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EVIDENCE: THE ROLE OF RECONSTRUCTION EXPERTS IN WITNESSED ACCIDENT LITIGATION

ROBERT EMMETT BURNS*

The propriety of expert testimony in injury or death actions where speed, point of impact or locale of the vehicles are ingredients of fault or responsibility continue to occupy the attention of Illinois appellate courts, particularly in the areas of so-called “reconstruction” evidence which is offered as the opinion of “accidentologists.”¹ In Adkins v. Chicago, Rock Island & Pacific Railroad Co.,² the Third Appellate District Court upheld the admission of reconstruction evidence by an expert on the brake and air brake lag time involved in a crossing collision,³ despite the fact that

¹ The development of experts in the field of accident reconstruction is a relatively recent phenomenon. In the past, police officers who routinely investigated accidents were regarded, and are regarded today, by some courts as non-experts, but qualified to express certain opinions based on views and experience. Sometimes a university professor with a background in engineering or physics is used to make certain mathematical calculations and evaluate accident occurrences by applying generally accepted laws of physics. Today, the study of accident occurrences is a field all to itself. Experts are trained to evaluate data such as skid marks, gouges in the road, location of debris and oil slicks, and measure the extent and type of damage to vehicles; to use scientific data to infer such things as speed of vehicle prior to braking, speed at contact, angle of impact, location of impact, etc.; or to determine whether brakes were working, whether the electrical system was functioning, etc.

The Northwestern University Institute of Traffic is a leader in the field of accident reconstruction and has for a number of years conducted numerous experiments and evaluations in attempting to refine and perfect accident reconstruction. The reconstruction expert today has a background in engineering and physics. He combines knowledge of theorems and formulae of the scientist with the practical and trained eye of one who has observed numerous accident scenes.


4 Id. at 918, 274 N.E.2d at 515.
there were three eyewitnesses to the collision between a train and plaintiff's auto. In *Siltman v. Reeves*, the Fourth Appellate District Court reversed the acceptance of reconstruction evidence that plaintiff's rear back-up light was not lighted at the time of the collision, apparently because there "were eyewitnesses," a 1970 vintage qualification of the leading 1965 supreme court opinion admitting reconstruction expert evidence.6

It is possible to reconcile *Adkins* with *Siltman* on the theory that in the former, eyewitness, driver, engineer and brakeman were not able to assist the jury,7 thus "making it necessary to rely on knowledge and application of principles of science beyond the ken of the average juror"8 (admitting a reconstruction expert). However, in *Siltman*, where taillight evidence was otherwise established9 by "credible, physical or eyewitness evidence,"10 no reconstruction expert opinion was admitted.

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5. Plank v. Holman, 46 Ill.2d 465, 264 N.E.2d 12 (1970). "However, reconstruction testimony may not be used as a substitute for eyewitness testimony where such is available." *Id.* at 470, 264 N.E.2d at 15 (1970).
6. Miller v. Pillsbury Co., 33 Ill.2d 514, 211 N.E.2d 733 (1965), a death case in which there were no eyewitnesses. For a rundown of majority and minority views, see Annot., 66 A.L.R.2d 1048 (1959).
7. "However, none of these witnesses were able to assist the jury as to time and distances involved, e.g. braking time and air brake lag time." 2 Ill. App.3d 704, 286 N.E.2d 631 (1972).
9. In *Siltman*, a highly qualified traffic reconstruction expert testified that, in his opinion, based on his examination of a taillight filament, the taillight of the tractor was off when it was hit from the rear. This opinion was contrary to testimony of three witnesses, all of whom had a close relationship with plaintiff (one eyewitness testified she saw a red flashing taillight on the back of the tractor). Other evidence tended to show that the tractor was not equipped with a working flashing taillight. There was testimony of the investigating police officer that the taillight filament was intact after the accident, that the filament was not in the same condition then as five months later when the expert examined it, and that the light switch on the tractor was in a position where, if the system were working properly, the taillight would have been on.
   The expert evidence was based on the condition of the filament on the taillight. The expert testified to the probability that the light was broken or not in order at the time of the accident.
10. "There is no place for the opinion of a reconstruction expert if the determinative facts are otherwise established by credible physical or eyewitness evidence." 131 Ill. App.2d at 963, 269 N.E.2d at 730 (1971).
The question remains: Does the presence of eyewitness evidence,\textsuperscript{11} with or without the Deadman's Act disqualification (if it be a death action), \textit{ipso facto} defeat, in Illinois, the propriety of proffered reconstruction expert testimony\textsuperscript{12} on such common accident matters as the condition which caused the injury, the speed of vehicles,\textsuperscript{13} point of impact,\textsuperscript{14} or the locale?\textsuperscript{15} The persistence of pa-


\textsuperscript{12} ILL. REV. STAT. ch. 51, § 2 (1969) disqualifies party survivors and those directly interested in the event from testifying, unless called (ILL. REV. STAT. ch. 110, § 60 (1971)) by the adverse party in interest (protected estate).

In Plank v. Holman, 108 Ill. App.2d 216, 246 N.E.2d 694 (1969), rev'd 46 Ill. 2d 465, 264 N.E.2d 12 (1970), the appellate court felt that reconstruction evidence on behalf of plaintiff should have been allowed, for the occurrence witness failed to describe the incident in any detail. In reversing, the supreme court instead emphasized their unwillingness to allow reconstruction testimony to be used as a substitute for eyewitness testimony where such was available (leaving arguably open what should be done if eyewitness testimony is available but not particularly helpful). In Ficht v. Niedert Motor Service, Inc., 34 Ill. App.2d 360, 181 N.E.2d 386 (1962) the Second Appellate District approved excluding testimony of an expert witness on the ground that his testimony, contradictory to that of the eyewitness, would tend to confuse the issues, invade the province of the jury, and make arrival at a just verdict more difficult.

\textsuperscript{13} Though there were no competent eyewitnesses, expert opinion evidence from a state highway officer, a graduate of Northwestern's Traffic Institute, was rejected by a divided court in Deaver v. Hickox, 81 Ill. App.2d 79, 224 N.E.2d 468 (1967), on appeal from a two-car death collision trial. The relevant trial scenario went something like this:

"The Court: Let me ask you, Officer, do you feel that you have sufficient back-ground to express an opinion on the matter?"

"A. Yes, I have an opinion. I can't say exactly, naturally. I don't think anyone can where you've got an impact involved, say exact speed. I think I could from past experience more than education, can estimate a speed, speculate a speed, rather."

"Mr. Ryan: Did you say speculate a speed, Trooper?"

"The Court: You mean estimate, based on skid marks and impact there as you saw it?"

"A. Well, Your Honor, more on automobile damage than the skid marks. Skid marks, where you have a terrific amount of automobile damage following it, from my study, leaves a lot to be desired. You can't go much by the skid marks when you've got a terrific lot of automobile damage after it."

"Mr. Ryan: And that's what we have in this case. I understood the trooper to say here that where there are terrific skid marks and terrific damage to the automobile it is difficult to estimate the speed."

"The Court: From the skid marks."

"A. From the skid marks, yes." The jury was then returned to the courtroom. The witness was then asked:

"Q. Now, officer, based on the observations which you have made and which we placed in our question to you, do you have an opinion as to the speed of the defendant's Falcon when it struck the doctor's Buick? . . . ."

"A. I do."

"Q. And what is that opinion?"
Parameter litigation concerning whether these matters are "beyond the ken of the average juror" seems but reminiscent of earlier expert opinion restrictions to only cases of absolute necessity where the jury would be incapable of drawing any conclusion unless expert evidence was provided.

The no-expert-needed rule, or, as it may also be called, the common-knowledge rule, provided that it was reversible error to receive the opinion of experts on that which was common knowledge. One text written on opinion evidence in Illinois presents an interesting insight into the early use of this rule:

[The] early decisions of Judge Breeze illustrated this attitude [against experts] . . . . He obviously relishes stating that "the most accomplished expert," "the most accomplished mechanic," "the most renowned bridge builder" is no more competent to give an opinion on a certain subject than the ordinary man.

Within the past twenty-five years, there have been great advancements made in the art of scientific evaluation of automobile acci-

“A. My opinion is that the speed at the time of impact would be between sixty and sixty-five miles an hour.” Id. at 82-83, 224 N.E.2d at 469-70.

It is to be noted that in Illinois, as an exception to the fact-opinion rule, a lay witness familiar with the speed of a vehicle may testify to the speed in terms of fast or slow, McKenna v. City Ry. Co., 296 Ill. 314, 129 N.E. 814 (1921), but not "too fast." Delany v. Badame, 49 Ill.2d 168, 274 N.E.2d 353 (1971).


17. See KING AND PILLINGER, OPINION EVIDENCE IN ILLINOIS, at 41 (1942): "In 1913, in the last case reversed under the common knowledge doctrine, plaintiff had been injured when a wheel came off a wagon. The reversal was on the ground that the opinion of blacksmiths were erroneously admitted to the effect that the friction of the wheel on the axle caused heat; that this caused the axle to expand; that the nut on the axle would also be heated and the heat would cause it to break off. The Supreme Court held that these expert opinions were facts 'within the knowledge of every man of ordinary intelligence.' Judge Carter, the Chicago Judge, dissented. The trial judge, three judges of the Appellate Court and Judge Carter (five judges in all from Chicago) held these opinions not within the common knowledge of a Chicago jury, but the six judges of the Supreme Court from downstate disagreed and reversed the case. Hoffman v. Tosetti Brewing Co., 257 Ill. 185, 100 N.E. 531 (1913)."

18. KING AND PILLINGER, supra note 17.

19. Id. at 40.
dents. The average man knows little about reaction time, braking power, and stopping distance; about the laws of action, geometric formulae of acceleration and deceleration, and coefficients of friction; the laws of physics and dynamics. The average man has had little practical experience in investigating accidents and testing and familiarizing himself with the various aspects of automobile accidents.

Today, the trend seems to be in the direction of allowing expert evidence to aid the jury in drawing proper inferences from raw physical facts of accidents. However, a ghost of the "no expert rule"


The following edited (REB) example of selections from a reconstruction case was found in WALTZ, CASES IN EVIDENCE 2d, at 565-71:

Direct Examination
"Q. Please state your name and address.
"A. My name is _______ and my office is in Manhattan.
"Q. What is your profession, your scholastic background, and what licenses have you held up to the present time?
"A. I am a graduate of Stevens Institute of Technology, 1926 ME. I hold professional engineers' licenses in New York, Connecticut and Pennsylvania, and have been in the engineering profession since the date of my graduation. I am a member of the American Association of Mechanical Engineers, the American Society of Safety Engineers and the National Association of Professional Engineers.
"Q. As part of your regular profession, in making accident reconstruction evaluations, have you in the past analyzed and studied roadway and damage markings left by various vehicles which have been involved in collisions?
"A. Yes.
"Q. How many years have you been doing this?
"A. For over thirty years.
"Q. Is there a recognized scientific formula for determining speed from skid marks?
"A. There is.
"Q. What is it?
"A. \[ V = \sqrt{30fS} \] The capital 'V' is the velocity of the moving object expressed in miles per hour. The small letter 'f' is the 'coefficient of friction' of the roadway. The capital 'S' is the length of the skid mark expressed in feet.
"Q. Does this formula take into consideration the things we discussed before, namely 'reaction time,' distance, the 'drag' or 'breaking' distance factors, and the sum total of both known as the 'speed distance' factor?
"Q. Assume also that the trailer-tractor left the type of skid marks shown in the photo and that the testimony of a State Trooper has indicated that they were 90 feet long, and that Dodge sedan was pushed another 67 feet from the point of impact, would you be able to compute, with reasonable certainty, the speed in which the truck was traveling prior to the impact?
"A. Yes. My computations would indicate that it was traveling at least 65 miles per hour at the time the brakes were applied, and 40 miles per hour, as testified.
may remain to haunt the attorney. Because impact, speed or locale
"opinions," especially by non-eyewitnesses, appear to be opinions on
"ultimate issues," there may be a fear that such testimony will invade
or usurp the province of the jury to find the facts.21

The case of Gillette v. City of Chicago22 illustrates the vitality of
the ultimate issue rule in Illinois. In that case expert testimony as
to the necessity of shoring up a building when that was the main
issue of the case was found inadmissible. The court said that an
expert may testify on the ingredients of the ultimate issue, but not
on that issue itself.23

In 1965, the Illinois Supreme Court considered the case of Miller
v. Pillsbury Co.24 and in it decided to follow the modern trend of
permitting reconstruction experts to testify. The court recognized
that this would entail some conflict with the ultimate issue prohibi-

"Q. I show you another photograph, plaintiff's exhibit C, which has been
identified by the trooper as fairly representing the appearance presented by
the sedan shortly following the collision. Is the type of damage shown thereon
significant to you and if so, why?
"A. Yes, it indicates the 'crushing' type of damage sustained by the sedan to
which I have referred, as distinct from 'rotation' type of damage. This cor-
roborates the opinion I previously gave, for this crushing type of damage shown
here would be expected if a fast moving trailer-tractor were to strike a slow
moving, or stationary, sedan."

386, 391 (1962): "The question of defendants' conduct in making this turn in
the manner in which the truck collided with the car in which the plaintiff was
riding was an ultimate issue in the case. It involved the conduct of these defend-
ants which was for the jury to pass upon. Wawrysyn v. Illinois Cent. R. Co.,
10 Ill. App.2d 394, 397, 135 N.E.2d 154 (1956). The course which the truck took in
making the turn at the intersection was a matter of common observation of the
witnesses who saw the occurrence. The jury is able to properly comprehend and
weigh the facts without the aid of an expert. To permit an expert witness to recon-
struct the scene of a collision and retrace the movement of a vehicle from the point
of impact back to some point prior thereto, and testify in contradiction to the testi-
mony of witnesses who viewed the occurrence, would open the door in every per-
sonal injury case to expert testimony on factual matters, and would be an invasion of
the province of the jury. If expert testimony were permitted, the opposing parties
would have the right to introduce experts of their own. This would tend to con-
fuse the issues and make the arrival at a just verdict more difficult."

22. 396 Ill. 619, 72 N.E.2d 326 (1947), but see Clifford-Jacobs Co. v. Industrial
Commission, 19 Ill.2d 236, 166 N.E.2d 582 (1960).

23. Proposed Federal Rule 704 provides: "Testimony in the form of an opinion
or inference otherwise admissible is not objectionable because it embraces an ulti-
mate issue to be decided by the trier of fact." Accord, Uniform Rule 56(4), Cal-

24. 33 Ill.2d 514, 211 N.E.2d 733 (1965).
tion, but pressed the belief that since the jury could accept or reject the testimony, their province was not invaded. The jury still retained the final decision-making power.

The ultimate issue restrictions, it is submitted, should be found, if anywhere, not in what Wigmore called "mere rhetoric" about usurping the jury function,\textsuperscript{25} but in the threshold decision of whether or not the subject, by sound discretion, generally admits of a need or usefulness of expert opinion evidence in the first place.\textsuperscript{26}

A third factor tending to chill proffered efforts of experts to reconstruct what happened in a contested accident case is the strong common law preference for the most objective evidence. This has been held to mean fact observation rather than mere surmise, conjecture, conclusion, or inferences.\textsuperscript{27} Witnesses must, after all, state facts, not opinions.\textsuperscript{28}

\begin{enumerate}
\item 7 Wigmore 3d § 1920, 17 (1940).
\item As Judge Craven (4th Appellate Dist.) put it in dissenting to the Deaver v. Hickox rejection of reconstruction evidence, quoting Buckler v. Sinclair Refining Co., 68 Ill. App.2d 283, 293, 216 N.E.2d 14, 19 (1966): "To render an opinion an expert need only possess special skill or knowledge beyond that of the average layman, and the determination of his qualifications rests within the sound discretion of the trial judge, People v. Jennings, 252 Ill. 534, 550, 96 N.E. 1077 (1911). The weight to be attached to such an opinion is a question for the jury in light of the expert's credentials, the facts upon which he bases his opinion and any limitations placed thereon during cross-examination. . . ." 81 Ill. App.2d 79, 89, 224 N.E.2d 468, 473 (1967).
\item In Abramson v. Levinson, 112 Ill. App.2d 42, 50, 250 N.E.2d 796, 800 (1969), the First District opinion sets out suggested factors needed in the exercise of trial discretion to accept reconstruction opinion:
\begin{enumerate}
\item The expert has the necessary expertise as a result of education, training and experience in the specific area about which he expresses an opinion,
\item The area of inquiry should require the employment of principles of physics, engineering or other science or scientific data, beyond the ken of the average juror,
\item The opinion of the expert cannot be naked, but must come clothed in evidentiary facts in the record, the inferences reasonably arising therefrom and must be elicited by hypothetical questions containing substantially all of the undisputed facts in evidence relating to the issue about which an opinion is sought, and
\item There must be a need apparent from the record in the case for scientific knowledge, expertise and experience which will aid the jury to a correct and a just result."
\end{enumerate}
\item The authors of OPINION EVIDENCE IN ILLINOIS, supra note 18, illustrate on page 1 the workings of the opinion rule with an amusing and somewhat supposititious case:
\begin{quote}
A JURY trial. A witness on direct examination is describing an automobile accident:
\begin{quote}
Q. What happened then?
A. The lady in the car that got hit stumbled out of her car and fell in a faint.
\end{quote}
\end{quote}
Parenthetically, witness testimony is not observed "fact" at all, but instead represents a filtered post hoc effort to reconstruct past "fact" ("reality") through the medium of nouns and verbs of the present.

In any given trial, what is fact and what is opinion depends upon which statement is specific enough to allow the jury to draw their own inferences from facts. The statement: "He was driving carelessly" may be held to be opinion when compared with the statement: "He was driving on the wrong side of the road;" and that statement may seem like opinion when compared with "He was driving on the left side of the road on a two-lane highway going north." Speaking of "compared to what," query: Which would be more reliable in a contest over a disputed accident—(1) an expert opinion based on skid marks, extent of vehicle damage, final position of vehicles on highway, and, in a proper case, an expert's speed estimate of 35 m.p.h., or (2) lay eyewitness testimony that the vehicle was going "fast"? Still, there ought to be limits to trial by expert.

Nonessential reconstruction testimony may waste time and presents a specter that the very presence of the expert will unduly impress the jury far beyond the value of his testimony without corresponding benefit of adding anything worthwhile or helpful.  

Lawyers who elect to try a no-liability case, or who fear cross-examination of eyewitness survivors, ought not to be able to obscure this type of evidence by instead resorting to the testimony of an accidentologist who would reconstruct an otherwise plain fact situation in the language of expertise and opinion.

Still, if distinction be the life of the law, perhaps additions are needed in reconstruction evidence guidelines. Language that ex-

"Defense counsel: Move to strike the opinions of the witness. Let him state the facts.

"The Court: Strike them out. The jury will disregard that answer. [To the witness:] You must state the facts and not your conclusions regarding them. You can't give the jury your opinion as to which car got hit, whose car it was, how the lady got out of the car or why she fell, if she did fall—you must state the facts."

29. See Cleary, Evidence as a Problem in Communicating, 5 Vand. L. Rev. 277 (1952), where the author points out that in a 60,000 word society, an overly liberalized reform of the rule against opinion could lead to a return to the earlier oath helping stage where much of everything seemed mere opinion.

30. See Abramson case standards, supra note 26.
Experts may not substitute their opinions when there is any eyewitness evidence (perhaps the origin of the thought that if an eyewitness is available, no reconstruction expert will ever be proper), or that speed, distance, locale, or point of impact evidence are not beyond the ken of the average juror if any eyewitness evidence is available, don't quite describe the apple. Perhaps more track is needed. In Wrongful Death Act cases where the evidence proof problems are aggravated by that Act, reconstruction expert evidence might be proper, irrespective of eyewitnesses, if either party is disqualified by direct interest in the affair.

Reconstruction evidence may be all geometry, but more evidence guidelines for trial judges could provide a little less appellate conjecture on the subject.

31. ILL. REV. STAT. ch. 51 § 2 (1969). Here's one from the docket of Judge Harold Clarke of the 5th circuit: "Plaintiff, intestate, age 23, had been out with friends. At about 1:00 a.m. he went to a tavern which was closed, and then was apparently returning to his home, traveling south. The defendant, a railroad switchman, got off work at 12:00 a.m., stopped at a tavern where he was identified, had a drink and proceeded toward his home. The two cars met head-on on a divided four-lane highway; plaintiff died. It was impossible to determine from the debris or position of the cars which party was going north and which party was going south. Plaintiff tried to establish by evidence that the deceased was traveling toward home, going south. A discovery deposition declared that defendant was traveling south. Investigation by both parties indicated they both were traveling in a southerly direction and therefore the cars could not have met head-on. After suit was filed and prior to trial, defendant was killed in another accident."

In the recent Illinois Supreme Court opinion of McGrath v. Rohde, — Ill. 2d —, — N.E.2d — (1972), a tender of a reconstruction expert by plaintiff-estate was rejected in a death action. The appellate opinion stressed that eyewitness testimony had been made available to the plaintiff when he, by deliberate choice, chose to call an incompetent defendant under section 60 of the Illinois Civil Practice Act (calling an adverse party). The supreme court opinion, however, hastened to add "that the plaintiff chose to call the defendant as a witness did not eliminate or diminish the standards of admissibility for reconstruction expert evidence." — Ill. 2d —, — N.E. 2d — (1972). Query: to what extent should the presence or absence of available incompetent party testimony, made competent by the Illinois Dead Man's Act, affect the propriety of reconstruction evidence? One could argue by analogy to the Illinois allowance of careful driving habits of the deceased to show due care of the plaintiff, a concession to necessity or need quite unrelated to whether or not the evidence would be beyond the ken of the jury.

32. The appellate court in Plank v. Holman, 108 Ill. App.2d 216, 246 N.E.2d 694 (1969) favored qualifying incompetents or those directly interested in the ch. 51 event if the party bearing such testimony elected to present reconstruction experts.