopted		proposed	
Michigan{1}	explicitly adopted	explicitly adopted		adopted 1978	
Minnesota{2}	explicitly adopted	explicitly adopted	explicitly adopted	adopted 1977	<i>dicta</i>
Mississippi{1}	explicitly adopted	explicitly adopted	explicitly adopted	adopted 1986	
Missouri{1}	explicitly adopted	explicitly adopted			
Montana{1}	explicitly rejected	explicitly rejected		adopted 1977	implicitly adopted
Nebraska{2}	explicitly adopted	explicitly adopted		adopted 1975	
Nevada{3}	implicitly rejected	implicitly rejected		adopted c. 1984	
New Hampshire{2}	explicitly adopted	explicitly adopted		adopted 1985	<i>dicta</i>
New Jersey{1}	explicitly adopted	explicitly adopted		adopted 1993	
New Mexico{2}	explicitly rejected	explicitly rejected		adopted 1973	implicitly adopted
New York{1}	explicitly adopted	explicitly adopted			<i>dicta</i>
North Carolina{2}	explicitly adopted	explicitly adopted		adopted 1984	
North Dakota{3}			implicitly rejected	adopted 1977	<i>dicta</i>
Ohio{1}	explicitly rejected	explicitly rejected		adopted 1980	
Oklahoma{1}	implicitly adopted	implicitly adopted			
Oregon{1}	explicitly rejected	explicitly rejected		adopted c. 1982	
Pennsylvania{1}	explicitly adopted	explicitly adopted			<i>dicta</i>
Rhode Island{3}				adopted 1987	
South Carolina{3}	implicitly rejected	implicitly rejected			
South Dakota{1}	implicitly rejected	implicitly rejected		adopted 1978	explicitly adopted
Tennessee{2}				adopted 1990	
Texas{1}	explicitly rejected	explicitly rejected		adopted 1983	
Utah{4}	explicitly "adopted"	explicitly "adopted"		adopted 1983	
Vermont{2}	implicitly rejected	implicitly rejected		adopted c. 1986	implicitly adopted
Virginia{3}	explicitly rejected	explicitly rejected			
Washington{1}	explicitly adopted	explicitly adopted		adopted c. 1985	explicitly rejected
West Virginia{2}	implicitly rejected	implicitly rejected		adopted 1985	explicitly adopted
Wisconsin{1}	explicitly rejected	explicitly rejected		adopted 1974	
Wyoming{2}	implicitly rejected	implicitly rejected	explicitly rejected	adopted 1978	implicitly adopted

The *Mattox* Court stated that "[g]eneral scientific acceptance is a statutory requirement for the admissibility of technical tests in paternity cases, as well as a common law requirement for scientific evidence where no statute governs. *Pulakis*." Ibid. at 763. In a footnote, without comment, the Court said "[b]ut see *Daubert*." Ibid. at 763 n2.

Arizona{1}

In 1962, Arizona explicitly adopted *Frye*. *State v. Valdez*, 371 P.2d 894 (AZ 1962) (jury criminal trial). In holding that the testimony regarding the results of defendant's polygraph test could only be admitted to corroborate defendant's testimony (and then only if by stipulation), the *Valdez* Court stated: "Of course absolute infallibility is not the standard for admissibility of scientific evi-

dence. But at this time it seems wise to demand greater standardization of the instrument, technique and examiner qualifications and the endorsement by a larger segment of the psychology and physiology branches of science before permitting *general use* of lie-detector evidence in court." Ibid. at 898 [emphasis added].

In 1993, in *dicta*, Arizona implicitly rejected *Daubert* while continuing to apply *Frye*. *State v. Bible*, 858 P.2d 1152 (AZ 1993). The *Bible* Court stated that "we are not bound by the United States Supreme Court's non-constitutional construction of the Federal Rules of Evidence when we construe the Arizona Rules of Evidence." Ibid. at 1183.

Arkansas{1}

In 1991, Arkansas explicitly rejected *Frye*. *Prater v. State*, 820 S.W.2d 429 (AR 1991) (jury criminal trial). In holding that the

trial court properly admitted DNA evidence, the *Prater* Court stated that “[the] more liberal standard, and the one which we adopt, is based upon the relevancy approach of the Uniform Rules of Evidence.” *Ibid.* at 431.

In 1993, Arkansas expressed approval of *Daubert*. *Jones v. State*, 862 S.W.2d 242 (AR 1993). The *Jones* Court stated: “We have no criticism of the *Daubert* case. Indeed, this court previously reached the same conclusion in *Prater*.” *Ibid.* at 244.

California{1}

In 1976, California explicitly adopted *Frye*. *People v. Kelly*, 549 P.2d 1240 (CA 1976) (bench criminal trial). In holding that the trial court improperly admitted voice spectrography evidence, the *Kelly* Court stated: “We simply circumscribe, carefully and deliberately, the admission of evidence born of new techniques until the time when there is demonstrated solid scientific approval and support of the new methods. The *Frye* test was not designed to eliminate reliance upon scientific evidence, but to retard its admissibility until the scientific community has had ample opportunity to study, evaluate and accept its reliability.” *Ibid.* at 1251.

In 1992, California ruled that a simple lack-of-foundation objection to the proffered scientific evidence did not preserve the *Frye* issue for review. *People v. Diaz*, 834 P.2d 1171, 1182–83 (CA 1992). *We believe that lack-of-foundation should always be—essentially by definition—an objection to scientific evidence sufficient to trigger an examination of that evidence in light of the scientific evidence standard prevailing in that jurisdiction.*

Colorado{2}

In 1981, Colorado explicitly adopted *Frye*. *People v. Anderson*, 637 P.2d 354 (CO 1981) (jury criminal trial). In holding that the trial court improperly admitted polygraph evidence, the *Anderson* Court stated that “the mere recordation of physiological data, even with the best of instruments, does not alone make the use of polygraphs scientific. To assure reliability, clear, unequivocal evidence about how often and under what circumstances such data permit the accurate detection of deception is also needed.” *Ibid.* at 360.

In 1993, Colorado ruled that *Frye*-3 goes to the weight, and not the admissibility, of DNA evidence. *Fishback v. People*, 851 P.2d 884, 893 (CO 1993) (a pre-*Daubert* case).

In 1993, in a case in which the *Frye* issue was not preserved for appellate review, Colorado commented on *Daubert*. *Public Serv. Co. v. Willows Water Dist.*, 856 P.2d 829 (CO 1993). The *Public Serv. Co.* Court stated that “[w]hile we recently reaffirmed the validity of the *Frye* test for certain circumstances in *Fishback*, the validity of the *Frye* test recently was rejected by the United States Supreme Court in *Daubert*.” *Ibid.* at 831 n1.

Connecticut{2}

In 1986, Connecticut explicitly adopted *Frye*. *Moore v. McNamara*, 513 A.2d 660 (CT 1986) (bench civil trial). In holding that the trial court properly admitted human leukocyte antigen test results, the *Moore* Court stated that “HLA testing has attained general acceptance in the scientific community as a means of testing for paternity.” *Ibid.* at 668.

In 1993, Connecticut commented on *Daubert*, stating that *Daubert* “has cast some doubt on the continued viability of the *Frye* test.” *State v. Borrelli*, 629 A.2d 1105 (CT 1993) [emphasis added]. The *Borrelli* Court indicated that Connecticut does not apply *Frye*

in all cases, and it held that testimony based on the battered-woman’s syndrome need not pass the *Frye* test. *Ibid.* at 1110.

Delaware{1}

In 1981, Delaware explicitly rejected *Frye*. *Whalen v. State*, 434 A.2d 1346 (DE 1981) (jury criminal trial). In holding that the trial court properly admitted evidence regarding a field test for sperm, the *Whalen* Court stated: “We do not agree with the defendant’s assertion that ‘general scientific acceptance’ is the only criteri[on] by which to assess the admissibility of the results of a scientific test. We note that the State’s evidence fulfilled the hallmarks of admissibility, relevance and reliability.” *Ibid.* at 1354.

In 1993, Delaware implicitly adopted *Daubert*. *Nelson v. State*, 628 A.2d 69 (DE 1993) (jury criminal trial). In holding that the trial court’s exclusion of evidence regarding the reliability of DNA testing was harmless error, the *Nelson* Court stated: “Our [previous decisions] are consistent with the Supreme Court’s decision in *Daubert*. Thus, in Delaware, scientific evidence, rather than being governed by *Frye*, must satisfy the pertinent Delaware Rules of Evidence concerning the admission of scientific testimony or evidence.” *Ibid.* at 73–74. The Court also noted that “[b]efore and since the codification of these rules we have held that the general acceptance test of *Frye* is not the sole criteri[on] for assessing the admissibility of scientific test results or evidence.” *Ibid.* at 73.

Florida{1}

In 1989, Florida explicitly adopted *Frye*. *Stokes v. State*, 548 So.2d 188 (FL 1989) (jury criminal trial). In holding that the trial court improperly admitted post-hypnotic testimony, the *Stokes* Court stated that “a courtroom is not a laboratory, and as such it is not the place to conduct scientific experiments. If the scientific community considers a procedure or process unreliable for its own purposes, then the procedure must be considered less reliable for courtroom use.” *Ibid.* at 193, 194.

In 1993, Florida reaffirmed its commitment to *Frye*, strongly implying that it is not bound by *Daubert*: “We are mindful that the United States Supreme Court recently construed Rule 702 of the Federal Rules of Evidence as superseding the *Frye* test. . . . However, Florida continues to adhere to the *Frye* test.” *Flanagan v. State*, 625 So.2d 827, 829 (FL 1993) (holding that sexual offender profile evidence does not pass the *Frye* test).

Georgia{4}

In 1982, Georgia explicitly “rejected” *Frye*. *Harper v. State*, 292 SE.2d 389 (GA 1982) (jury criminal trial). In holding that the trial court properly excluded the results of sodium amytal (“truth serum”) tests, the *Harper* Court stated: “[W]e conclude that the *Frye* rule of ‘counting heads’ in the scientific community is not an appropriate way to determine the admissibility of a scientific procedure in evidence. Instead, we approve of the approach taken by the trial court in this case. We hold that it is proper for the trial judge to decide whether the procedure or technique in question has reached a scientific stage of verifiable certainty, or in the words of Professor Irving Younger, whether the procedure ‘rests upon the laws of nature.’ ” *Ibid.* at 395. *Nevertheless it appears that the result would have been the same had the Court applied FRYE.* The *Harper* Court stated that “until it is proven with verifiable certainty that truth serum compels a person to tell the truth, neither the results of truth-serum tests nor the opinions of experts based on the results of these tests shall be admissible in evidence.” *Ibid.*

at 396. *If “verifiable certainty” is a higher standard than “general acceptance,” then Georgia’s rejection of FRYE as too liberal is clearly a minority view among those states that have rejected FRYE.*

In 1990, Georgia applied a “general acceptance” test while citing *Harper. Caldwell v. State*, 393 S.E.2d 436, 441 (GA 1990). In holding (in a pre-trial appeal) that DNA evidence could be admitted at trial, the *Caldwell* Court stated that “[a]ll of the procedures hereinabove constituting DNA fingerprinting are recognized as reliable and have gained *general acceptance* in the scientific community in which they belong.” *Ibid.* at 440 [emphasis added]. The Court then stated that “[*Frye*] is not the test in Georgia” and quoted approvingly the language cited above from *Harper*. The *Caldwell* Court then continued, “The trial court may make this determination [whether the procedure rests upon the laws of nature] from evidence presented to it at trial by the parties; in this regard expert testimony may be of value. Or the trial court may base its determination on exhibits, treatises or the rationale of cases in other jurisdictions. The significant point is that the trial court makes this determination based on the *evidence available* to [it] rather than by simply calculating the consensus in the scientific community. The evidence in this case clearly demonstrates that the DNA identification techniques used in this case are based on sound scientific theory and that, if proper procedures are followed, analysis of clean, undegraded samples of sufficiently high molecular weight DNA can produce reliable results.” *Ibid.* at 441 [emphasis added]. *If the “evidence available” includes whether there is a “consensus in the scientific community,” Georgia’s standard sounds more like an adoption of FRYE.* The Court also added in effect that *Frye-3* was a requirement for admissibility. *Ibid.* at 441.

Hawaii{4}

In 1992, Hawaii explicitly “adopted” Frye, but its standard is ill-defined. *State v. Montalbo*, 828 P.2d 1274 (HA 1992) (jury criminal trial). In holding that the trial court properly admitted DNA evidence, the *Montalbo* Court stated: “We therefore ‘adopt’ the *Frye* test of general acceptance in the relevant scientific community under the reliability prong of the . . . analysis. We hold that a court should weigh general acceptance along with the other factors listed below in order to determine, under Hawaii Rules of Evidence (HRE) Rules 702 and 703, whether scientific evidence should be admitted at trial. These factors include whether: 1) the evidence will assist the trier of fact to understand the evidence or to determine a fact in issue; 2) the evidence will add to the common understanding of the jury; 3) the underlying theory is generally accepted as valid; 4) the procedures used are generally accepted as reliable if performed properly; 5) the procedures were applied and conducted properly in the present instance. The court should then consider whether admitting such evidence will be more probative than prejudicial.” *Ibid.* at 1280–81. The *Montalbo* Court did not indicate which factors are necessary.

Idaho{4}

In 1991, Idaho implicitly “rejected” *Frye*. *State v. Crea*, 806 P.2d 445 (ID 1991) (“intoximeter” evidence in a DUI case).

In 1991, Idaho applied the Rules as its standard. *State v. Rodgers*, 812 P.2d 1208 (ID 1991) (jury criminal trial). In holding that the trial court’s admission of “blood splatter” evidence was not an abuse of discretion, the *Rodgers* Court stated: “[W]e do not believe that ‘general scientific acceptance’ is a prerequisite to admission of evidence, scientific or otherwise, if the reliability of the evidence

is otherwise established. Although the foundation evidence on reliability submitted here was not overwhelming, the trial court did not abuse its discretion in finding the bloodstain analysis sufficiently reliable to be admissible.” *Ibid.* at 1210. *The Rodgers Court appears to have misapplied the foundation standard in indicating that although there was skimpy foundation it was still appropriate to admit the evidence. Evidence with an underwhelming foundation has no foundation and is inadmissible.*

In 1992, Idaho applied *Frye*, which indicates that its standard is ill-defined. *State v. Gleason*, 844 P.2d 691, 692 (ID 1992) (*Frye* is the standard for horizontal gaze nystagmus test—a roadside intoxication test).

Illinois{1}

In 1981, Illinois explicitly adopted *Frye*. *People v. Baynes*, 430 N.E.2d 1070 (IL 1981) (jury criminal trial). In holding that the trial court improperly admitted polygraph evidence, the *Baynes* Court stated that “there remain serious doubts about the reliability and *scientific recognition* of the tests.” *Ibid.* at 1076 [emphasis added].

Indiana{1}

In 1983, Indiana implicitly adopted *Frye*. *Peterson v. State*, 448 N.E.2d 673 (IN 1983) (jury criminal trial). In holding that the trial court improperly admitted evidence obtained via hypnosis, the *Peterson* Court stated: “[Defendant’s] position in the instant case is that hypnosis is so unreliable that it has not gained general acceptance in the scientific community as a technique for accurately enhancing memory recall and therefore should not be legally recognized and relied upon. A general examination of hypnotism scholarship shows support for this contention.” *Ibid.* at 676.

In 1991, Indiana held in effect that *Frye-2* is a prerequisite to the admission of scientific evidence. *Hopkins v. State*, 579 N.E.2d 1297 (IN 1991). The *Hopkins* Court states that “the proponent of scientific test results bears the burden in *each case* to lay an evidentiary *foundation* establishing the reliability of the procedure used in that test.” *Ibid.* at 1303 [emphasis added].

Iowa{1}

In 1980, Iowa explicitly rejected *Frye*. *State v. Hall*, 297 N.W.2d 80, 85 (IA 1980).

In 1994, Iowa implicitly adopted *Daubert*. *Hutchinson v. American Family Mut. Ins. Co.*, 514 N.W.2d 882 (IA 1994) (jury civil trial). In holding that the trial court’s admission of testimony from defendant’s expert witness psychologist (who concluded that plaintiff’s injuries were preexisting) was not an abuse of discretion, the *Hutchinson* Court stated: “[W]e refuse to impose barriers to expert testimony other than the basic requirements of Iowa rule of evidence 702 and those described by the Supreme Court in *Daubert*.” *Ibid.* at 887. *Thus, with essentially no comment, much less analysis, Iowa implicitly adopted DAUBERT.*

Kansas{1}

In 1947, Kansas explicitly adopted *Frye*. *State v. Lowry*, 185 P.2d 147 (KS 1947) (jury criminal trial). In holding that the trial court improperly admitted “lie detector” evidence, the *Lowry* Court stated: “We are not ready to say that the lie detector has attained such scientific and psychological accuracy, nor its operators such sureness of interpretation of figures on a dic.l that the testimony

here in question was competent, over objection, for submission to a jury holding the fate of the defendant in its hands." Ibid. at 151.

Kentucky{1}

In 1993, in *dicta*, Kentucky noted that its adoption of Rules of Evidence superseded *Frye*, its pre-Rules standard. *Staggs v. Commonwealth*, 877 S.W.2d 604 (KY 1993). The *Staggs* Court stated that "[t]his matter arose and was tried prior to the effective date of the Kentucky Rules of Evidence. We therefore are not called to interpret KRE 702. On the question of the acceptance of art therapy as a reliable scientific technique applicable to an issue in this case, our pre-KRE rule is that enunciated in the decision of *Frye*." Ibid. at 604.

Louisiana{4}

In 1979, Louisiana explicitly "rejected" *Frye*. *State v. Catanese*, 368 So.2d 975 (LA 1979) (criminal trial, pre-trial appeal). In holding that the trial court improperly admitted polygraph evidence, the *Catanese* Court stated that "the 'general acceptance' standard of *Frye* is an unjustifiable obstacle to the admission of polygraph test results." Ibid. at 980. Nevertheless, the *Catanese* Court excluded the evidence, not on "general acceptance" grounds, but because "at present in our court system the probative value is so outweighed by the reasons for its exclusion that the evidence should not be admitted in criminal trials." Ibid. at 981.

In 1993, Louisiana explicitly "adopted" *Daubert*. *State v. Foret*, 628 So.2d 1116 (LA 1993) (jury criminal trial). In holding that the trial court improperly admitted psychological testimony regarding sexual abuse, the *Foret* Court stated: "As we find the *Daubert* court's 'observations' on what will help to determine this threshold level of reliability to be an effective guide, we shall adopt these 'observations,' as well." Ibid. at 1123. The Court then found that "use of [Child-Sexual-Abuse-Accommodation-Syndrome]-like techniques for determinations of the existence of abuse fails to satisfy the *Frye* element ('general acceptance' in the [scientific] community) of the *Daubert* test." Ibid. at 1125. ***If the "Frye element" is a necessary element of the Daubert test, then Daubert adds nothing to the analysis, and Louisiana's "adoption" of Daubert is more like an adoption of Frye.***

Maine{4}

In 1978, Maine explicitly "rejected" *Frye*. *State v. Williams*, 388 A.2d 500 (ME 1978) (jury criminal trial). In holding that testimony regarding voice spectrography was properly admitted, the *Williams* Court stated that "[w]e believe [that applying the *Frye* standard] would be at odds with the fundamental philosophy of our Rules of Evidence, as revealed more particularly in Rules 402 and 702, generally favoring the admissibility of expert testimony whenever it is relevant and can be of assistance to the trier of fact." Ibid. at 503. The *Williams* Court then stated that "[i]n particular cases where the expert testimony proffered rests on newly ascertained, or applied, scientific principles, a stronger showing may become necessary before the presiding Justice is satisfied that the preconditions of admissibility, in terms of relevance and helpfulness to the fact-finder, have been met. Thus, in the particular circumstances of a given case the presiding Justice may see fit to place greater emphasis on the consideration whether or not the scientific matters involved in the proffered testimony have been *generally accepted* or conform to a *generally accepted* explanatory theory." Ibid. at 504 [emphasis added]. ***This "rejec-***

tion" of Frye sounds more like an adoption of Frye. i.e., Maine apparently "rejects" Frye when a scientific principle is generally accepted while applying the Frye "general acceptance" test when the principle is not generally accepted.

Maryland{1}

In 1978, Maryland explicitly adopted *Frye*. *Reed v. State*, 391 A.2d 364 (MD 1978) (jury criminal trial). In holding that the trial court improperly admitted voice identification testimony based on spectrographic analysis, the *Reed* Court stated: "Without the *Frye* test or something similar, the reliability of an experimental scientific technique is likely to become a central issue in each trial in which it is introduced, as long as there remains serious disagreement in the scientific community over its reliability. Again and again, the examination and cross-examination of expert witnesses will be as protracted and time-consuming as it was at the trial in the instant case, and proceedings may well degenerate into trials of the technique itself. The *Frye* test is designed to forestall this difficulty as well." Ibid. at 371-72.

Massachusetts{1}

In 1963, Massachusetts explicitly adopted *Frye*. *Commonwealth v. Fatalo*, 191 N.E.2d 479, (MA 1963) (bench criminal trial). In holding that the trial court properly excluded polygraph evidence, the *Fatalo* Court stated that "[j]udicial acceptance of a scientific theory or instrument can occur only when it follows a general acceptance by the community of scientists involved." Ibid. at 481.

In 1993, in a post-*Daubert* case, Massachusetts applied *Frye*. *Commonwealth v. Daggett*, 622 N.E.2d 272 (MA 1993) (holding that improper admission of DNA evidence was harmless error but not citing *Daubert*).

Michigan{1}

In 1983, Michigan explicitly adopted *Frye*. *People v. Young*, 340 N.W.2d 805 (MI 1983) (jury criminal trial). In holding that the trial court should have conducted a *Frye* hearing to determine the admissibility of blood analysis identification evidence, the *Young* Court stated that "the admissibility of novel scientific evidence is governed by the [*Frye*] standard. Such evidence must have achieved general scientific acceptance among impartial and disinterested experts." Ibid. at 815.

Minnesota{2}

In 1989, Minnesota explicitly adopted *Frye*. *State v. Schwartz*, 447 N.W.2d 422 (MN 1989) (pretrial appeal in a criminal trial). In holding that the trial court improperly admitted DNA evidence, the *Schwartz* Court stated: "While we agree with the trial court that forensic DNA typing has gained general acceptance in the scientific community, we hold that admissibility of specific test results in a particular case hinges on the laboratory's compliance with appropriate standards and controls, and the availability of their testing data and results." Ibid. at 428. ***This makes Frye-3 an explicit prerequisite to the admissibility of scientific evidence, though perhaps only to DNA typing.***

In 1994, Minnesota commented on *Daubert*. *State v. Hodgson*, 512 N.W.2d 95 (MN 1994). The *Hodgson* Court stated: "We note that recently the United States Supreme Court, in *Daubert*, held that the Rules of Evidence supersede the *Frye* or general acceptance test for the admission of novel scientific evidence. We need not

address the issue of what impact *Daubert* should or will have in Minnesota. Suffice it to say, we are satisfied that basic bite-mark analysis by a recognized expert is not a novel or emerging type of scientific evidence. Like fingerprint comparisons, bitemark comparisons by an expert . . . are routinely used to prove that a particular person was present at a particular place or did a specific act." Ibid. at 98 (citations omitted). ***This does little to clarify the issue. Why did the Court not need address the DAUBERT issue? Because the issue was not preserved or because DAUBERT will have no effect? The Hodgson Court implies that because a scientific technique is not novel, it need not pass the FRYE test. Must the application of FRYE be limited to novel scientific evidence as the Court implies? This is reminiscent to the Maine Williams opinion.***

Mississippi{1}

In 1984, Mississippi implicitly adopted *Frye*. *House v. State*, 445 So.2d 815 (MS 1984) (jury criminal trial). In holding that the trial court improperly admitted post-hypnotic testimony, the *House* Court stated that "it is our view at this time that [hypnosis] does not have the status as a science whose practitioners are capable of giving opinions regarding the truthfulness of their subjects with that high degree of validity that we demand of expert witnesses generally." Ibid. at 822. Although the *House* Court did not cite *Frye*, it phrased the question in terms of "general acceptance": "Is the field of expertise one in which it has been scientifically established that due investigation and study in conformity with techniques and practices *generally accepted* within the field will produce a valid opinion?" Ibid. at 822 [emphasis added]. (Although the *House* Court did not cite *Frye*, *House* was later cited by Mississippi—when it adopted New York's version of the *Frye* standard—as standing for the proposition that *Frye* survived Mississippi's enactment of Rules of Evidence. *Polk v. State*, 12 So.2d 381, 390 (MS 1992).)

The Polk Court, in addition to clearly stating the governing law, clearly applied the facts to the law in a manner similar to the three-prong Frye analysis we set out previously: "[T]his Court adopts the modified version of the [New York] test set forth by the Supreme Court of Alabama . . . :

- I. Is there a *theory*, generally accepted in the scientific community, that supports the conclusion that DNA forensic testing can produce reliable results?
- II. Are there current *techniques* that are capable of producing reliable results in DNA identification and that are generally accepted in the scientific community?
- III. In this particular case, did the testing laboratory *perform* generally accepted scientific techniques without error in the performance or interpretation of the tests? We hold that there is a *generally accepted* scientific *theory* that forensic DNA testing can produce reliable results. The theory underlying the first prong of the test is thus met. [We hold that] [t]he circuit judge correctly found that there are *techniques* capable of producing reliable results in DNA matching that are *generally accepted* in the scientific community. [Thirdly, w]e agree and hold that the forensic DNA testing, as *performed* by Cellmark in this case, also passed the third prong. . . ." Ibid. at 390–93 [emphasis added].

Missouri{1}

In 1972, Missouri explicitly adopted *Frye*. *State v. Stout*, 478 S.W.2d 368 (MO 1972) (jury criminal trial). In holding that the

trial court improperly admitted testimony regarding the application of neutron activation analysis to blood samples, the *Stout* Court stated: "The parties agree that neutron activation analysis is generally accepted as a scientific technique of chemical analysis. The State argues that this is enough to meet the *Frye* test. We do not agree. The issue must be narrowed to whether the application of [neutron activation analysis] to blood samples has gained general acceptance in the particular field in which it belongs. In this case, on the record presented, we conclude it has not." Ibid. at 371. ***Thus, though the State argued that it need satisfy only Frye-1, the Court adopted a standard consisting of Frye-1 and Frye-2.***

In 1993, the high court wryly informed a defendant-appellant that Missouri had not adopted codified Rules of Evidence. "Our review is further thwarted by our inability to locate any treatise or publication entitled Missouri Rules of Evidence. Believing Defendant would enlighten us with the contents of § 801(d)(C), we turned to the argument section of his brief and learned nothing. No further reference to this publication is found there. The State's brief surmises that 'no such provisions exist.'" *State v. Higgins*, 852 S.W.2d 172, 176 (MO 1993).

Montana{1}

In 1983, Montana explicitly rejected *Frye*. *Barmeyer v. Montana Power Co.*, 657 P.2d 594 (MT 1983) (jury civil trial). In holding that the trial court's admission of corrosion analysis evidence (used to date burn marks on metal) was not an abuse of discretion, the *Barmeyer* Court stated that "the general acceptance rule is not in conformity with the spirit of the new rules of evidence." Ibid. at 598.

In 1994, Montana implicitly adopted *Daubert*. *Hart-Albin Co. v. McLees, Inc.*, 870 P.2d 51 (MT 1994) (admission of testimony of human factors expert was not an abuse of discretion). With little discussion, the *Hart-Albin* Court stated: "In its recent opinion in *Daubert*, the United States Supreme Court rejected the 'general acceptance' standard for admission of expert testimony." Ibid. at 56.

Nebraska{2}

In 1990, Nebraska explicitly adopted *Frye*. *State v. Reynolds*, 457 N.W.2d 405 (NE 1990) (jury criminal trial). In holding that the trial court properly excluded the testimony of a psychiatrist, the *Reynolds* Court stated: "While mentioning *Frye* in a string of citations with no discussion about the principle applied in the decisions cited, or obliquely referring to *Frye* in excerpts from judicial opinions of other jurisdictions, this court has, nevertheless, recognized and adopted the *Frye* test or standard for admissibility of scientific evidence." Ibid. at 418.

In 1992, after commenting that *Frye* is "not totally controlling" the Nebraska high court went on to prescribe each of the three prongs of *Frye* (see the three *Frye* tests tabulated in the table) as necessary. *State v. Houser*, 490 N.W.2d 168, 178–81 (NE 1992). ***The Houser Court also states that FRYE was one of several necessary factors, suggesting that its scientific evidence standard is stricter than FRYE.***

Nevada{3}

In 1988, Nevada implicitly rejected *Frye*. *Santillanes v. State*, 765 P.2d 1147 (NV 1988) (jury criminal trial). In holding that the trial court properly admitted results of a serological electrophoresis test, the *Santillanes* Court stated that a reference in an earlier

opinion to “general scientific acceptance” was not intended to assert a special test for scientific evidence and that “[i]n the sixty-five years since *Frye* was decided we have neither cited to nor adopted the decision.” *Ibid.* at 1147.

New Hampshire{2}

In 1969, New Hampshire explicitly adopted *Frye*. *State v. Coolidge*, 260 A.2d 547 (NH 1969).

In 1992, New Hampshire explicitly rejected *Frye*-3 (while retaining *Frye*-1 and *Frye*-2 as its standard). *State v. Vandebogart*, 616 A.2d 483 (NH 1992). In holding that the trial court improperly admitted DNA evidence (because certain underlying statistical techniques had not been generally accepted), the *Vandebogart* Court stated: “[W]e conclude that the admissibility of scientific evidence requires: (1) general acceptance in the relevant scientific community of the scientific theory or principle; and (2) general acceptance in the relevant scientific community of the techniques, experiments, or procedures applying that theory or principle. In our opinion, the third prong . . . , as to whether the testing laboratory adhered to generally accepted techniques, addresses matters that properly go to either the admissibility or the weight to be given the evidence in a particular case, not admissibility under *Frye*.” *Ibid.* at 490.

In 1993, in a case in which the “issue” of whether the New Hampshire Rules of Evidence superseded *Frye* was not preserved, New Hampshire explained how its Rules work with *Frye*. *State v. Cressey*, 628 A.2d 696 (NH 1993) (jury criminal trial). In holding that the trial court erred in admitting the testimony of the State’s expert psychologist to prove that the child victims had been sexually abused, the *Cressey* Court stated: “The requirement that an expert’s testimony be reliable is reflected in the evidentiary practices of properly establishing an expert’s qualifications, and subjecting technical evidence to the scrutiny of the test set forth in *Frye*. We therefore recognize that an expert’s testimony must rise to a threshold level of reliability to be admissible under New Hampshire Rule of Evidence 702. *Cf. Daubert*.” *Ibid.* at 698 (citations omitted). Nevertheless, the *Cressey* Court implicitly indicated that supersession was, in fact, an issue.

New Jersey{1}

In 1984, New Jersey explicitly adopted *Frye*. *State v. Kelly*, 478 A.2d 364 (NJ 1984) (jury criminal trial). In holding that the trial court improperly excluded testimony regarding the battered-woman’s syndrome, the *Kelly* Court stated: “In a relatively new field of research, such as that of the battered-woman’s syndrome, there are three ways a proponent of scientific evidence can prove its general acceptance and thereby its reliability: (1) by *expert testimony* as to the general acceptance, among those in the profession, of the premises on which the proffered expert witness based his or her analysis; (2) by authoritative *scientific and legal writings* indicating that the scientific community accepts the premises underlying the proffered testimony; and (3) by *judicial opinions* that indicate the expert’s premises have gained general acceptance.” *Ibid.* at 210 [emphasis added].

In 1993, New Jersey reaffirmed its commitment to *Frye*. “In New Jersey, the ‘general acceptance by the relevant scientific community’ test, established in *Frye*, substantially is still the law . . .” *State v. Spann*, 617 A.2d 247, 259 (NJ 1993) (a pre-*Daubert* case).

New Mexico{2}

In 1952, New Mexico explicitly adopted *Frye*. *State v. Lindemuth*, 243 P.2d 325, 334 (NM 1952).

In 1993, New Mexico implicitly adopted *Daubert* and explicitly rejected *Frye*. *State v. Alberico*, 861 P.2d 192 (NM 1993) (jury criminal trial). In holding that the trial court properly admitted expert opinion testimony (to show that an alleged rape victim suffered from post traumatic stress disorder (PTSD) consistent with sexual abuse), the *Alberico* Court stated that “general acceptability” is “neither a necessary nor a sufficient condition for admissibility; it is, however, one factor that a district court normally should consider. . . .” *Ibid.* at 203. The *Alberico* Court criticized *Frye* as “vague” but then stated: “We will not attempt to etch into stone a list of criteria as the *sine qua non* for the admissibility of scientific evidence, but these criteria will serve as guidelines for our lower courts and allow for further development in this area of our case law. *Ibid.* at 204. **The *Alberico* Court’s analysis of the underlying technique is confusing:** “PTSD is generally accepted by psychologists and psychiatrists as a valid technique for evaluating patients with mental disorders.” *Ibid.* at 208. **Its identification of a disorder as a technique underscores the fact *Frye*-1 and *Frye*-2 are often confused.**

New York{1}

In 1983, New York explicitly adopted *Frye*. *People v. Hughes*, 453 N.E.2d 484 (NY 1983) (jury criminal trial). In holding that evidence extracted exclusively from hypnotic examination is not admissible, the *Hughes* Court stated that “the proper inquiry is whether hypnosis has gained general acceptance in the scientific community as a reliable means of restoring recollection. It is evident, however, that at the present time hypnosis has not achieved that status.” *Ibid.* at 494.

In 1994, New York touched on the issue of foundation. *People v. Wesley*, 633 N.E.2d 451 (NY 1994) (holding that DNA evidence is generally accepted). The *Wesley* Court stated: “While foundation concerns itself with the adequacy of the specific procedures used to generate the particular evidence to be admitted, the test pursuant to *Frye* poses the more elemental question of whether the accepted techniques, when properly performed, generate results accepted as reliable within the scientific community generally. Only that *Frye* question is before us. The issues of a proper foundation and of the adequacy of laboratory procedures here are not before us, though some of the arguments made by the parties appear not to make this distinction.” *Ibid.* at 454. In a footnote, the Court noted that *Daubert* is not applicable, presumably because New York has not adopted Rules of Evidence. *Ibid.*, n2.

One New York case, although not a ruling from New York’s highest court, has been frequently cited (see Alabama *supra*): *People v. Castro*, 545 N.Y.S.2d 985 (Sup. Ct. 1989) (holding *Frye*-1, *Frye*-2, and *Frye*-3 necessary).

North Carolina{2}

In 1984, North Carolina explicitly adopted *Frye*. *State v. Peoples*, 319 S.E.2d 177 (NC 1984) (jury criminal trial). In holding that the trial court improperly admitted hypnotically-refreshed testimony, the *Peoples* Court stated that “[i]n addition to holding that hypnosis has not reached a level of scientific acceptance which justifies its use for courtroom purposes, we further conclude that no set of procedural safeguards can adequately remedy this unreliability.” *Ibid.* at 188.

In 1990, North Carolina called general acceptance “one index, though not the exclusive index, of reliability. Thus we do not adhere exclusively to the formula enunciated in *Frye*.” *State v. Pennington*, 393 S.E.2d 847, 852 (NC 1990).

North Dakota{3}

In 1983, North Dakota expressed a preference for its Rules of Evidence, although it suggested that for *scientific* evidence, a “general acceptance” standard would apply. *State v. Morris*, 331 N.W.2d 48 (ND 1983) (jury criminal trial). In holding that the trial court properly admitted opinion testimony (that the possession of one pound of marijuana usually indicates an intention to sell), the *Morris* Court rejected defendant’s arguments that the testimony failed the “general acceptance” test because “[a]t no time in the present case did the State pretend to offer expert testimony on a matter of *science*.” *Ibid.* at 52 [emphasis added].

In 1983, North Dakota noted that it had “never directly adopted the *Frye* rule.” *State v. Brown*, 337 N.W.2d 138, 148 n6 (ND 1993).

In 1994, North Dakota discussed the *Frye* issue, but failed to make its position clear. *City of Fargo v. McLaughlin*, 512 N.W.2d 700 (ND 1994). **In the opening paragraph of the opinion, the McLaughlin Court presents the question and its holding, but the holding fails to answer the question.** “We consider whether a police officer may testify about the results of a horizontal gaze nystagmus [HGN] test without the State first establishing the scientific reliability of the test by expert testimony. We mainly hold that the trial court did not abuse its discretion in admitting evidence of the HGN test results in this case.” *Ibid.* at 700. Later, the Court restated the question: “Simply stated, the question is whether the State must meet the *Frye* standard through expert testimony as a prerequisite to admissibility of the test results.” *Ibid.* at 705. Then, in a footnote, the Court referred to *Daubert* but without noting its effect: “The United States Supreme Court has recently held that the *Frye* test, requiring general acceptance within the relevant scientific community, has been superseded by FRE 702.” *Ibid.* at 705 n2. The Court then noted that the HGN technique has been generally accepted: “We begin our analysis by noting that the underlying scientific basis for HGN testing—that intoxicated persons exhibit nystagmus—is *undisputed*, even by those cases and authorities holding the test inadmissible without scientific proof in each case. It is *generally accepted* that a person will show a greater degree of nystagmus at higher levels of intoxication, and that a properly conducted HGN test can identify nystagmus. We take notice of these physiological facts, and conclude that it is unnecessary to require expert testimony of these *widely accepted* principles.” *Ibid.* at 706 [emphasis added] (citations omitted). The Court then implied that *Frye*-3 is not part of its standard, noting that objections about the test “go to the weight of the evidence, rather than its admissibility.” *Ibid.* at 707. In the final analysis, however, the Court never states whether *Frye* or *Daubert* governs scientific evidence in general or HGN evidence in particular. Instead, the Court states: “In sum, we agree with those cases that stress that HGN test results are admissible in conjunction with other field sobriety tests.” *Ibid.* at 707.

Ohio{1}

In 1983, Ohio explicitly rejected *Frye*. *State v. Williams*, 446 N.E.2d 444 (OH 1983) (jury criminal trial). In holding that the trial court properly admitted testimony regarding voice spectrography, the *Williams* Court stated: “[W]e endorse a more flexible standard derived from this state’s Rules of Evidence.” *Ibid.* at 447.

In reaching its conclusion, the *Williams* Court counted five cases in which testimony regarding voice spectrograph had been admitted and five where it had not. *Ibid.* at 446. The Court concluded that “[t]here was sufficient demonstration of ‘reliability’ adduced at trial to qualify the evidence as ‘relevant’ within the meaning of Evid. R. 402.” *Ibid.* at 448.

The Williams Court did not address the rationale underlying its rejection of FRYE. The Court did not explain, for example, why it thought the evidence was reliable. It merely listed the qualifications of the expert witness—which is a totally different issue—and noted that the testimony was un rebutted. It appears that the Williams Court would not have reached the same conclusion had the courts it looked to been aligned nine to one against admitting testimony regarding voice spectrographs.

Oklahoma{1}

In 1986, Oklahoma implicitly adopted *Frye*. *Plunkett v. State*, 719 P.2d 834 (OK 1986) (jury criminal trial). In holding that the trial court did not abuse its discretion by admitting electrophoresis evidence, the *Plunkett* Court stated that “[b]efore scientific evidence is [determined to be] admissible, there must be proof that the reliability of the tests used has gained general acceptance and recognition in the concerned scientific community.” *Ibid.* at 840. (Although the *Plunkett* Court did not cite *Frye*, *Plunkett* was later cited by Oklahoma as standing for the same proposition as *Frye*. *Yell v. State*, 856 P.2d 996, 996 (OK 1993).)

In 1993, Oklahoma summarized the issue as one of foundation. *Yell v. State*, 856 P.2d 996 (OK 1993). The *Yell* Court stated that “[T]he party seeking to admit such evidence must lay a proper foundation before the results of a scientific test may be admitted into evidence.” *Ibid.* at 996.

Oregon{1}

In 1984, Oregon explicitly rejected *Frye*. *State v. Brown*, 687 P.2d 751 (OR 1984) (jury criminal trial). In holding that the trial court properly excluded testimony regarding polygraph tests, the *Brown* Court stated: “In this opinion we review the extensive history of the *Frye* test, evaluate alternative tests adopted by our Court of Appeals and other states, and abandon these special tests in favor of resolving the problems of admissibility of scientific evidence by relying on traditional evidence law as codified in the Oregon Evidence Code.” *Ibid.* at 754.

Pennsylvania{1}

In 1977, Pennsylvania explicitly adopted *Frye*. *Commonwealth v. Topa*, 369 A.2d 1277 (PA 1977) (jury criminal trial). In holding that the trial court improperly admitted expert testimony concerning voice spectrography analysis of a recorded telephone call, the *Topa* Court, citing *Frye*, stated: “Admissibility of the evidence depends upon the general acceptance of its validity by those scientists active in the field to which the evidence belongs. *Frye*.” *Ibid.* at 1281.

In 1994, Pennsylvania commented on *Daubert*. *Commonwealth v. Crews*, 640 A.2d 395 (PA 1994) (criminal jury trial). In holding that the trial court properly admitted DNA evidence, the *Crews* Court stated that “the narrow holding of *Daubert* does not affect this case, as the Federal Rules of Evidence are not authoritative in determining admissibility of the DNA evidence in this case. Moreover, although the *Frye* decision of 1923 was not binding on Pennsylvania courts, we nevertheless adopted the *Frye* test as a

useful way of evaluating novel scientific evidence under Pennsylvania law. . . . Whether or not the *rationale* of *Daubert* will supersede or modify the *Frye* test in Pennsylvania is left to another day." Ibid. at 400.

Rhode Island{3}

In 1988, Rhode Island held that the trial court improperly admitted into evidence results of polygraph examinations. *State v. Dery*, 545 A.2d 1014, 1017 (RI 1988). The *Dery* Court stated that "[i]n this jurisdiction, we have been open to evidence of developments in science that would tend to assist the trier of fact. This court has never been hostile to the proof of fact by evidence relating to scientific tests or experiments. However, after review of the authorities and the evidence in this case, we are of the opinion that test results of polygraph examinations have not been established as scientifically reliable and accurate." Ibid. at 1017.

Rhode Island's rule, however, remains ill-defined. Although its high court has cited FRYE in numerous cases, it has focused only on what other jurisdictions have held and has not stated with any clarity what its own standard is; in particular, it has never explicitly adopted or rejected FRYE.

South Carolina{3}

In 1979, South Carolina implicitly rejected *Frye*. *State v. Jones*, 259 S.E.2d 120 (SC 1979) (jury criminal trial). In holding that the trial court properly admitted "bite mark" testimony (that is, the comparison of bite marks on a victim's body with the dentition of an accused to prove identity), the *Jones* Court stated: "In reliance on *Frye*, appellants argue that the admissibility of scientific evidence requires a preliminary showing of general acceptance of the techniques and theories by the scientific community. *In this case*, we think admissibility depends upon the degree to which the trier of fact must accept, on faith, scientific hypotheses not capable of proof or dis[-]proof in court and not even *generally accepted* outside the courtroom." Ibid. at 124 [emphasis added]. Thus, although the *Jones* Court did not apply *Frye* in this case, it implied that general acceptance was an important factor.

In 1990, South Carolina's rule remained unclear: "South Carolina, however, has never specifically adopted the *Frye* test and has employed a less restrictive standard in regard to the admissibility of scientific evidence." *State v. Ford*, 392 S.E.2d 781, 783 (SC 1990) [emphasis added]. The *Ford* Court then cited *Jones* as a case where *Frye* was not used.

In 1992, South Carolina cited *Frye* as good law. *State v. Squires*, 426 S.E.2d 738 (SC 1992). The *Squires* Court stated that "[a]lthough the validity of infrared spectroscopy is not challenged in this appeal, we nevertheless take judicial notice that the infrared spectroscopy process utilized by the DataMaster has gained general acceptance in the scientific community. *Frye*." Ibid. at 740 (citation omitted).

South Carolina's rule of evidence is ill-defined. Their "rule" seems to be to employ FRYE where they "know" that something has been generally accepted and to reject FRYE in other cases. We read this as an implicit rejection of FRYE.

South Dakota{1}

In 1991, South Dakota explicitly adopted *Frye*. *State v. Wimberly*, 467 N.W.2d 499 (SD 1991) (jury criminal trial). In holding that DNA test results were properly admitted in evidence, the *Wimberly* Court stated that "[t]he admissibility of scientific evi-

dence such as DNA profiling is governed by the standards set forth in *Frye*." Ibid. at 505 (citation omitted).

In 1994, South Dakota explicitly adopted *Daubert*. *State v. Hofer*, 512 N.W.2d 482 (SD 1994) (jury criminal trial). In holding that the trial court properly admitted evidence concerning an "intoxilyzer" test, the *Hofer* Court stated that "[t]he United States Supreme Court recently held that the *Frye* test was superseded by the Federal Rules of Evidence and thus . . . general acceptance in the scientific community is no longer required." Ibid. at 484.

Without much discussion, the *Hofer* Court adopted *Daubert* as readily as the *Wimberly* Court had adopted *Frye*.

Tennessee{2}

In 1992, Tennessee applied a "general acceptance" test. *State v. Sensing*, 843 S.W.2d 412 (TN 1992) (bench criminal trial). In holding that the trial court properly admitted into evidence the results of an Intoximeter 3000 "breathalyzer" test, the *Sensing* Court stated that "the technique of testing breath samples for blood alcohol content has achieved general acceptance in the scientific community." Ibid. at 416. The Court also recognized the foundation issue: "The fundamental question is the present foundation to be laid for the admission of evidentiary breath tester results." Ibid. at 416.

Interestingly, Tennessee has apparently never cited *Frye* or *Daubert*.

Texas{1}

In 1992, Texas explicitly rejected *Frye*. *Kelly v. State*, 824 S.W.2d 568 (TX 1992) (jury criminal trial). In holding that the trial court did not abuse its discretion in admitting "DNA fingerprint" evidence, the *Kelly* Court stated: "Is the *Frye* general acceptance test still a part of Texas law? We conclude that it is not. First, there is no textual basis in Rule 702 for a special admissibility standard for novel scientific evidence. Second, as should be fairly obvious, scientific evidence maybe shown reliable even though not yet generally accepted in the relevant scientific community." Ibid. at 572.

Utah{4}

In 1987, Utah explicitly "adopted" *Frye* as one possible test. *Kofford v. Flora*, 744 P.2d 1343 (UT 1987) (jury civil trial, paternity suit). In holding that the trial court employed the wrong standard in admitting evidence from a human leukocyte antigen (HLA) test, the *Kofford* Court stated that "*Frye* is a valid test, even though not necessarily an exclusive test, for determining when a [sic] scientific evidence is sufficiently reliable to be admitted and is not inconsistent with Rules 402, 403 and 702 of the Utah Rules of Evidence." Ibid. at 1347. ***Since a test based on the Rules of Evidence is generally more liberal than one based on FRYE, Kofford is more properly read as an implicit rejection of FRYE.***

Vermont{2}

In 1993, Vermont implicitly adopted *Daubert*. *State v. Brooks*, 643 A.2d 226 (VT 1993) (criminal trial). In holding that the trial court improperly excluded evidence of defendant's blood-alcohol content, measured by DataMaster infrared testing device, the *Brooks* Court stated that the Vermont's Rules of Evidence governed the *admissibility* of evidence, while another statute governed only the *presumption of validity*. Ibid. at 226. The *Brooks* Court noted

the Supreme Court's decision in *Daubert* and stated that "[s]imilar principles should apply here because Vermont's rules are essentially identical to the federal ones on admissibility of scientific evidence." *Ibid.* at 226.

Virginia{3}

In 1988, Virginia explicitly rejected *Frye*. *O'Dell v. Commonwealth*, 364 S.E.2d 491 (VA 1988) (criminal jury trial). In holding that the trial court properly admitted expert testimony regarding the "multisystem" method of electrophoresis used to test defendant's blood, the *O'Dell* Court stated: "We see no reason to adopt the *Frye* test. Even if it were the law in Virginia, the evidence was sufficient to meet it." *Ibid.* at 504.

Virginia has common-law evidence rules and apparently has never reversed a judgment based on the improper admission of scientific evidence.

Washington{1}

In 1974, Washington implicitly adopted *Frye*. *State v. Woo*, 527 P.2d 271 (WA 1974).

In 1994, Washington explicitly adopted *Frye* and explicitly rejected *Daubert*. *State v. Riker*, 869 P.2d 43 (WA 1994) (jury criminal trial). In holding the trial court did not abuse its discretion by excluding expert testimony regarding the battered-woman's syndrome, the *Riker* Court stated that "[i]n examining the *Frye* question, we look to see: (1) whether the underlying theory is generally accepted in the scientific community and (2) whether there are techniques, experiments, or studies utilizing that theory which are capable of producing reliable results and are generally accepted in the scientific community." *Ibid.* at 47-48. ***This is a Frye-1 and Frye-2 approach.*** The *Riker* Court explicitly rejected *Daubert* and described how *Frye* and Washington's Rules of Evidence work together: "We recognize that the United States Supreme Court has recently held that the *Frye* standard is not applicable under the Federal Rules of Evidence. *Daubert*. Nevertheless, in this state, we continue to adhere to the view that the *Frye* analysis is a *threshold inquiry* to be considered in determining the admissibility of evidence under ER 702." *Ibid.* at 48 n2 [emphasis added].

West Virginia{2}

In 1980, West Virginia explicitly adopted *Frye*. *State v. Clawson*, 270 S.E.2d 659 (WV 1980).

In 1993, West Virginia explicitly adopted *Daubert*. *Wilt v. Buracker*, 443 S.E.2d 196 (WV 1993) (jury civil trial). In holding that

the trial court's admission of testimony of an economist regarding hedonic damages was an abuse of discretion, the *Buraker* Court stated that "*Daubert's* analysis of Federal Rule 702 should be followed in analyzing the admissibility of expert testimony under Rule 702 of the West Virginia Rules of Evidence." *Ibid.* at 203.

Wisconsin{1}

In 1984, Wisconsin explicitly rejected *Frye*. *State v. Walstad*, 351 N.W.2d 469 (WI 1984) (bench criminal trial). In holding that the application of *Frye* to expert witness testimony regarding "breathalyzer" analysis was harmless error, the *Walstad* Court stated that "[n]owhere in the Wisconsin Rules of Evidence or in the extensive commentaries to it is the *Frye* rule mentioned. Under our rules, if the evidence is relevant, it is admissible, unless it is excluded for some special reason, such as prejudicial effect or jury confusion." *Ibid.* at 486-87. The Court also stated that "the trial judge's reliance upon *Frye* does not find support in the law of evidence of Wisconsin." *Ibid.* at 487.

Wyoming{2}

In 1992, Wyoming implicitly rejected *Frye*. *Rivera v. State*, 840 P.2d 933 (WY 1992) (jury criminal trial). In holding that evidence of DNA profiling was properly admitted at trial, the *Rivera* court stated that "[w]hile the parties have not couched their arguments within the Wyoming Rules of Evidence, we are satisfied a correct approach, rather than invoking . . . *Frye*, would be to analyze the admissibility of scientific evidence in accordance with those rules." *Ibid.* at 941. At the same time, the court also suggested that *Frye-3* was a prerequisite for the admissibility of scientific evidence: "[I]t is important for the trial court to be satisfied about the manner in which the testing was performed." *Ibid.* at 942.

In 1993, Wyoming implicitly adopted *Daubert*. *Springfield v. State*, 860 P.2d 435 (WY 1993) (jury criminal trial). In holding that evidence of DNA profiling was properly admitted at trial, the *Springfield* Court stated: "[O]ur determination in *Rivera* parallels a most recent decision of the United States Supreme Court. See *Daubert*." *Ibid.* at 443. The *Springfield* Court also stated explicitly that *Frye-3* tests are not part of its standard: "Concern about specific procedures goes to the reliability[i]ty of evidence and the weight given by the jury." *Ibid.* at 444.

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