C29 An Accident Reconstructionist's View of How the Rules of Evidence Affect Expert Testimony

Peter Alexander, PhD*, Raymond Smith & Associates, 4934 Wagontrail Court, Parker, CO 80134

The goal of this presentation is to inform attendees of the flaws in the judge's gatekeeper role regarding admissibility of scientific testimony.

This presentation will impact the forensic science community by providing case studies of application of *Daubert* ruling in civil litigation involving scientific conclusions.

The National Academy of Sciences (NAS) has recently issued a 254 page draft report stressing the need to strengthen forensic science activities in the United States. Among the areas mentioned were:

- The lack of standardization of procedures;
- The lack of mandatory certification, and accreditation of practitioners;
- The lack of established accuracy limits for procedures;
- The admissibility of forensic evidence in litigation;

This paper deals with the last item, the admissibility of accident reconstruction data and conclusions used at trial which are drawn from that data.

The NAS Report recounted the *Frye* standard developed in 1923 and the 1975 Federal Rules of Evidence – Rule 702 which led up to the 1993 *Daubert* decision. *Daubert* established several standards (cited below) that the trial judge could consider with regard to expert testimony.

1) Whether a theory or method has been tested;
2) Whether it has been subjected to peer review and publication;
3) Whether it has a known rate of error;
4) Whether there are standards controlling the technique;
5) Whether it is accepted in the scientific community;

When one side in a lawsuit challenges the other side's expert based on the *Daubert* decision, the judge is required to act as the "gate keeper" and rule on the admissibility of the presentation in terms of the above criteria, in order to prevent the jury from being exposed to unsound or unscientific conclusions. Often during a *Daubert* challenge the judge is presented with conflicting, rather technical, testimony from experts on each side. One side may contend that the other expert's conclusions are invalid because they rely on junk science or faulty assumptions. This process is an exercise in fairness to ensure that one side in a court case does not influence the jury with testimony that is not sound or accurate. How well this process works for the accident reconstructionist is discussed below.

On occasion the judge shirks his gatekeeper role and decides to let the jury decide the merits of each side's expert conclusions. Sometimes it appears that the judge may feel that he is insufficiently technically astute to render a decision. Unfortunately, a jury is even less qualified to make this judgment than the judge. When the judge fails to fulfill this role, the jury is presented with two experts who each sound very convincing but have contradictory scientific conclusions. In such a situation it is possible for justice to be perverted. Two case studies illustrating this process are detailed below.

Case Study 1: This case involved a rear impact to the stopped plaintiff's 1992 Suzuki Sidekick, by a 1997 Jeep Grand Cherokee. Roughly $1500 in damage was suffered by each vehicle. Physicians attributed cervical and mild brain injuries to the plaintiff resulting from this collision.

The plaintiff's expert placed the Jeep's impact speed at >10 mph, resulting in a 5 mph. speed change of the plaintiff's vehicle. The female plaintiff was restrained and turned when she was hit by surprise from the rear.

The defense expert concluded that the impact speed was <5 mph, resulting in a 4g peak acceleration to the occupant. The expert cited staged rear impact crash tests at this speed, in which the human volunteers were uninjured. The expert also stated that the forces in this collision were no greater than those experienced during normal daily activities. The defense expert's conclusions were based on a numerical model which was used only by that expert and had never been independently tested or validated. The model was capable of producing any result the expert wanted, depending on his choice of key input parameter values.

Previously the State Supreme Court had ruled that comparing forces in a collision to forces related to daily activities was junk science and inadmissible. Likewise the Supreme Court had also ruled that comparison of the lack of injuries incurred in staged crash tests with the likelihood of injury in an actual collision was junk science.

During the hearing, in this case, challenging the defense's right to present this data to the Jury, the judge abdicated his responsibility and decided to let the jury decide which expert was right. The jury decided that the plaintiff could not have been injured in this impact. If the jury had known that the defense expert was relying on "junk science" would the result have been different?

Case Study 2: This case involved a 2000 Toyota Avalon which struck the plaintiff's slowly moving 1989

Cadillac Deville from the rear. The defendant claimed she was only traveling at 5 mph when the plaintiff stopped suddenly. There was $1,000 damage reported to the plaintiff's vehicle and a precision frame measurement showed that the frame had been bent by the force of the collision. Physicians testified to various significant back and neck injuries suffered by the plaintiff in this collision.

The plaintiff's expert testified that this collision's relative impact speed was in excess of 12 mph. and aggravating factors such as a prior asymptomatic injury, being turned at the moment of impact, and being hit by surprise contributed to the likelihood of injury to the plaintiff. The expert also established that the stated impact speed was a minimum value necessary to cause the frame damage noted.

Despite being challenged, the defense expert, a medical doctor, was allowed to testify regarding her reconstruction of this accident. She concluded that the peak acceleration in this collision was less than 2g and it was unlikely that someone would be injured at that acceleration level. The expert also noted that we live with 1g acceleration exerted on our bodies. Despite the defense expert having no credentials in the area of accident reconstruction, she was allowed to testify as to her conclusions in that area. Incredibly, the plaintiff's accident reconstruction expert was not allowed to rebut the defense expert's accident reconstruction testimony because he was not a medical doctor like the defense's expert.

The jury found against the plaintiff, agreeing with the defense expert that acceleration levels of 2g were unlikely to cause the stated injuries. The jury never heard that the 4 mph. that would have produced the 2g acceleration claimed by the defense, never would have bent the plaintiff's vehicle frame. The jury also never heard that, even if the defense was correct about the impact speed, a 1g vertical acceleration applied to one's body is not comparable to a 2g horizontal acceleration applied to the head and neck. In addition, the jury never heard that the peak accelerations experienced by the plaintiff could actually have been as high as 15g. Would the jury verdict have been the same if they had been allowed to hear these arguments during rebuttal?

Conclusion: How can the possible perversions of justice apparent in the above examples be avoided? It appears that some judges are not comfortable deciding issues which are technically based. One option might be to require judges to have some minimal training in science or engineering. Another possibility might involve providing science education to sitting judges. Still another option might involve the appointment of a technical advisor by the judge to help him rule on cases involving complex technical matters. Attorneys and judges might provide different sets of options with regard to this question.

Accident Reconstruction, *Daubert*, Expert Testimony