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NOTES AND COMMENTS

SHOULD RELIABLE SCIENTIFIC EVIDENCE BE CONCLUSIVE AND BINDING ON THE JURY?

Occasionally a case arises where reliable scientific evidence which is directly related to the ultimate issue would appear to dictate the resolution of the case: yet, the jury returns a verdict contrary to the scientific evidence. For example, in a paternity case where the blood tests have excluded the putative father, the jury finds he is the father of the child.¹ Such verdicts stimulate critics to assert that the jury went beyond the traditional fact finding and truth seeking functions assigned to it.² The proposed remedy for this problem is to make reliable scientific evidence binding on the jury, thereby eliminating the option of rejecting the evidence.

The position established herein is that even the most reliable scientific evidence should not be conclusive and binding on a jury. The issue will be examined on its merits, to the exclusion of pleas favoring the jury system and constitutional problems. The discussion will center on these areas: rules of evidence which affect verdicts, an examination of the reliability of various sciences with a view toward specific situations, and the problems which would be generated by judicial or legislative promulgation of a rule of conclusiveness concerning scientific evidence.

RULES OF EVIDENCE

Initial recognition should be given to the fact that it is the exception rather than the rule to find uncontroverted scientific evidence in a case. Controversy usually centers upon conflicting expert testimony, allegations of improper scientific technique, or disagreement as to the conclusiveness of the scientific evidence itself. Inability to controvert the scientific evidence in some manner probably contributes to pre-trial settlements.³ Thus, many cases where the scientific evidence is extremely reliable never reach the jury. When purportedly reliable scientific evidence does reach the jury, and the jury rejects this evidence, is the situation of concern here despite the rarity of the occurrence.

Present rules of evidence adequately prevent verdicts contrary to uncontroverted evidence. Judges can non-suit parties, direct a verdict at the end of plaintiff's or defendant's evidence, or set aside a verdict which is contrary to the evidence.⁴ A verdict in opposition to immutable laws of science cannot be left standing.

¹ See, e.g., *Berry v. Chaplin*, 74 Cal. App. 2d 652, 169 P.2d 442 (1946).

² Note, *Evidence: Bastards: Infants: Parent and Child: Blood Tests as Proof of Non-Parentage*, 39 Calif. L. Rev. 277 (1951); and, Note, *Evidence: Conclusiveness of the Exclusionary Blood Test*, 17 Okla. L. Rev. 201 (1964).

³ Gordon, *The Use of Scientific Evidence and Its Legal Limitations*, 9 J. For. Sci. 301, at 310 (1964).

⁴ Bush, *Law and Tactics in Jury Trials*, ch. 10, § 151 (Students' ed. 1950). For a case

Where scientific evidence is controverted in some manner the issue of whether a verdict should be directed does not lend itself to easy solution. If controversy results from contradictory scientific evidence, a genuine issue of fact is present for the jury to resolve. In this situation the proposed conclusive rule would have no application because the scientific evidence is, in fact, inconclusive.

If the scientific evidence is controverted by non-scientific testimony of witnesses, a different issue results. Here the courts have split over whether a verdict contrary to the scientific evidence should be overturned,⁵ or whether the verdict must stand because a genuine issue of fact was generated.⁶ The courts in the former category depend on the reliability of the scientific evidence while the courts in the latter category treat scientific evidence as having the same weight as the non-scientific testimony. To a large extent, of course, the courts in both categories are influenced by the specific factual situations. But even in this unsettled area, where presumably a conclusive rule would be beneficial, such a rule is unnecessary.

Under the test used by a majority of courts to determine whether a verdict should be directed, if there is any evidence which could sustain a verdict for the non-moving party, the motion would be denied.⁷ In those jurisdictions where scientific evidence and eye witness testimony are given the same weight, the motion for a directed verdict would be denied. The gradual adoption of a new test for a directed verdict changes this result.

The new test for a directed verdict requires, ". . . if the evidence as a whole so overwhelmingly preponderates in favor of the moving party as to leave no doubt as to the factual truth, then he is entitled to a directed verdict as a matter of law, even though there is some evidence which, if standing alone, would justify a verdict to the contrary."⁸ The essence of the new test is a comparison of the evidence and not an examination of the evidence in favor of the non-moving party. The new test would permit a directed verdict where unequivocal scientific evidence is weighed against lay witness testimony.⁹ For instance, where blood tests which exclude the putative father are compared with the plaintiff's uncorroborated testimony, a verdict could be directed under the new test which

where reversal was required because the verdict was contrary to incontrovertible physical facts, see *Lamp v. Penn R. Co.*, 305 Pa. 520, 185 Atl. 269 (1913).

⁵ *Directed Verdicts on Uncontradicted Testimony*, 1959 Trial Lawyers Guide 65, at 83.

⁶ See, *McCarthy v. Manhattan Beach*, 41 Cal. 2d 879, 264 P.2d 932 (1954). In fact, the line between opinion evidence (having the least probative value) and expert testimony regarded as fact (fingerprint evidence) is not clearly drawn. Thus, the present stage of battle is not at the conclusive level as much as it is at the stage of what weight should be given to the testimony, if at all.

⁷ Wigmore, *Evidence*, § 2494, at 296 (3d ed. 1940).

⁸ Note, *Evidence-Sufficiency for Directed Verdicts—Can a Judge Hold a Candle to Twelve Reasonable Men?* 28 De Paul L. Rev. 322 (1968).

⁹ See, *Pedrich v. Peoria & Eastern R. Co.*, 37 Ill. 2d 494, 229 N.E.2d 504 (1967), where testimony concerning physical evidence given by laymen, and contradictory to the plaintiff's testimony, was a sufficient basis for a directed verdict.

could not have been directed under the old test. To the extent that credibility of witness and specific factual situations influence this result, the new test for a directed verdict offers flexibility which a conclusive rule would deny. Therefore, adoption of the comparison test for a directed verdict is preferable to adoption of a conclusive rule.

RELIABILITY OF SCIENTIFIC EVIDENCE

Scientific evidence can be divided into three categories of reliability: scientific evidence which is least accurate, scientific evidence accepted by the courts but not 100% reliable, and scientific evidence which speaks for itself in absolute terms.

The social sciences and the polygraph test are representative of the least accurate scientific evidence. These are not considered here because serious doubt exists as to their probative value. The sciences in this category (least accurate) generally have not been sanctioned by the courts but within this category some proponents of particular sciences assert a high degree of reliability. The polygraph, for example, has been said to be 99% accurate, although others allege it to have a 30% accuracy.¹⁰ Although the truth probably lies between the two extremes, the position of the polygraph advocates illustrates that those who should know the accuracy of their science can be either hasty or biased when they have an interest in gaining acceptance. These advocates, albeit few in number, present a danger where acceptance is sought to bring the science within the purview of the proposed conclusive rule. If those very experts who know the most about the science are biased, or overly eager, how can the accuracy of the science be objectively determined?

The category of sciences which is accepted by courts, but is not 100% reliable is exemplified by tests to determine intoxication and medical testimony. Two characteristics of this type of evidence prevent it from being conclusive although the sciences in this category are accepted as having probative value.

The first characteristic of the category of scientific evidence which renders it less than 100% conclusive is that uncontrollable variables prevent certainty. The correlation, for instance, between alcohol influencing the brain and that found in the blood stream or on the breath depends on, *inter alia*, a time factor, the age and weight of the suspect and his "experience with intoxicants."¹¹

The second characteristic of this category of evidence which renders it less than 100% conclusive is that while the test results remain constant, the opinions drawn from the test results do not. Medical opinion illustrates this point. A research team found that in 24 of 100 cases where X-rays were used as evidence they had been interpreted incorrectly.¹² Disagreement between the treating

¹⁰ Note, *Evolving Methods of Scientific Proof*, 13 N.Y.L. Forum 683, at 693 (1966).

¹¹ Boyce, *Judicial Recognition of Scientific Evidence in Criminal Cases*, 8 Utah L. Rev. 313, at 317 (1964).

¹² Myers, *'The Battle of the Imports: A New Approach to an Old Problem in Medical Testimony*, 44 Neb. L. Rev. 539 (1965).

doctor and the pathologist concerning the cause of death is not uncommon.¹³

The problem of reliability is further complicated by the method used to present medical opinion. The law looks for a single cause of death whereas most deaths are due to multiple factors.¹⁴ Thus the testimony elicited from doctors is sometimes different from that which they would like to give. This fact is true not only of causes of death but also true concerning causes of fatal traffic accidents. A research group has exploded the belief that fatal traffic accidents can be attributed to a single cause (drinking, sleeping, speeding, etc.).¹⁵

Another problem of reliability is that no standard meaning can be given to the term "cause of death."¹⁶ What is thought to be the cause of death has always been relative to the time and status of medical knowledge. As medical science evolves what was thought to be a cause of death may actually be only a symptom.¹⁷

Where uncontrollable variables are present, where interpretation is necessary, and where opinion evidence of causation is involved, enactment of a rule of conclusiveness would be imprudent. The jury must be allowed to determine the weight of the evidence.

The final category and the most reliable scientific evidence is that scientific evidence which speaks for itself in absolute terms. In this category proponents of a conclusive rule would point to ballistics, fingerprints, neutron-activation analysis and blood tests. If the results of these tests are not inconclusive, the accuracy of the findings are over 99%.¹⁸

Scientific evidence which is highly reliable is vulnerable where the findings approach a degree of inconclusiveness or where improper techniques were used. Assuming the proposed conclusive rule were in effect, it could not be applied where any basis for the above defects exists. The conclusive rule could, therefore, be circumvented by alleging these defects; and, such allegations would become standardized defenses. Who would make the determination of whether a basis to allegations of inconclusive findings or improper techniques exists? The alternative to letting the issue go to the jury is to have a "battle of experts" at a pre-trial hearing. The weakness of the pre-trial hearing approach is that a judge would merely duplicate what is done by a jury in the normal course of events. Or, if opposing experts are not used, the judge would have to inquire, hopefully with the same force and effect as an interested party would on cross-examination. In addition, the judge would have to resolve the issue competently because he does not have the protection which is afforded a jury by the general verdict. The judge must, as a professional individual, face the prospect of

¹³ See, e.g., *Kaercher v. Miller*, 25 Pa. 2d 518 (1962).

¹⁴ Bohrod, *The Meaning of 'Cause of Death'*, 8 J. For. Sci. 15 (1961).

¹⁵ Gordon, *supra* n.3, at 305.

¹⁶ Bohrod, *supra* n.14.

¹⁷ *Id.*

¹⁸ See generally, Note, *supra* n.10, pp. 613 to 775.

reversal of a specific finding of fact. A systematic reluctance to face such consequences is evident in our present system.¹⁹

Fingerprints are so unique that if the results are not inconclusive, no two experts would disagree on the findings.²⁰ At least twelve points or characteristics of a fingerprint must be present to make a conclusive finding.²¹ If the fingerprint is unclear, a conclusive finding is impossible.²² Also, some skin disease may alter fingerprints.²³ Therefore, even uniquely definitive fingerprint evidence is susceptible to the problems of reliability.

Fingerprint evidence, as with ballistics and neutron-activation analysis, seldom dictates the resolution of the ultimate issue in a case. It is usually used in conjunction with other evidence. The totality of evidence is then weighed in view of the opposing party's theory of the case. Viewed in this context, a need for a conclusive rule cannot be shown. The jury probably accepts the scientific evidence as conclusive in establishing what it purports to establish, but other factors must be considered before the ultimate issue is resolved. Enacting a conclusive rule is unnecessary and such action would only serve to unduly emphasize the scientific evidence. The jury will, in effect, be told to regard the defendant guilty until he justifies the presence of his fingerprints.

Creation of a conclusive rule for ballistic evidence would be attended by a unique problem. Once two bullets can be matched, the findings are highly accurate. A problem exists, however, where the bullets do not match and the suspect's gun is excluded. Subsequent firings can alter a gun.²⁴ Thus ballistics tests could wrongly exclude the gun which was actually involved. If a conclusive rule is in force, is the suspect entitled to the benefit of the rule as well as the burden? If so, a suspect's gun will be conclusively excluded even though it was, in fact, the gun involved.

The problem of overemphasis of the importance of the ballistics test is also present. In a "close" case where the ballistics test match the bullets but the defendant asserts his gun was stolen and replaced, the conclusive rule may sway the jury to disregard a defense which, under the present rules, may be given some credence.

Neutron-activation analysis (NAA) is deemed to be highly accurate, and it offers fantastic potential as the newest type of scientific evidence.²⁵ Although NAA has only recently been accepted in courts, due to its high degree of reliability, it must be considered for the benefit of the conclusive rule.

¹⁹ Richardson, *Modern Scientific Evidence*, § 5.6 at 107 (1961).

²⁰ Moenssens, *Admissibility of Fingerprint Evidence and Constitutional Objections to Fingerprinting Raised in Criminal and Civil Cases*, 40 Chi-Kent L. Rev. 85, at 95 (1963).

²¹ *Id.* at 99.

²² *Id.*

²³ Ahrens, *Scientific Evidence and the Law*, 13 N.Y.L. Forum 613, at 614 (1966).

²⁴ The problem is further complicated where the suspect may have intentionally altered the gun barrel or switched gun barrels.

²⁵ Note, *supra* n.10 at 730.

NAA results should not be made binding on a jury. When testing for chemical residues, NAA suffers from the same defects as the now discredited paraffin tests. The paraffin test was supposed to reveal whether the suspect had recently fired a gun as evidenced by the presence of dermal nitrates. But, dermal nitrates can come from sources other than firing a gun. Urine, nicotine and fertilizer leave nitrate residues. When the NAA is used to test for the presence of dermal nitrates it may reveal such presence, but the issue is, where the residue originated. In fact, whenever NAA is used to test for residues which can be accounted for in a manner other than the one sought to be ascribed to the presence of the residue, the limited value of this evidence is unduly emphasized by a conclusive rule. To say the presence of the residue is conclusive and binding on the jury subverts the issue of the meaning of the evidence. A suspect is then forced to account for what may literally be inexplicable, even to a scientist. The defendant would have to try to compile a history of his contact with various chemicals.

Blood grouping tests to exclude the putative father in paternity cases are said to be 99.99% biologically accurate. The .01% inaccuracy is caused by mutations of the blood. Thus, some argue that the results should be binding on a jury regardless of witness testimony to the contrary. The problem here is that 99.99% biological accuracy translates into a 99% legal accuracy.²⁶ The result is, rather than one in one thousand people with mutated blood wrongly excluded, one in one-hundred people should not have been exonerated. This result is caused by the probability factor of finding the one in one thousand people with mutated blood in a given sector. The enactment of a conclusionary rule would serve to institutionalize this legal error of 1%. In spite of the plaintiff's insistence that defendant is the father, every one in one hundred actual fathers would be wrongfully excluded. Also, because blood tests go to the ultimate issue in a paternity case, if the defendant is excluded as a matter of law, a verdict would have to be directed thereby depriving the plaintiff of the opportunity to present what may be compelling evidence that this case is the one in one hundred exception to the rule.

The above examples of problems concerning reliable scientific evidence do not purport to discredit the overall value of these sciences. But, the examples are designed to demonstrate that enactment of a rule of conclusiveness will not be free of difficulties. These problems cast doubt on the feasibility of a conclusive rule.

*Berry v. Chaplin*²⁷ is the case most often cited by those who clamor for the taking away from the jury the right to reject scientific evidence. The *A* and *B* blood test demonstrated Charlie Chaplin could not have fathered the child involved. Yet, the jury found that he was the father because the scientific evi-

²⁶ Ross, *The Value of Blood Tests as Evidence in Paternity Cases*, 71 Harv. L. Rev. 466 (1958).

²⁷ 74 Cal. App. 2d 652, 169 P.2d 442 (1950).

dence had the same weight as the plaintiff's testimony and the jury believed the plaintiff.

Even if a conclusive rule had been in force at the time of the *Chaplin* case, it should not have been applied. The *A* and *B* test indicated exclusion of Chaplin but, the *M* and *N* test results were inconclusive. And, no counter-test to ascertain the validity of the *A* and *B* test was run.

In view of these doubts, the *Chaplin* jury probably rejected the scientific evidence. More likely they were motivated by other considerations which had more meaning to them than the blood test. A jury purveys the type of justice people want because it reflects contemporary community standards.²⁸ Thus, a desire to legitimize the child and a desire to find a financially responsible person to care for the child could have motivated the jury.²⁹ This consideration, standing alone, is quite analogous to the "deep pocket" theory of tort law. But this consideration was not standing alone as moral considerations were also present. In the *Chaplin* case, and another often noted Maine case,³⁰ the defendant told others that he thought he was the father and he admitted to the illicit relationship. In two other paternity cases, less often referred to, blood tests excluded the putative father and the defendant denied the relationship. The defendant was exonerated in each of those cases.³¹ Enactment of a conclusive rule will prevent a jury from considering such factors, and it will leave the jury with the perfunctory role of announcing the result dictated by the rule in paternity cases.

Another factor ignored by the critics of the *Chaplin* verdict is the ability of the judge to determine that blood tests should be treated as conclusive. Is a judge expected to survey an entire branch of science and then extend judicial notice? Or, is the judge to accept the word of the partisan expert before him that the findings are so reliable as to be conclusive? What test is to be used by the judge? In the area of admissibility of scientific evidence the courts still use the Frye test (general acceptance in the community) to exclude the polygraph.³² But in the *Coppolino* case³³ the test was one of whether the scientific technique was reproducible regardless of general acceptance. Thus the test for admissibility does not aid the judge.

The function of determining conclusiveness of scientific evidence must necessarily be left to the legislature where resources to investigate and power to change the law exist. In six states legislatures enacted the Uniform Paternity Act after "undesirable" verdicts. Thus, to criticize courts when a *Chaplin* case occurs is unfair.

²⁸ Clark, *The American Jury*, 1 Val. U. L. Rev. 1 (1966).

²⁹ Note, *supra* n.10, at 648.

³⁰ *Jordan v. Davis*, 143 Me. 185, 57 A.2d 209 (1948).

³¹ *Jordan v. Mace*, 144 Me. 351, 69 A.2d 670 (1949); *C v. C.*, 200 Misc. 631, 109 N.Y.S.2d 276 (1951).

³² See, Boyce *supra* n.11 for a general discussion of the application of the Frye test.

³³ *Coppolino v. State*, 223 So. 2d 68 (2d Dist. Fla. 1969).

CONCLUSIVENESS

A rule making reliable scientific evidence binding on a jury will generate problems which effect our present system of justice. A reconsideration is necessary before enactment of a conclusive rule otherwise the rule could change basic principles of justice which should not be altered.

First, the spirit of allowing the jury to return a general verdict, permits the jury to mitigate the harshness of the applicable law. This fact permits overall stability of our system of laws but allows a degree of flexibility within the system. Finding a moral duty coupled with the "deep pocket" theory in paternity cases is an example of this flexibility. Or, where the jury must find that the deceased died violently before insurance recovery is permitted, juries have provided flexibility. A doctor may testify the deceased's veins were diseased causing the veins to rupture, thus the cause of death was non-violent. Yet, the jury seized "ruptured veins" as a violent cause of death.^{33a} These situations illustrate "a moral right in view of a legal wrong."³⁴ The consequences are contained in the term "justice." Justice incorporates social needs as well as scientific accuracy, but neither to the exclusion of the other. Justice may contain scientific accuracy but scientific truth is not necessarily equated with justice as a goal of law. A conclusive rule which dictates the ultimate resolution of a case does equate scientific truth with legal truth. The role of the jury is rendered perfunctory in such situations.

A danger of alienating citizenry from the judicial process also exists if a conclusive rule is enacted. Despite the reluctance of citizens to serve on juries, once they participate, they are favorably impressed by the judicial process.³⁵ To remove the element of weighing scientific evidence would remove the beneficial effect of having scientific principles explained to the jury. A phenomenon comparable to the mystique that the computer is smarter than humans would result. Thus, the jury would be told they are bound by a scientific test which they are not given the opportunity to understand. The result is that not only the defendant is affected, but the jury is affected also. The more a jury is regimented by being told they must accept that which they may desire to reject, the more the battle-lines are drawn between the courts and science and the underdog role of the defendant. A degree of the understanding between law and society is lost.

Enactment of a conclusive rule would necessitate a change in our present system of partisan experts. Partisan experts evolved because "only men of science can answer the reasoning of men of science."³⁶ Which party an expert represents is determined, in part, by the highest bid and the expert's personal and professional prejudices.³⁷ The testimony then given is colored either con-

^{33a} *New York Life Ins. Co. v. Wise*, 251 P.2d 1058 (Okla. 1953).

³⁴ Richardson, *supra* n.19, § 3.10 at 46.

³⁵ Lousberg, *On Keeping the Civil Jury Trial*, 43 *Notre Dame L.* 344 (1968).

³⁶ 2 *Law and Contemporary Problems* 401 (1935).

³⁷ Botein, *Impartial Medical Testimony*, 328 *Annals* 75 (1960).

sciously or subconsciously by personal and professional prejudices (including schools of thought and professional in-group disagreements). Experts would have to be neutralized before an objective finding could result and be given the benefit of a conclusive rule.³⁸ Therefore the feasibility of court appointed experts should be considered before adoption of a conclusive rule. The alternative is a battle of experts out of the presence of the jury where the judge the finder of fact.

As a final point, there is a perpetual tendency for law to lag behind changing ideas and concepts. The jury, with the flexibility now permitted it, fills the void created by legislative inertia.³⁹ The conclusive rule would prevent this result. The paraffin test to determine if the suspect recently fired a gun provides an example of this point. At one time the paraffin test was believed highly reliable. If, at its apex of believed conclusiveness, the test would have been given a conclusive and binding effect on a jury, how much time would be necessary to discredit the test, as it now has been? Even today an overwhelming number of states permit paraffin test results into evidence in the face of discreditation by experts. If the courts are unwilling to change, could the legislature be expected to be more willing? Especially a legislature which meets only periodically. At least under the present system, counter-experts can discredit the paraffin test and the jury has a basis for rejecting the findings. A conclusive rule would prevent this result. The act of not making paraffin tests conclusive would involve a lengthy effort to change an entire structure. Injustice would be institutionalized from the point when the paraffin test was made conclusive to the point when the test was made not conclusive.

All scientific techniques evolve and face the same problems illustrated by the paraffin test. New discoveries may render accepted practices obsolete or prove techniques erroneous. Experts and counter-experts who must convince a jury of the reliability of their techniques is the best method of preventing injustice which results from erroneous scientific techniques. Neither the expert nor his scientific techniques should be cloaked with the infallibility that a conclusive rule presumes.

CONCLUSION

In view of the limited number of cases where rejection of scientific evidence is clearly demonstrated and in view of the safeguard of the directed verdict, enactment of a rule making scientific findings conclusive is not necessary. The problems which would be generated are not adequately balanced by benefits to be realized. The slightest possible error in the scientific technique opens the door to institutionalized injustice. The goal of law should remain justice not scientific infallibility.

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³⁸ Meyers, *supra* n.12.

³⁹ Richardson, *supra* n.19 at 98.