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Challenges to Testimony You Should Understand

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Daubert, Frye: Challenges to Doctors

The best defense a lawyer can make to any opposing expert is to have the judge rule that the expert cannot testify. Challenges to your right or ability to testify will be waged on the basis of *Daubert, Frye*, or perhaps its more recent cousin - *Kumho* (*Kumho Tire Co. v. Carmichael*, 526 US 137, 119 S.Ct. 1167, 143 L). Not with me so far? Read on. To have your opinions heard by a jury, you may have to stand up to these legal challenges; to do so, the lawyer calling you will have to be familiar with these issues.

To complicate matters, as we'll see, things vary between states. However, it has been my own experience that many lawyers are not quite as familiar as others with just what can be introduced as evidence by experts and what cannot be. I've many times been informed by one lawyer that certain types of illustrative evidence will be disallowed and, therefore, I shouldn't even bring it with me to court. I know this is poor advice, because I have used this type of evidence quite effectively in other cases in the same court. However, if the lawyer doesn't believe the evidence (whether it be testimony; introducing charts; graphs; posters; x-rays; models; videos; or whatever else) will be allowed, he or she won't ask you to present it, effectively compromising the power, breadth, and perhaps the very credibility of your testimony.

And while much of this article looks at challenges to your medical testimony, what's good for the goose is often good for the gander. These same challenges can be made against the testimony of experts who oppose you, such as auto crash reconstructionists (ACR). I'll show you how.

Historically, the courts have used the *Frye* ruling to make determinations about the admissibility of expert witness testimony in the area of science or medicine. The Frye rule (*Frye v. United States*, 293 F 1013 D.C. Cir, 1923) asks, as its two primary concerns:

1. whether or not the findings presented by experts are generally accepted within the field to which they belong; and
2. whether they are beyond the general knowledge of the jurors.

As you might expect, these questions are subject to some interpretation. For example, if a paper is being used in support of chiropractic, but was published in a medical journal, from which discipline do we judge the testimony in regards to the field in which it belongs? Moreover, in any discipline, there are usually at least two popular and opposing opinions, and whiplash trauma is a classic example. We have Dr. Robert Ferrari championing the "late whiplash as pure fiction" dogma with heroic zeal. Potentially, then, this argument might come down to a preponderance of evidence - in this case, who has the most and the best literature. But who judges the value, legitimacy or credibility of that literature? You can see how variable the outcome is likely to be from one case to the next. Your best defense is to know what to expect and to be prepared.

In *Frye*, also known as the "general acceptance test," the connection (i.e., relevance) between the science and the facts of the particular case was not required.

In *Daubert* (*Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579, 1993), as you might recall, a plaintiff was awarded $4.5 billion on the basis of what amounted to, essentially, junk science. It was argued that a number of physical ailments resulted from leakage of silicone from a breast implant. Subsequent class action suits have crippled the company. The case was important because the "science" offered by the plaintiff came from dubious sources such as nonpeer-reviewed nutrition literature, whereas the defense arguments offered as support strong epidemiological studies published in peer-reviewed medical literature, which pointed out the lack of connection between these various disorders and leaking silicone. In fact, ongoing literature continues to refute connections between these leaks and the various musculoskeletal, connective tissue, rheumatic, and autoimmune disorders alleged to have resulted from them.

The case prompted the U.S. Supreme Court to step in and redefine the way courts can or should consider the weight of expert testimony. At this point, over 200 cases in federal court have cited *Daubert*. (Unfortunately, the O.J. Simpson case illustrates how juries can still choose to disregard admitted evidence, regardless of its scientific weight or credibility. In that case, faulty police work and racial issues were more compelling.) In *Daubert*, the U.S. Supreme Court essentially dismissed *Frye*, promulgating fresh standards of scientific critique. Judges, who were stressed by the court as gatekeepers, are now encouraged to consider

evidence more independently, using relevance to the facts at hand and reliability as their guide. Four elements to consider were as follows:

1. Has the scientific theory or technique been tested?
2. Has the opinion been published or reviewed by peers?
3. What is known of the potential rate of error?
4. Has it been generally accepted in the relevant scientific community?

Sometimes five factors are described, with the fifth being the existence and maintenance of standards controlling the technique's operation. Note that factor four is the vestige of the *Frye* ruling, so, while *Frye* is no longer the standard, it remains one of the tests of such evidence.

Daubert considers that a theory has to be falsifiable to be considered scientific. This is classical Karl Popper scientific philosophy. "Falsifiability" means that the theory or scientific testimony must be capable of being proven false. This is sometimes referred to as the null hypothesis when conducting experimental studies. We devise our hypothesis and then attempt to disprove it experimentally. The null hypothesis is simply the obverse of our real hypothesis, and if we fail to reject the null hypothesis with our study, we lend support to the original hypothesis. Because things like astrology, Marxism and religion cannot be falsified through scientific means, they lie outside the realm of science. No scientific experiment could be devised, for example, to prove that God does not exist. And,while most scientists don't argue against God or religion, such beliefs are simply outside of the realm of what we define as science because they cannot be disproved using scientific methods. (Note that this does not imply that these things are necessarily pseudoscientific. A thing is said to be pseudoscientific only when it lies outside the realm of science, yet is represented as being scientific.)

Sounds good so far, but there are some potential snags in all of this. In a case I testified in recently, the defense attorney kept asking me about the known error rate in connection with the literature I cited during my testimony. But the error rate cannot always be known for all of the literature. Let's use a thought experiment to consider the truth of this statement about known error rate.

Suppose you invented a revolutionary new type of device to measure pressure within a closed compartment. In order to validate the new instrument, you would compare its results against a gold standard instrument whose accuracy was known. The results could then be compared statistically and the error rate could be calculated. This would make the work scientific in the eyes of the court under *Daubert*. But suppose this

new instrument measured something for which there was no current gold standard, or perhaps measured it much more accurately than the current gold standard instrument. Validating it would become much more difficult.

Videofluoroscopy (VF) is just one example of a clinical tool that does not lend itself well to validation and whose current level of validation is poor. But does that imply that it is not valid? Does it imply that these images offer nothing clinically useful to trained radiologists and clinicians? No. It is only an indictment of the lack of investigation in this area to date. However, the theory that VF can measure real-time spinal motion and kinematics is ultimately falsifiable. (Note that theories are, in this way, always provisional, and subject to rejection by future scientific investigation. Conversely, scientific philosophy also offers us the somewhat disquieting rule that nothing can ever be proved conclusively, and it can only fail to be falsified by more and more experiments.) Thus, in this case, VF could be considered a scientific modality, despite the fact that its error rate is currently not known.

An amicus brief provided to the Supreme Court in *Daubert* by the Carnegie Commission of Science and Technology suggested that judges consider methodological issues of reliability; validity; study design; data collection; and replication - a heady order for nonscientists and another reason why one never knows what will be allowed or disallowed in a court. But defense lawyers are using Daubert to attempt to exclude testimony. In some cases, hearings have been requested to determine whether an expert can testify - sort of a trial within a trial. This is sometimes referred to as a 402 hearing.

In an interesting test of *Daubert*, the 10th U.S. District Circuit Court of Appeals in *Compton v. Subaru of America, Inc*., held that the *Daubert* analysis did not apply to all expert testimony, but merely to "unique, untested, or controversial methodologies or techniques." Therefore, "the application of Daubert factors is unwarranted in cases where the expert testimony is based solely on experience or training." Thus, the court should consider the testimony on the basis of the Federal Rules of Evidence (FRE). In this case, Rule 702, which has two requirements: that the scientific knowledge is grounded in the methods and procedures of science and is more than subjective belief and speculation; and that the scientific evidence assists the fact-finder in reaching a conclusion in the case. This means that if the expert is not testifying on a particular methodology or technique, that testimony should be considered admissible so long as that person is qualified as an expert and the testimony is relevant to the case. Opinions on the type or severity of injuries, or the likely prognoses, would come under this heading.

The 9th U.S. District Circuit Court of Appeals, in *McKendall v. Crown Control* (955667, September 15, 1997) ruled that expert testimony need not be based on scientific knowledge or methods, but may rely on the training, experience, education, and other qualifications of the witness. Again, this is highly relevant to your type of testimony.

In an extremely important case, the U.S. Supreme Court has recently decided this issue (March 23, 1999) in *Kumho Tire Co. v. Carmichael* (97-1709, 1999). In this case, an expert who would have testified that a tire blew out not because it was bald, but because it had several poorly repaired punctures, was barred from testifying at trial. Justice Steven Breyer wrote that expert testimony included not just scientific testimony, but also testimony based on "technical" and other "specialized knowledge." Justice Scalia concurred, writing, "*Daubert* factors are not holy writ." Thus, the *Kumho* case is important because it clarified the rules regarding the judgment of nonscientific testimony. However, despite the fact that *Daubert* was expected to allow a more liberal use of experts in the courtroom, statistical analysis of these cases has shown that *Daubert* has instead had a chilling effect, and has developed into a critical defense tool in certain litigations.

As to the variability among states, the FRE, which became effective in 1975, have been adopted by only 38 states. Currently, 35 states have acknowledged *Daubert*, with 11 of these adopting it as their standard of acceptance. Six states have rejected it outright in favor of the Frye rule. Eighteen states have acknowledged *Daubert*, but are undecided as to whether it will ultimately be adopted or rejected.

The procedure for bringing a *Daubert* challenge, by the way, is to make a motion *in limine* pursuant to FRE 104. In support of that motion, the parties submit affidavits, reports, and any deposition testimony delineating the challenged expert opinions. The information submitted to the court by both sides can be critical in the *Daubert* challenge. And you can very often be a critical part of the development of those motions.

As a recent example of this, and one that would rock the firmament of the ACR’s world, an attorney who attended my whiplash seminar series several years ago, Nick Vacula, from Arizona, challenged the testimony of Whit McConnell,MD, who was going to opine that the plaintiff (Vacula’s client) would not have been injured in the car crash based on his reconstruction of the crash and also based on his research in low-speed crash testing.[1-4]

Vacula hired a statistician (Mark Reiser) to point out that it is entirely unscientific to rely on a small number of staged volunteer crash tests to extrapolate to the real universe of potential crash victims, or to attempt to assign risk of injury on this basis. Where did he get the idea for the challenge in the first place? Yours truly. The judge agreed, and the testimony with regard to the probability of injury was barred. Since then, several other judgments similar to this have been handed down around the country, and the case has been used repeatedly to challenge the testimony of ACRs.[5]

Although California rejected *Daubert* and still uses the older *Frye* rule (called *Kelly-Frye* due to rejection in the *Kelly* case in 1976), some California judges do use *Daubert*. Fundamentally, both are rules to allow the judge to take on a gatekeeper's role in allowing the introduction of scientific evidence. *Frye v United States*, 293 F. 1013 (D.C. App. 1923) requires the general acceptance in the scientific community from which the evidence comes. This rule was adopted by California and has also been adopted by a third of the states, including most of the most populous ones.

In a recent article[6] the authors argued that *Daubert* and *Frye* do not apply to medical testimony. Said one Supreme Court Justice, "We have never applied the *Kelly-Frye* rule to expert medical testimony."

What does this mean to you? Arguably, that you should be allowed to testify as to what the medical literature shows and to state your opinions on any subject you have training in. Note that many defense attorneys have been successful in convincing judges that physicians should not be allowed to testify as to injury mechanics on the basis that the doctors are not biomechanical engineers. It is thus important to develop your background in biomechanics during your direct testimony. If a motion *in limine* is filed by the defense to disallow your testimony on issues of biomechanics, you then respond accordingly with your own written reply. This is very often successful.

***Daubert, Frye*: Challenges to ACR**

We have seen that attorneys applying my teachings have successfully gagged the testimony of ACRs on issues of injury potential, limiting them to the reporting of simple crash metrics, such as delta V and acceleration. And that these rulings can be used with similar effects in other states (as the Arizona case has been applied in New York and Colorado now). But are the basic methods of ACR, from which these crash metrics are derived, immune to a *Daubert*/*Frye* challenge? Standard ACR techniques, until recently, have been largely unchallenged. This has probably been the case because they were based on classical Newtonian mechanics and have enjoyed a rather inviolable reputation. After all, who would argue with physics?

But a particularly intriguing paper was recently published through the Society of Automotive Engineers which, if properly applied, could have a very chilling effect on the admissibility of even simple crash metrics as determined using classical ACR methods.[7] This is important because - at least to my knowledge - it is the first study to test the error rate of ACR.

In one part of the study, ACRs were shown crash damage photos and were then asked to estimate the crash speed. (This method, while not terribly definitive, is very commonly used by ACRs to determine speeds in real-world crashes.) Their estimations covered a surprisingly broad range of crash speeds, from a low of six mph to a high of 30 mph, and the curve was quite shallow, meaning that these extreme values were not simply statistical outliers. In the case of the study's first photo-assessment-derived equivalent barrier speed (EBS) range of estimates (a low of six mph to a high of 30 mph), I calculated the kinetic energy of a nominal 1,000-pound vehicle traveling at six mph to be 1,208 lb/ft, and then compared this to the same vehicle's energy when traveling at 30 mph, which is 30,199 lb/ft. I did this because it is, after all, the transfer of kinetic energy that injures occupants, and delta V or EBS are only useful for estimating this energy.

Notice the difference between six and 30 is 400 percent, which might sound like an unacceptable degree of uncertainty all by itself. However, I calculated kinetic energy, which is related to the square of the velocity, and now the variation (between 1,200 and 30,000 lb/ft of energy) is a rather remarkable 2,400 percent: the energy at 30 mph is 25 times greater than that at six mph. In plain English, if this study is representative of the universe of ACRs (and it is not possible to draw firm conclusions from a single study such as this, although I am fairly certain that it is going to turn out to be representative), it suggests that the paper would be useful for mounting a *Daubert* or *Frye* challenge against ACR testimony when photos were used as a means of crash speed assessment. (We are currently conducting our own ACR reliability study on speed estimates from photos in low-speed staged crashes conducted at the Spine Research Institute of San Diego.)

Summary

Your testimony on certain subjects may be challenged on the basis of *Daubert* or *Frye*, but if your testimony is well grounded in science, and you can demonstrate that, it should survive the challenge. On the other hand, there are good arguments that neither *Daubert* nor *Frye* should be applied to medical testimony. And what's good for the goose is also good for the gander. Opposing experts are often more vulnerable to such legal challenges than physicians. But don't expect your patients' attorneys to be familiar with all of the

material in this paper. Go out and do a little homework; get the papers; and help write the motions in limine. *Nullus captiva*.

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