

# **Evidence Issues for Trial Attorneys**

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## EVIDENCE PRESENTATION

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**EXPERT WITNESSES: ADMISSIBILITY OF OPINION TESTIMONY OF BIOMECHANICAL ENGINEERS WITH RESPECT TO CAUSATION OF SERIOUS INJURY IN LOW-SPEED, REAR-END, AUTO ACCIDENT CASES.**

Although the use of biomechanical engineers (BME) in personal injury cases is hardly a recent phenomenon, (see, for example, *Martell v Chrysler Corp.* 186 AD2d 1049 (4<sup>th</sup> dep't 1992), trial courts across the state still seem to be all over the road in deciding whether opinion testimony regarding the forces involved in multi-car motor vehicle accidents and whether they were sufficient to cause the plaintiff's claimed injuries should be admitted into evidence. Some courts (see, for example, *Clemente v Blumenberg* 183 Misc 2d 923 Sup Ct Richmond County [1999], *Garner v Baird* 27 Misc 3d Sup Ct NY County [2009]), have concluded that the scientific principles and methodologies underlying such testimony were not shown to have met the Frye "general acceptance" test (*Frye v US* 293 F2d 1013 [DC Cir 1923]), while other courts (see, for example, *Shah v Rahman* 167 Ad3d 671 [2d dep't 2018]), *Cornell v 360 W 51<sup>st</sup> St Realty* 22 NY3d 762 [2014], determined that the principles, even if generally accepted, were not properly applied to the case at hand, or that the foundation for admissibility was otherwise lacking. (See *Imran v R. Barclay Monuments Inc* 167 AD3d 99 [2d Dept 2018], *Pascocello v Jibone* 161 AD3d 516 [1<sup>st</sup> dep't 2018]).

In Federal Court, the trial judge assumes the role of evidentiary gatekeeper under FRE 702 and determines whether the principles underlying the expert opinion are grounded in good science that has been reliably applied to the case at hand. In doing so, the court assesses whether the principles and methodologies have been published and peer-reviewed, tested with replicable results and have an acceptable error rate. General acceptance under Frye is, at best, an ancillary consideration. The court will also consider whether the expert's opinion was the product of independent study or conducted in anticipation of litigation. (See also *Kumho Tire v Carmichael* 526 US 137 [1997]).

While some courts may allow a BME to testify generally about the displacement of energy and changes in speed ( $\Delta V$ ), caused by multi-vehicle impacts, (*Clemente v Blumenberg supra*, *Neat v Pfeffer* 2013 NY Slip Op 32207 Sup Ct NY County), they may not allow the expert to give an opinion whether the forces involved in the collision in question were sufficient to cause the plaintiff's injuries if there is too great an analytical gap between the data upon which the expert relies and the conclusion offered. See *Cornell v 360 West 51<sup>st</sup> St Realty LLC* 22 NY3d 762 [2006], *People v Brooks* 31 NY3d 929 [2018]). Such a gap can occur, for example, where crash-test studies upon which the expert bases the opinion fail to account for certain variables (e.g. make, model, age, size, weight, condition of the vehicles, road

conditions, angle of impact, age, gender, physical health, height, weight of the occupant), peculiar to the case at hand. Others challenge the studies as fundamentally flawed for any number of reasons including the crash participants' bias, awareness of the test objectives and knowledge that they will be subject to a low-speed impact.

Courts also diverge on whether a BME who is not a medical doctor (in the United States or elsewhere), should be allowed to give an opinion on the injury causation question. In *Gates v Longdon* 120 Ad3d 980 (4<sup>th</sup> dep't 2001) and in *Santo v Nicolos* 24 Misc 3d (Sup Ct Bronx County 2009), the courts said no, and in *Vargas v Sabri* 115 Ad3d 505 (1<sup>st</sup> dep't 2014), *Valentino v Grossman* 283 Ad2d 571 (2d dep't 2001), and *Plate v Palisade Plate Film Delivery Corp* 39 AD3d 835 (2d dep't 2007), the courts did not find the lack of medical training to be a bar to an opinion that the forces of the accident were insufficient to have caused the plaintiff's injuries. Conversely, in *Torres v Hickman* 162 AD3d 821 ( 2d dep't 2018), the court held that the trial court properly precluded an orthopedic surgeon from opining that the accident "imparted a tremendous amount of energy" because he was not a biomechanical engineer and did not quantify the degree of force involved.

The first question to ask in determining whether a Frye hearing is even warranted is whether the expert is relying on new or novel scientific principles, theories or methodologies in forming an opinion (as opposed to personal experience, observation or testing, in which case Frye does not even come in to play. *People v Oddone* 22 NY3d 369 [2013]. See also *People v Brooks* supra and *People v Wesley* 83 NY2d 417 [1994]). If so, then the opponent of such evidence bears the initial burden of demonstrating (by more than unsupported say-so), that the underlying principles upon which the expert relied have not gained general acceptance in the relevant scientific community. (See *Saulpaugh v Kraft* 5 A3d 934 [3d dep't 2004]). If this threshold has been met, the burden then shifts to the proponent to establish by a preponderance of the evidence that the proposed testimony is based on generally accepted principles. (See *Garner v Baird* supra, *DeMeyer v Advantage Auto* 9 Misc 3d 303 [Sup Ct Wayne County 2003], *Styles v GM* 20 AD3d 328 [1<sup>st</sup> dep't 2005]). General acceptance cannot be established by conclusory claims of the expert but rather, by scientific writings, peer reviewed articles, independent studies that have used the same methodology and yielded the same results, judicial opinions and those of other experts. (See *Parker v Mobil Oil Corp* 7 NY3d 434 [2006]).

Once general acceptance has been established, the proponent must also demonstrate that the principles were properly applied to the case on trial. These are foundational matters of relevance and reliability that apply to all expert testimony. (See *Shah v Rahman* 167 AD3d 671 [2d dep't 2018]). Moreover, the application of the principles and data (from relevant studies) to the case at hand must be established by more than the "ipse dixit" (unsupported word) of the expert. (*Cornell v 361 West 51<sup>st</sup> St Realty LLC* supra, 22 NY3d at 781 , citing *GE Co v Joiner* 527 US 136, 146 [1997]).

In an article entitled "The Use of Biomechanical Engineers in Motor Vehicle Accident Trials" appearing in the February 2016 edition of the New York State Bar Journal, Kings County Supreme Court Justice Debra Silber (also a Fellow of the Advanced Science and Technology Adjudication Center), concluded , based upon a review of published court decisions, that trial courts may be analyzing the admissibility of biomechanical expert testimony with respect to injury causation under Frye when they should probably be doing so by assessing whether the expert has properly related the underlying principles to the facts of the given case. Noting that trial court decisions statewide reflect a fairly even split for and against admissibility, the author notes that while "there is no doubt that the testimony of a biomechanical

engineer is based on scientific principles or procedures which have been sufficiently established to have gained general acceptance in the particular field... the court must still make a determination that the processes and methods employed by the expert in formulating the opinion adhered to accepted standards of reliability within the field.”

In Judge Silber’s view, there should no longer be any doubt but that biomechanical engineers are proper witnesses in motor vehicle accident cases at least insofar as explaining the forces and speed changes involved in an accident are concerned. Whether or not a BME should be allowed to opine on the causation question seems to depend, as noted above, on the Department in which the case is tried. The need for Frye hearings in the first instance, however, appears to be on the wane. In *Shah v Rahman supra*, the Second Department held that the trial court did not err in denying the plaintiff’s request for a Frye hearing where the court had previously determined in a different case involving the same expert that his testimony was based on generally accepted scientific principles and there was a sufficient foundation to show that they were appropriately applied in this case. (Citing inter alia, *People v LeGrand* 8 NY3d 449 [2007], and *Vargas v Sabri supra*. See also *People v Foster-Bey* 158 AD3d 641 [2d Dept 2018] where court said that a judge may rely on findings of another court that certain DNA testing procedures were not a novel scientific techniques requiring a Frye hearing).

Some lawyers argue that conclusions drawn from crash test studies are based on faulty premises that there is a threshold level of force below which a person will not sustain injury and that the absence of demonstrable damage to a vehicle equates with no physical injury.

Lawyers may also challenge the notion that the forces imposed upon a vehicle during an accident can accurately be determined by examining photographs of damage and evaluating repair bills. Some also take issue with the studies themselves, pointing to things like inadequate sample sizes, biased participants, forewarning of impact, use of crash test dummies that cannot replicate the reaction of a live human being, and test conditions that do not fairly represent real-life accidents.

Another avenue of attack is the failure of studies to account for important variables including the age, gender, height, weight, physical health of the occupant, his/her body and head position in the vehicle at the time of impact, the make, model, age and condition of the vehicles, their position and angle of impact, the condition of the seat, headrest and position of the occupants in relation to them, the weather and road conditions and the movement of the vehicles post impact. (See article: “Defense Biomechanical Experts,” by Daniel G. Kagan Esq. of Maine Law Firm, Berman and Simmons).

Others challenge the notion that low-speed, rear-end collisions with little or no vehicular damage translate to no physical injury, suggesting that the initial body movement upon impact is not that of the head and neck but rather that of the torso moving forward (with G forces pulling the head downward) as the result of forces transmitted through the frame and seat of the vehicle. Moreover, even in low speed impacts with little or no hyperextension, the rapid change in velocity combined with both vertical and horizontal movement can cause torque and compression resulting in injury. (See article: “Low Speed Impacts: Does No Property Damage Equal No Injuries?” by Paul Godlewski Esq of Scheibel, Goetz and Seiber of Minnesota , submitted for the Trial Lawyers Section of the Florida Bar Association, February, 2000).

Lawyers seeking to disabuse juries of the “no vehicle damage equals no physical injury” assumption, may also focus on vehicular and human factors that, in their view, are too varied and complex to replicate in staged accidents that seek to reduce the concept of causation to a simple matter of Delta V. They look to things like individual susceptibility and tolerance to injury based, as noted above, on characteristics such as age, gender, physical condition, position and angle of the body and head vis-à-vis the seat- back headrest, their characteristics and spring rate, the movement of the occupant’s head and body (ramping), whether the occupant was wearing a seat belt, what the occupant was wearing, whether the head and torso accelerated at different rates. They may also suggest that it is more appropriate to focus on the peak Delta V based on the sudden change in velocity rather than on an average Delta V and to consider the initial jarring of the cervical spine in relation to the entire spine upon impact. (Kagan article, supra). Such challenges may be beyond the expertise of a biomechanical engineer and may be better directed to a medical professional.

In the case of *Imran v R. Baranay Monuments* 167 AD3d 992 (2d dep’t 2018), the court affirmed the trial court’s decision to set aside a jury verdict in favor of the defendant (based on lack of serious injury), because the opinion of the defense BME was based on an insufficient foundation and the crash tests used to calculate Delta V were too dissimilar to this accident. Here, the plaintiff was a passenger in the lead car of a four-car collision who sustained injuries of the cervical spine, lumbar spine and knees.

At the trial on damages (following summary judgment on liability granted to the plaintiff), the defense called a BME who relied upon photographs and repair estimates of the plaintiff’s vehicle (Honda CRV), and of the second car in line (a Ford Focus), to determine that the Delta v was five to seven miles-per-hour. He then used different crash tests to determine what happens to occupants involved in impacts of similar speeds. He concluded that the impact from the Ford to the CRV was not enough to have caused the plaintiff’s injuries.

The Second Department held that the foundation for the opinion was lacking for failure to calculate the forces exerted by all four vehicles instead of just the first two in line. Further, the crash tests upon which the expert relied were not sufficiently similar to this one including the use of crash test dummies that differed in weight from the plaintiff. So, it was foundation (or the lack thereof) and not Frye that carried the day for the plaintiff.

Similarly. In *Shah v Rahman supra*, the court held that where the trial judge had already found the underlying science to be generally accepted, it need not reinvent the wheel and litigate the question anew. There, at the conclusion of the damages trial, the court, without conducting a Frye hearing, allowed the defense expert to testify that the forces involved in the accident could not have caused the plaintiff’s injuries. In the court’s view, the only issue was one of foundation, in particular, whether the accepted scientific methods were properly applied to the facts of the case. (See also *Pascocello v. Jibone* 161 AD3d 516 [1<sup>st</sup> dep’t 2018] where the court affirmed the trial court’s decision to exclude opinion testimony because it was based on photographs for which an inadequate foundation had been established (citing, inter alia, *Hamsch v New York City Transit Authority* 63 NY2d 723 [1984])).

## CASES PRECLUDING BME TESTIMONY:

Clemente v. Blumenberg 183 Misc 2d 923 (Sup Ct, Richmond County 1999)

In this rear-end, two-car MVA case, the court precluded the defense BME from testifying that the impact to the plaintiff's vehicle could not have caused the plaintiff's herniated and bulging discs because the data and methodology used by the expert were not shown to have general acceptance in the relevant scientific community. Also, the expert's theory and methodology of determining the change in velocity by comparing the damage (as shown by photos and repair bills), to the subject vehicles with test vehicles damaged in low-speed, rear-end crash studies was deemed to lack acceptance or validity in the field of engineering or physics.

Facts: The plaintiff, a 40-year-old female driving a 1996 GMC Jimmy, was hit from behind by the 17-year-old male defendant who was driving an Astro Mini-Van. The plaintiff testified that she was slowing down to make a turn when she was hit and the defendant said that he hit her at 25 miles per hour when she was standing still (but the impact caused no vehicular advancement). The jury found the defendant 73% liable and the plaintiff 27% liable.

During the damages phase, the plaintiff called a treating neurologist who attributed her injuries (L4-L5 disc herniation and bulging disc at L5-S1) to the accident.

A defense orthopedic surgeon and radiologist (neither of whom examined the plaintiff or reviewed her MRI until trial) testified that the plaintiff had pre-existing disc degeneration and that her injuries were not caused by the accident.

The defense then proffered a well-credentialed biomechanical engineer (MS degree, Diplomate in his field) who mainly prepared reports for the Insurance industry and who previously testified for the defense in trials and other proceedings, and who studied Physiology, to testify about 1. The forces generated in an auto accident, 2. The human body's reaction to such forces, 3. The types of injuries that can result from such forces, and 4. Whether the forces involved in this accident could have caused the plaintiff's injuries.

Methodology: The expert calculated the change in velocity (Delta V) of the plaintiff's vehicle at impact (to determine the forces exerted upon the plaintiff's body) by examining photos and repair records of the damage to her vehicle and compared them to repair bills for 13 SUVs (one of which was the same year, make, and model as the plaintiff's) that were damaged in crash tests involving a backward impact into a flat barrier at 5 miles per hour. The average repair bill was \$882.00, and reportedly none of the drivers was injured. Since the plaintiff's auto repair bill was \$860.40, the expert concluded that the change in velocity of the plaintiff's vehicle at impact was also 5 miles per hour. Relying on "data and studies" finding that rear end impacts under six miles per hour do not yield long term serious injuries, the expert concluded that the plaintiff's injuries could not have been caused by this impact.

The Court said:

1. The defendant's cited literature/studies were not reliable because:

- a. they involved participants who were associated with the authors or their sponsors, and who were aware of the purpose of the tests and the fact of impending impact,
  - b. the sample size (5 - -10 “volunteers”) was too small to be statistically significant,
  - c. it was improper to bootstrap data from other studies using different control variables and methodologies to bolster their findings,
  - d. the use of crash test dummies in some of the tests could not be properly related to the effects of the collisions on a live human body.
2. The studies relied on also failed to account for the dynamics of this accident inasmuch as the plaintiff testified that her vehicle was in motion when hit from behind and the defendant testified (incredibly) that he struck the plaintiff’s stationary vehicle at 25 miles per hour but didn’t cause it to move forward on impact.

Ruling: The expert may opine as to the general formula of forces involved in rear end accidents if based on facts in evidence but may not offer an opinion on causation because the Frye test was not met and the data and methodology, as noted above, were flawed.

Side Note:: The court in Clemente engaged in a lengthy discussion about the New York (Frye) rule in comparison to FRE 701 which relegates the ‘general acceptance’ criterion to one of several factors that a trial court must apply as “evidentiary gatekeeper” in determining whether the expert’s testimony is based on valid, reliable science and is relevant (i.e., applicable) to the case at hand.

Some of the measuring sticks for reliability include whether the principles and methodology have been published, tested (with replicable results), peer-reviewed, and found to have an acceptable error rate. (See Daubert v. Merrill Dow Pharmaceuticals Inc. 509 US 579 [1993]).

On remand, the 9<sup>th</sup> Circuit added the criterion of whether the expert’s opinion was the product of research that was independent rather than conducted in preparation for litigation. (See also Kumho Tire v. Carmichael 526 US 137 [1991], which extended the Daubert “scientific” analysis to matters of “technical” knowledge such as engineering.)

Santo v. Nicolos 24 Misc 3d 999 (Sup. Ct. Bronx County 2009)

The court precluded the defendant’s biomechanical engineer from testifying in this rear-end impact MVA trial that the physical forces resulting from the collision could not have caused the plaintiff’s injuries (torn meniscus, lumbar injury) because the expert could not cite any studies articles, journals, or other scientific literature that utilized his methodology (examining photos and repair records of the impacted vehicle, assessing the weight, dimension, and center of gravity of the vehicles ) to determine the change in velocity, severity and direction of force, and its effect on the plaintiff’s movement in the vehicle.

The court also noted that the expert WAS NOT A DOCTOR.

The court, noting Frye, observed that in order for scientific testimony to be admitted, the procedures and results underlying the science must be shown to be generally accepted as reliable in the scientific community. (See also, Styles v. General Motors 20 AD3d 1151 (1st dep’t 2005)) The most common way to demonstrate such acceptance is to cite peer-reviewed literature in the field indicating that independent



studies have been conducted using this methodology, that the results have been duplicated, and that the studies were conducted on a statistically significant number of subjects. (Sounds a lot like Daubert) Anecdotal information alone is insufficient to meet this test.

The court also observed that the proffered expert opinion must properly relate existing data, studies, and literature to the case at hand and be connected by something more than the “ipse dixit” (i.e., unsupported say-so) of the expert. Where the expert cites no literature at all, the court should not allow the opinion. See also *Cumberbatch v. Blanchette* 35 AD3d 307 [1<sup>st</sup> dep’t 2004], *Marsh v Smith* 12 AD3d 307 [1<sup>st</sup> dep’t 2004]).

*Garner v. Baird* 27 Misc 3d 123 (NYC Civil Ct 2010):

Court held that once the plaintiff, in a Frye hearing on motion to preclude the defendant’s biomechanical expert from testifying that the forces of the accident were insufficient to have caused the plaintiff’s injury (torn meniscus), made a prima facie showing that the expert’s theories and methodology are not generally accepted, the BURDEN shifted to the defendant to demonstrate by a preponderance of the evidence that the proposed testimony was based on generally accepted scientific principles, and that the witness was properly qualified in his area of expertise. (see also *DeMeyer v. Advantage Auto* 9Misc 3d 303 [Sup. Ct. Wayne Cty 2005], once the opponent makes a threshold showing that the particular theory, principle, or methodology has not gained general acceptance, i.e., is a novel theory, the burden shifts to the proponent to establish otherwise).

In *Saulpaugh v. Kraft* 5 AD3d 934 (3d dep’t 2004), the court noted that the ultimate burden of proving general acceptance rests upon the proponent of the expert testimony, and conclusory statements of such acceptance (absent evidence of peer-reviewed controlled studies, clinical data, relevant literature) are insufficient to meet the burden.

In *Garner supra*, the defendant’s expert, a Professor of Mechanical Engineering and Applied Mechanics with no medical training (though reportedly able, based on training, to review structural injuries to the human body), testified at the hearing that he used “vehicle stiffness parameters” obtained from the results of crash tests performed by the National Highway Traffic Safety Authority (NHTSA) to determine that the maximum force imposed upon the plaintiff’s knee as a result of the accident was 500 lbs (compared to 1000 lbs from walking). Consequently, in his opinion, the forces of the impact were insufficient to have caused the plaintiff’s injury.

The Court held that the defense failed to meet the Frye test as there was no evidence of general acceptance of the expert’s methodology to determine velocity of the vehicles upon impact. (Citing, *inter alia*, *People v. Wesley* 83 NY2d 417 [1994]) In particular, the expert failed to cite any studies to support the conclusion that a back seat passenger in a motor vehicle whose knee hits the car door on impact could not have suffered a torn meniscus. The Court also noted that the expert WAS NOT A DOCTOR.

Gates v. Longdon 120 AD3d 980 (4<sup>th</sup> dep't 2014)

In this rear-impact MVA case, the defendant, relying upon an affidavit from a biomechanical engineer, moved for summary judgment, contending that the plaintiff did not suffer a serious injury as a result of the accident. The plaintiff cross-moved for summary judgment on negligence. The trial court denied the defendant's motion with respect to both theories of injury (permanent consequential and significant limitation), and granted the plaintiff's cross motion.

On appeal, the Fourth Department: reversed the trial court's determination with respect to the permanent consequential injury, affirmed with respect to significant limitation, and held that the trial court properly denied the defendant's motion with respect to causation because the defendant's expert, NOT BEING A MEDICAL DOCTOR, lacked the requisite skill, training, education, knowledge, and experience to offer a reliable opinion on the issue. (Citing, inter alia, Matott v. Ward 48 NY2d 455 [1979])

But see Cardin v. Christie 283 AD2d 978 (4<sup>th</sup> dep't 2001) where the Fourth Department found that the Trial Court did not abuse its discretion in allowing the defendant's expert on injury causation analysis to offer an opinion that the impact of the collision was insufficient to cause the plaintiff's alleged injury. (It's not clear from the decision whether that expert was also an MD).

In Cardin, the jury in this rear-end auto accident case found for the defendant, accepting the defense argument that the plaintiff stopped suddenly without warning or use of signals. The trial court denied the plaintiff's motion for judgment as a matter of law since the jury's verdict was not "utterly irrational", and denied the motion to set aside the verdict since the plaintiff failed to establish that the verdict could not have been reached by any fair interpretation of the evidence.

#### CASES ADMITTING BIOMECHANICAL EXPERT TESTIMONY

Martell v. Chrysler Corp. 186 AD2d 1059 (4<sup>th</sup> dep't 1992)

In this product liability case arising from the plaintiff's claim of a defective seatbelt, the Appellate Division rejected the plaintiff's argument that she was improperly denied an opportunity to develop the nature and extent of her injuries (in the liability phase), where the plaintiff's biomedical expert testified about the plaintiff's injury, and the plaintiff's entire medical history was received into evidence.

Cocca v. Conway 283 AD2d 787 (3d dep't 2001) Here, the Court held that the defense complied with CPLR 3101(d) by informing the plaintiff in discovery that its two non-medical experts (a mechanical engineer and a biomechanical engineer) would testify based on principles of biomechanical analysis (pertaining to tolerance, limits of flexion/extension of the cervical spine and how it is affected by forces of impact) and accident reconstruction that the accident was of insufficient magnitude to have caused the plaintiff's injuries.

The Court also found that the plaintiff's claim that the experts' theories lacked general acceptance in the scientific community was unpreserved inasmuch as the plaintiff never requested a Frye hearing.

Facts: the plaintiff's vehicle was hit on the rear passenger side by the defendant's station wagon, which was towing a trailer. An MRI showed Herniated discs at C6 – C7 with nerve root impingement. The plaintiff's family physician and orthopedic surgeon testified that the accident either caused the plaintiff's injuries or exacerbated a previously asymptomatic condition.

The defense orthopedic surgeon concluded, after reviewing the plaintiff's medical records, that she has a history of tendonitis in her left shoulder and a shoulder injury dating back over 20 years with periodic complaints of tenderness, tingling, and numbness in her arms. More recently, she complained of stiffness in her neck and left shoulder. She was described as having probable degenerative disc disease of the neck and lumbosacral spine. According to this doctor, the plaintiff's injuries were not caused by this accident nor did it aggravate a previously non-symptomatic condition.

The defense also called a neurologist who reached a similar conclusion.

Valentine v. Grossman 283 AD2d 571 (2d dep't 2001)

The trial court erred in excluding the testimony of the defense's second biomechanical expert (that the G forces, i.e., acceleration x weight of this accident, were insufficient to cause the plaintiff's herniated disc) on relevancy grounds. (The trial court ruled that while the scientific method of relying on studies calculating G forces in crash tests involving live subjects was valid, the expert's opinion was not relevant because the G force in this accident was estimated [by the defendant's first biomechanical engineer] at 3.6 Gs, consistent with crash tests involving dummies and cadavers, when crash tests involving live subjects was 3.2Gs, which a second expert claimed was an insignificant difference.)

The Second Department held that the testimony was relevant because it tended to make the defendant's claim of no causation to be more probable than not. (Presumably, the reliability and weight to be accorded such testimony would have been for the jury to determine.) The AD remanded for a new trial on damages (the trial court having earlier granted summary judgment for plaintiff on liability).

Mitchell v. Brown 43 AD3d 1009 (2d dep't 2007)

The trial court, in this rear impact collision case (where the plaintiff's vehicle was propelled into another car in oncoming traffic), erred in summarily disallowing the defendant's expert (licensed professional engineer) from testifying without first conducting a Frye hearing where the plaintiff, as an alternative to outright preclusion, moved for a Frye hearing.

Pre-trial, the court granted the plaintiff's motion (unopposed by the defense) for summary judgment that the defendant's negligence was the sole proximate cause of the accident. The plaintiff also moved to preclude the defendant's engineer from testifying at the trial on damages. The court reserved until trial and then summarily disallowed the expert at trial. (See also *Abramson v. Quickway* 56 AD3d 702 [2d dep't 2008], error to preclude expert without conducting a Frye hearing when it is requested.)

In contrast, see *Vargas v. Sabri* 115 AD3d (1<sup>st</sup> dep't 2014) where the First Department held that the trial court "did not improvidently exercise its discretion" in denying the plaintiff's request for a Frye hearing to determine the admissibility of the defendant's biomechanical expert.

In that case, the plaintiff challenged the expert's qualifications for lack of medical training and the fact that it conflicted with the opinion of the defense orthopedic expert. The court held that the expert's lack of medical training (not really a Frye issue), did not disqualify him from testifying about the mechanics of injury (citing *Colarossi v. CR Bard Inc* 113 AD3d [1<sup>st</sup> dep't 2014]) or offering an expert opinion that the forces of the accident were insufficient to cause the plaintiff's injuries. Moreover, the fact of any conflict with the orthopedic doctor's opinion when to the weight rather than to admissibility of the engineer's testimony. (Citing *Williams v. Halpern* 25 AD3d 461 [1<sup>st</sup> dep't 2006]) And, to the extent that the plaintiff claimed that the studies upon which the expert relied were unreliable, the court was unpersuaded because the plaintiff failed to set forth the basis for their alleged unreliability.

(NOTE: Just as claims by the expert of "general acceptance" in the scientific community must be supported by evidence (e.g., peer-reviewed studies), so too must challenges to such studies be more than conclusory.)

*Plate v. Palisade Film Delivery Corp.* 39 AD3d 835 (2d dep't 2007)

The trial court erred in determining that the defendant's biomechanical engineer was not qualified to testify whether the force of the impact of the rear impact collision could have caused the plaintiff's spinal injuries or exacerbated preexisting injuries to the plaintiff's cervical spine (from two prior MVAs within the past four years resulting in discectomies). Such testimony, in the Court's view, could have affected the amount of damages awarded. Moreover, any claim that the expert was "not a specialist" in a relevant field of science went to the weight rather than the admissibility of the testimony (citing *Borawski v. Huang* 34 AD3d 409 [2d dep't 2006]).

The trial court granted judgment as a matter of law as to causation and serious injury at the close of proof. The jury then awarded the plaintiff \$2 million in damages. On appeal, the Court said that judgment as a matter of law should only be granted when "there is no rational process by which a jury could base a finding for the non-moving party", and only after viewing the evidence in the light most favorable to that party. (CPLR 4401)

*Shifrel v. Singh* 61 AD3d 401 (1<sup>st</sup> dep't 2009)

In this case, the plaintiff sustained a torn rotator cuff (per MRI) as a result of a rear end impact into his stopped vehicle caused by the defendant's vehicle. The plaintiff underwent surgery followed by seven weeks of physical therapy.

At trial, the plaintiff's doctor attributed his injury (described as acute and not degenerative) to the accident. The defendant only called a biomechanical engineer who testified that based on the weight of the vehicles and speed at impact, it was unlikely that the plaintiff's shoulder would have made contact with the steering wheel.

The jury found for the plaintiff on his 90/180 claim (but not for permanent consequential or significant limitation) and awarded him \$5,000.00 for past pain and suffering. (\$0.00 for future pain and suffering)

On appeal, the Court upheld the verdict as to liability and no award for future pain and suffering, but vacated the award for past pain and suffering as unreasonable. The court directed the defendant to either stipulate to a \$50,000.00 damages award or have a new trial.

Gaona-Garcia v. Gould 31 Misc3d 1237A (Sup. Ct. Bronx County 2011)

In this case, Supreme Court denied the plaintiff's motion to preclude the testimony of the defense biomechanical engineer/accident reconstructionist, concluding that these disciplines "have been found to be generally accepted in the scientific community."

In a good discussion of the trial court's role under Frye, the court said that its "gate-keeping" function is NOT to engage in its own independent, unbridled review of an expert's methodology and conclusions but, rather, to ensure that it does not rely on an expert's testimony REGARDING A NOVEL PROCEDURE/METHODOLOGY/THEORY unless it has been found to be generally accepted in the relevant scientific community as leading to reliable results. (Citing Marsh v. Smith 12 AD 3d 37 [1<sup>st</sup> dep't 2004] There, the trial court was deemed to have gone too far in making a judicial finding of reliability rather than relying on what the experts in the field generally had to say.)

Query: whether the court's approach in Marsh was more akin to what is required by Daubert supra and FRE 702? And how is this different from the foundational analysis that a trial court must engage in when determining whether studies relied on by the expert yield conclusions that can properly be related to the facts of a given case? The former inquiry, it seems, has to do with general acceptance (i.e., reliability) of the underlying scientific principles and methodology, while the latter pertains to the relevance of the opinion offered (i.e. its relatability to the facts of the case at hand).

So, under Frye, the trial judge's function is NOT to make an independent determination whether the expert's methodology is reliable, but to see whether there is CONSENSUS IN THE SCIENTIFIC COMMUNITY as to its reliability. In short, the court's role is limited to determining whether the expert's deductions are based on principles that are sufficiently established to have gained general acceptance.

Noting that New York courts (e.g., Plate v. Palisade supra, Cardin v. Christie supra) have long found biomechanical engineers to be qualified to render opinions on whether the forces involved in an accident can cause injuries, the Court in Gould rejected the plaintiff's claim that the expert's theories were novel, lacking in general acceptance, and unreliable. The court was also unpersuaded by the plaintiff's argument that the expert (who was also licensed to practice medicine in England) should be precluded because he was not a licensed MD in the USA. That factor, in the court's view, was a matter of weight, not admissibility (citing Borawski v. Huang supra. See also, Kwon v. Martin 19 AD3d 664 [2d dep't 2005]).

## NEW YORK RULE ON EXPERT WITNESSES

(See New York Unified Court System Guide to the Rules of Evidence [Rule 7.01] at NYCOURTS.GOV)

1. A person qualified as an expert by knowledge, skill, experience, training or education may testify to an opinion (or information concerning scientific, technical, medical or other specialized knowledge) when:
  - a. the subject matter is beyond the knowledge or understanding, (or will dispel misconceptions), of the typical finder of fact; and
  - b. the testimony will help the (fact) finder...to understand the evidence or determine a fact in issue, especially when the facts cannot be stated or described in such a manner as to enable the (fact) finder to form an accurate judgement about the subject matter.
  
2. Where the subject matter of the testimony is NOT based on the PERSONAL TRAINING or EXPERIENCE of the witness (People v Oddone 22 NY3d 369 [2013]), but rather is based on SCIENTIFICALLY DEVELOPED procedures, tests or experiments, it must be (or have been) established that:
  - a. there is GENERAL ACCEPTANCE within the relevant scientific community of the validity of the theory or principle underlying the procedure, test or experiment;
  - b. there is general acceptance...that the procedure, test or experiment is RELIABLE and PRODUCES ACCURATE RESULTS; and
  - c. the particular procedure, test or experiment was conducted in such a way as to yield an accurate result. (See Frye v US 293 F. 1013 [DC Cir 1923; People v Brooks 31 NY3d 939 [2018]; People v Wesley 83 NY2d 417 [1994]).
  
3. Opinion testimony that meets the above criteria is admissible even if it embraces the ultimate issue to be decided by the fact finders. (See, for example, People v Rivers 18 NY3d 222 [2011]; Fire investigator allowed to opine that the pour pattern of accelerant on stairs was consistent with arson.

4. An expert NEED NOT express a conclusion with certainty but need only DEMONSTRATE A DEGREE OF CONFIDENCE in the conclusion sufficient to satisfy ACCEPTED STANDARDS OF RELIABILITY in the expert's field. (See *Matott v Ward* 48 NY2d 455 [1979]).
  
5. a. Unless the court orders otherwise, questions calling for an expert's opinion NEED NOT be in hypothetical form. The expert MAY BASE an opinion of FACTS IN THE RECORD or KNOWN TO THE WITNESS, and ...MAY STATE an opinion or reasons WITHOUT FIRST SPECIFYING THE DATA upon which it is based; HOWEVER, an expert who relies on FACTS WITHIN PERSONAL KNOWLEDGE that are NOT CONTAINED in the record IS REQUIRED to TESTIFY TO THOSE FACTS (before) rendering the opinion.
  - c. An expert may also rely on OUT-OF-COURT MATERIAL if :
    - i. It is of a kind ACCEPTED IN THE PROFESSION AS RELIABLE in forming a professional opinion, provided there is evidence (beyond the witness' say-so), establishing the reliability of (such) material. (See *People v Sugden* 35 NY 2d 453 [1974]; *Hamsch v NYC Transit Authority* 63 NY2d 723 [1984]). Note that just because the opinion may come in if this foundation is met, that does not mean the out-of-court material (i.e. hearsay) upon which it is based will be admitted into evidence.
  
    - ii. It comes from a witness who is subject to full cross examination by the opposing party.

(The remaining sections on the right of confrontation and lack of criminal responsibility in criminal cases have been excluded from this discussion).

#### RECENT EXPERT WITNESS CASES

*Demaille v State* 166 AD3d 1405 (3d dep't 2018): Expert testimony is necessary to establish that medical care provided fell below the proper standard of care and caused the plaintiff's condition.

In this case, the plaintiff alleged that the State provided inadequate care (slow to order tests and perform follow-up care and provide proper medication), in response to his complaints of bodily pain when he was an inmate in a correctional facility. In addition to his own testimony, he offered medical records which documented his complaints and indicated that the defendant sometimes delayed in performing tests and arranging follow-up consultations.

Noting that the medical records said nothing about the appropriate standard of care in treating the plaintiff's complained-of conditions (back, ear and head pain), the Court of Claims dismissed the complaint for lack of expert medical testimony regarding the proper standard of care and the nature of the defendant's deviation therefrom.

Galluccio v Grossman 161 Ad3d 1049 (2d dep't 2018): Expert witness must be qualified in the appropriate specialty.

In this medical malpractice action, the plaintiff alleged negligent failure by the emergency room physician to properly diagnose and treat her septic wrist joint. In reply to the defense motion for summary judgment, the plaintiff submitted an affidavit from a doctor who was board certified in internal medicine and infectious diseases. However, since there was no indication that this expert had any training in emergency medicine or did anything to acquaint himself with the standard of care for this specialty, the affidavit was insufficient to raise a triable issue of fact.

O'Connor v Kingston Hospital 166 AD3d 1401 (3d dep't 2018): RN was deemed properly qualified to testify based on 35 years of experience (treating patients with bed sores) and from review of medical records (which she claimed were not accurate), that the defendant exacerbated the plaintiff's sores by: using the wrong kind of skin cream, conducting an improper examination, failing to flip the patient every two hours to relieve pressure, not ordering an air mattress and failing to properly evaluate the patient's risk of bed sores. In the court's view, this witness was sufficiently qualified based on experience and did not exceed the limits of her expertise in offering her opinions regarding the defendant's negligent care of the plaintiff.

Vergine v Phillips 167 AD3d 1319 (3d dep't 2018): In this MVA case, the court allowed the plaintiff to amend his bill of particulars (to include a claim of PTSD alleged to have been caused by the accident) upon the sworn affidavit of a licensed clinical social worker whom the court found competent to render such an opinion, (not unlike a psychiatrist, neuropsychologist or psychologist).

Hokenson v Sears Roebuck 159 AD3d 1501 (4<sup>th</sup> dep't 2018): in this products liability case, the court found the plaintiff's response insufficient to defeat the defendant's summary judgment motion because the plaintiff's expert (an occupational health and safety consultant), demonstrated no experience with or personal knowledge of the ladder from which the plaintiff fell, nor did he show any knowledge or experience with the design or manufacture of ladders generally. (Citing Stever v HSBC Bank 82 AD3d 1680 [4<sup>th</sup> dep't 2011]).

Mosley v EHJ, LLC 159 AD3d 434 (1<sup>st</sup> dep't 2018): In this personal injury action, the court held that the plaintiff's expert's opinion lacked a proper basis where the expert relied on a report of a post-accident



MRI comparing the plaintiff's spinal stenosis to the most recent pre-accident MRI which was NOT admitted into evidence. The expert also did not review the plaintiff's pre-accident medical records.

*Al-Kabyle v Ali* 159 AD3d 477 (1<sup>st</sup> dep't 2018): Affidavit of defense handwriting expert expressing virtual certainty that the signature on a consent form was from the same person who signed several exemplars was insufficient to support summary judgment where the expert's affidavit failed to describe the exemplars nor were they submitted with the affidavit.

*Colucci v Stuyvesant Plaza* 157 AD3d 1095 (3d dep't 2018): Expert affidavit was deemed insufficient to establish causation (of toxic mold) because it was conclusory in nature.

See also *Humphrey v Riley* 163 AD3d 313 (3d dep't 2018): Conclusory, speculative expert medical affidavit without a stated factual basis deemed insufficient to defeat defense motion for summary judgment.

*Matter of Chin Chuan Wang* 162 AD3d 447 (1<sup>st</sup> dep't 2018): In this will contest, the will proponent argued that the objector's expert opinion should not have been allowed because it was based, in part, on conversations with the objector about the decedent's mental capacity. The court rejected that argument, holding that a psychiatrist's opinion may be received even though it is partially based on inadmissible hearsay provided it is of a kind that is generally accepted in the profession as reliable in forming opinions, or comes from a witness who is subject to cross examination.

*Tornatore v Cohen* 162 AD3d 1503 94<sup>th</sup> dep't 2018): In this (chiropractic) malpractice case, the court allowed the plaintiff's life-care specialist to state an opinion about the plaintiff's future medical needs even though it was partially based on hearsay conversations with the plaintiff's treating physician. Noting that the expert also relied on a review of medical records, recommendations of other treatment providers, an interview of the plaintiff, research and analysis of costs, the court found that there was a sufficient basis for the opinion of which the hearsay was but a link in the chain of data.

*Matter of New York City Asbestos Litigation (Juno)* 32 NY3d 1116 (2018): In this case, the plaintiff's decedent, an auto mechanic, allegedly contracted mesothelioma from exposure to asbestos while working with the defendant/auto manufacturer's contaminated products.

The trial court set aside a verdict for the plaintiff for failing to establish that his mesothelioma was the result of exposure to a sufficient quantity of asbestos in products sold/distributed by the defendant. The First Department affirmed the lower court's order and agreed that the plaintiff's expert failed to provide at least some quantitative scientific expression of the level of exposure to toxins in the defendant's products that was sufficient to cause this disease. The Court of Appeals affirmed, concluding that the

evidence was insufficient as a matter of law to establish that exposure to the defendant's products was a proximate cause of the plaintiff's condition. (Citing *Parker v Mobil Oil Corp* 16 AD3d 648 [2006]; *Cornell v 51<sup>st</sup> St Realty LLC* 22 NY3d 762[2006]).

*Kubera v Bartholomew* 167 AD3d 1477 (4<sup>th</sup> dep't 2018): In this medical malpractice action the court, finding that an expert may not rely on disputed facts when rendering an opinion, held that the defendants failed to meet their burden (in context of summary judgment), with respect to medical proof because they relied solely on symptoms documented in medical records (of Medicor and BMH) which were significantly different from those allegedly reported to the other defendants and which the plaintiff manifested prior to surgery.

*Romano v Stanley* 90 NY2d 444 (1997): Expert must explain how facts relied upon support the opinion.

In this *Dram Shop* case, the plaintiff's expert testified that the decedent driver must have been visibly intoxicated at the defendant's bar where she had drinking about four hours before the fatal accident. The expert referenced the deceased's BAC (.33%) and the otherwise normal appearance of her liver but did not explain how these factors supported the opinion offered. The court, therefore, found the opinion to be inadmissible because it was speculative.

#### A FEW MORE FRYE CASES

*Brouard v Convery* 59 Misc3d 233 (Sup St Suffolk County 2018): In this MVA case, the court declined the plaintiff's request to take judicial notice of the general acceptance of diffusion tensor imaging (DTI), and granted the defendant's cross motion to preclude expert testimony on the subject because DTI was not shown to be generally accepted in the field of neurology as the standard in treatment of patients suffering from minor traumatic brain injury.

The court pointed out that general acceptance can be shown through scientific or legal writings, judicial opinions or opinions from other experts in the field. In this case, the court found that a "white paper" (an authoritative report that summarizes a complex subject and advances the author's point of view), which was supported by members of the scientific community, concluded that while neuroimaging techniques such as DTI showed encouraging results in group comparison analyses, there was not enough evidence to support the routine clinical use of advanced neural imaging for individual diagnosis and prognosis.

In contrast, see *Redish v Adler* 2018 NY Slip Op 50565(U) (Sup Ct Bronx County) where the court rejected the defendant's motion to preclude the plaintiff's experts from testifying that extracorporeal membrane oxygenation (ECMO) and high frequency oscillatory ventilation (HFOV) was the standard of care for treating asthmatic patients and that the failure to do so amounted to a deviation from the proper

standard of care. (In this case, the plaintiff alleged that defendant was negligent in treating her asthma attack by failing to provide or transfer her to a facility that provided these modes of treatment).

The court noted that ECMO and HFOV therapies had sufficient support in the medical community and that the fact that there were differing opinions justified denying the defendant's motion.

DB v Montefiore Medical Center 162 AD3d 478 (1<sup>st</sup> dep't 2018): In this medical malpractice case, the court held that the lower court record was insufficient to allow it to determine whether the medical opinion offered by the plaintiff's expert (that the plaintiff's injuries were caused by hypoxic ischemia brought on by intercranial pressure), was based upon theories that enjoyed general acceptance in the medical community.

#### A FEW WORDS (AND CASES) ON HEARSAY

Hearsay is an out-of-court statement made by a declarant (usually but not always someone other than the witness on the stand) which is offered to prove the truth of what it asserts. A statement can be verbal, ("the street was wet,") written ("Dear Fred: I cut you out of my will,") or non-verbal conduct, (hit-and-run victim points in a westerly direction in response to officer's question, "which way did he go?"), but to constitute hearsay, it must be assertive in nature (i.e. it seeks to advance some factual proposition that is capable of being proven or disproven)...1. The condition of the street; 2. Fred's status under the will; 3. The driver's direction of travel).

Therefore, statements that are not intended as an assertion (e.g. questions that inquire and commands that direct others to do or not do something) are generally considered not to qualify as hearsay. Therefore, their admissibility as non-hearsay turns on other factors such as relevance to material issues in the case.

In New York courts, hearsay is not admissible unless it falls within an exception to the rule against hearsay (e.g. present sense impression, excited utterance, statement for diagnosis and treatment, business record, statement of a party-opponent, declarant against interest). The burden of establishing the existence of an exception falls upon the proponent of the statement but if it is not offered for its truth, it is not excluded by the hearsay rule. (See New York Unified Court System Guide to Rules of Evidence [Rule 8.00-8.01] NYCOURTS.GOV).

Paquay v Cup of Tea 165 AD3d 964 (2d dep't 2018): In this construction accident case, the court found the plaintiff's deposition testimony (that he was told that the roof collapsed because the third-floor ceiling beams had been cut) was insufficient to raise a triable issue of fact because it was based on inadmissible hearsay.

Davis v Eab-Tab Enterprises 166 AD3d 1449 (3d dep't 2019): In this case where an issue was whether a worker was an employee as alleged in the verified complaint, the court held that this qualified as a judicial admission even though the complaint was superceded by an amended pleading.

Moskowitz v Tory Burch 161 AD3d 525 (1<sup>st</sup> dep't 2018): In this breach of contract case, the court held that a report prepared by a party's agent to assess damages and recommend a course of action was admissible as an admission of a party opponent.

Matter of State Farm Fire and Casualty Insurance Co v Jackson 165 AD3d 518 (1<sup>st</sup> dep't 2018): On a motion to stay arbitration, the court held that the testimony of the respondent driver and of his passenger who were hit by a hit-and-run driver, was admissible as a present sense impression because their testimony was corroborated by photographs of the license plate of the runaway vehicle that they showed to the responding officer.

In contrast, see Gomes v Pearson Capital 159 AD3d 480 (2d dep't 2018) where the plaintiff's statement that he fell from a scaffold was not corroborated by independent evidence. The statement also did not qualify as an excited utterance as there was no evidence offered that the plaintiff was still under the stress of excitement of a startling event when he spoke to his foreman.

A present sense impression is a statement which describes or explains an event or condition as the declarant is perceiving it, as it unfolds or immediately thereafter. It will be admitted (whether or not the declarant is available as a witness), as long as there is evidence independent of the statement that supports both the accuracy of the statement and the fact that it was made contemporaneously or immediately after the event in question. (See NY Rule 8.29, Guide to New York Evidence).

An excited utterance is a statement about a startling or exciting event of a participant in or observer to the event (whether available as a witness or not), which is made under the stress of nervous excitement resulting from the event and was not the product of studied reflection and possible fabrication. (See Rule 8.17, Guide to New York Evidence).

Both present sense impressions and excited utterances must be based on personal knowledge of the declarant, but while the admissibility of the former turns on contemporaneity and corroboration, the latter is considered reliable because of the excitement which purportedly suspends the declarant's reflective powers and likelihood of fabrication. There is also an element of spontaneity but the fact that the statement is made in response to a question (e.g. from a 911 operator), will not necessarily render it inadmissible. Excited utterances are somewhat less time sensitive than present sense impressions but

the more time that passes and opportunity to interact with others increases, such statements lose their nature as excited utterances.

## BUSINESS RECORDS

CPLR 4518: a. Generally, any writing or record, whether...an entry in a book or otherwise, made as a memorandum or record of any act, transaction, occurrence or event, shall be admissible (as) evidence...of that act, transaction, occurrence or event, if...it was made in the regular course of...business, and...it was the regular course of such business to make it, at the time of the act, transaction, occurrence or event, or within a reasonable time thereafter.

Records which satisfy these foundational elements will generally be admitted even if the custodian of records (who must be familiar with the business' record-keeping practices and procedures) lacks personal knowledge of the entries, provided the information was provided by someone under a business duty to do so accurately and reasonably close in time to the events recorded therein. If the record contains hearsay from persons outside the business, such information must meet some hearsay exception in its own right, lest it be redacted as inadmissible hearsay. (See *Johnson v Lutz* 253 NY 124 [1930]; statements of third persons contained in police report describing automobile-motorcycle accident constituted inadmissible hearsay).

*Fuentes v Acevedo* 162 AD3d 613 (1<sup>st</sup> dep't 2018): In this MVA case, the lower court was deemed to have improperly considered an uncertified police accident report submitted by the plaintiff in opposition to the defendant's motion for summary judgement.

In contrast, see *Colon v Val's Ocean Pacific Foods* 157 AD3d 462 (1<sup>st</sup> dep't 2018) where the court, in granting summary judgment to the plaintiff on liability, properly considered a police report containing a statement by the defendant with respect to the happening of the accident because it was admissible as an admission of a party opponent.

In *Ardonuy v RB Juice* 164 AD3d 1296 (2d dep't 2018), another MVA case, the defendant moved for summary judgment, contending there was no triable issue with respect to proximate cause. In support thereof, the defendant offered a police report prepared by the responding officer (who was not an eyewitness), who attributed the accident to improper lane usage and passing by the plaintiff. Noting that the source of this conclusory information was unknown, the court found that there was no way to determine whether such person was under any duty to make the statement or whether some other hearsay exception applied. Hence, it constituted inadmissible hearsay.

In *Nava-Juarez v Mosholu Fieldston* 167 AD3d 511 (1<sup>st</sup> dep't 2018), the court held that the defendant failed to establish that the plaintiff (who spoke only Spanish) was the source of the statement, "while working, I fell down stairs" which was recorded in an accident report form (C3). In fact, the plaintiff alleged that he was injured when a ladder he was working on shifted suddenly.

The accident form in question was prepared by the plaintiff's worker's comp. attorney with the help of a translator who interpreted the plaintiff's words as stated above, but the Spanish word for stairs (*escalera*), is the same for ladder. Moreover, there were no stairs at the one-story building where the plaintiff was injured. Since the plaintiff was in no position to discover the error in translation (because he could not read English), and the defendant failed to establish that the plaintiff actually said what was interpreted into the report, the court held that the the report was not admissible.

In *76<sup>th</sup> & Broadway Owner LLC v Con Ed* 160 AD3d 447 (1<sup>st</sup> dep't 2018), an action for contribution/indemnification, the plaintiff in the underlying action, alleged that he was injured when he stepped on a nail sticking out of a piece of plywood on a traffic light platform in a fenced-in delivery area of a construction site. In the context of the defendant's motion for summary judgment, the court held that an accident report prepared by an employee of the plaintiff (stating that the plywood was dislodged from the platform by Con Ed workers and must have been moved during demolition and trench work), was inadmissible because even though the employee was under a business duty to prepare the report, his statements indicated that instead of speaking from personal knowledge, he was relying on conclusory statements made by others who were not identified. Nor was there any indication that the sources of the information were under any business obligation to report such findings. (The court also noted that the site was crowded with employess of several different subcontractors and vendors any one of whom could have struck the platform in question.

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# The Use of Biomechanical Engineers in Motor Vehicle Accident Trials

By Debra Silber

In theory, a biomechanical expert in a motor vehicle accident case takes the available information about the accident and, using physics and engineering principles, his or her understanding of human anatomy and physiology, relevant scientific studies, and safety and manufacturing information about the vehicles, determines whether the forces generated in the accident were sufficient to cause the alleged injuries. With enough information, the motion of the occupants inside the vehicles can be ascertained, and it is this sudden and unexpected motion that can cause the occupants to either impact the interior of the vehicle or to move in a way that exceeds the natural physiological range of motion of human beings, either of which can cause injuries. This process is known as the expert's "theory of causation."

The analysis employed involves a type of accident reconstruction, which must determine, among other facts, the weight of the vehicles and their respective speeds. From this information, the amount of energy that is transferred to each vehicle by the impact can be calculated, which is sometimes referred to as the "first

accident." Then, the expert presents a calculation of the force sustained by the occupants of the vehicles, known as the "second accident." These are only the most basic principles. There are many other factors which must be considered, such as whether the road is wet, if the person is wearing a seatbelt, the age, height and weight of the occupant, the occupant's location in the vehicle and his or her seating position, the model of the car, the height of the head rest, if there are airbags and if they deployed, how "crashworthy" the vehicles are, the points of impact on the vehicles, whether both vehicles are moving or if one is stopped, and if so, in park or neutral, if the vehicle impacts any stationary objects before coming to rest, and the interior design of the vehicles.

The "trend is to allow expert opinion testimony reconstructing motor vehicle accidents from physical evidence, provided the expert witness is sufficiently qualified in the particular field and has before him or her enough physical evidence to provide the witness with the important variables involved."<sup>1</sup> In order to reach any conclusions which are scientifically sound and

trustworthy, the expert must have sufficient information to base his or her opinion on. This is the issue that needs a judge's scrutiny. Whether this is described as a "Frye inquiry,"<sup>2</sup> or what has been described as the "Parker component," referring to *Parker v. Mobil Oil*,<sup>3</sup> the issue is whether the witness' methodology was "appropriately employed."<sup>4</sup>

Some biomechanical engineers retained to testify are unwilling to admit they cannot form a trustworthy conclusion from the information given to them. Nonetheless, they use deductive reasoning, extrapolation and inference, and report their conclusions as based on sound science. Unfortunately, with what appears to be a good deal of hocus-pocus and the use of complicated (and intimidating) mathematical formulas, they can sometimes fool a judge and jury. It is the judge's role to preclude testimony that will not be useful to the jury, which includes testimony that is misleading, inaccurate, or irrelevant.

A review of the published decisions in New York that involve the admissibility of testimony from biomechanical engineers in motor vehicle trials indicates that judges have, after holding a hearing, often concluded that the principles and procedures employed by the witness are not sufficiently established to have gained general acceptance in the scientific community (*Frye*), when it would probably be more accurate to say that the court concluded that it found too great of an analytical gap between the data and the witness' opinion (foundation).<sup>5</sup> The analysis for the court, described as the court's "gate-keeping function" under *Frye*, is often defined as having several "prongs." As applicable herein, the only issue or prong for the court to review is whether the expert's reasoning or methodology is relevant to the facts at issue, that is, whether the expert can demonstrate a proper foundation for his or her testimony.

The expert's testimony must be precluded when the expert does not have enough information to form a proper opinion, but attempts to offer one anyway, which testimony would not be relevant. An expert's opinion not based on accurate facts is worthless.<sup>6</sup> For example, if it is clear that the proffered biomechanical engineer had looked up crash test information or specifications for the wrong vehicle, or had not examined the vehicles or seen photos of the vehicles after the accident, did not know the height and weight of the allegedly injured party and where in the vehicle he or she was seated,<sup>7</sup> or did not have other pertinent information regarding the accident, he or she could not properly conclude that the plaintiff could not have been injured in the accident at issue.

If, for example, the expert is unaware that the plaintiff's truck hit a stationary object, such as a lamppost, after contacting the other vehicle, all of his calculations would be not merely unreliable, but useless. Where the expert was unaware of a plaintiff's prior injuries, which could make him or her more susceptible to a new injury, the

expert's conclusions were found to be unreliable.<sup>8</sup> This was also the case where the expert testified that damage to a seatbelt was caused by a prior accident without providing any basis for this conclusion.<sup>9</sup> Thus, when an expert has insufficient information upon which to base an opinion, his or her testimony is properly precluded.<sup>10</sup>

It is the judge's role to preclude testimony that will not be useful to the jury.

It must be noted that the Court of Appeals has opined that this analysis is not really a *Frye* inquiry, but an "admissibility question applied to all evidence – whether there is a proper foundation – to determine whether the accepted methods were appropriately employed in a particular case."<sup>11</sup> In *Cornell v. 360 W. 51st St. Realty*,<sup>12</sup> the court explained that "a court may exclude the expert's opinion if 'there is simply too great an analytical gap between the data and the opinion proffered.'" In addition, the Court in *Cornell* described *Parker* as having "clarified rules for the foundation necessary to admit expert evidence."

In New Jersey, a *Daubert*<sup>13</sup> state which uses the Federal Rules of Evidence in its state courts, biomechanical engineers may testify if they lay a proper foundation. This analysis is also applicable in New York despite New York being a *Frye* state. In *Hisenaj v. Kuehner*,<sup>14</sup> the Supreme Court of New Jersey concluded that the proposed expert, who based his opinion on the findings in 17 different biomechanical engineering studies of persons involved in similar low-impact collisions, which involved humans and not cadavers or crash test dummies,<sup>15</sup> should have been permitted to testify, and therefore reversed the intermediate appellate court, finding that the trial court's decision to allow the testimony was not an abuse of discretion. The court explained that "the biomechanical engineer applies concepts of mechanics to explain the physiological effects of [outside] force acting upon a living being, and specifically how that force likely would affect the normal functions of [that being] or [its] organs." The hearing, the court states, is "to determine admissibility, not credibility."<sup>16</sup>

The Appellate Division, Second Department has instructed "where the tendered scientific deduction has been deemed generally accepted as reliable, there remains a separate inquiry applied to all evidence. This inquiry is 'whether there is a proper foundation – to determine whether the accepted methods were appropriately employed in a particular case.'"<sup>17</sup> There is no longer any question that a biomechanical engineer with sufficient information may apply the procedures of



the witness' profession to generate an opinion as to the forces which impacted the plaintiff. The judge, however, must ascertain that the expert has obtained sufficient and reliable information, the foundation, upon which to base his or her conclusion.

When a biomechanical engineer is called to testify, *Frye* is satisfied in a motor vehicle case, as the science is not "novel" and has been held to be relevant, but the

the contact between the vehicles, can be admitted, as that testimony is based on the witness' own calculations, while the "theory of causation" testimony concerning the "second accident," the contact between the vehicle and the plaintiff, must be precluded if not based on reliable, peer-reviewed studies.<sup>21</sup>

It should be noted that only one New York appellate decision regarding biomechanical engineers has, to

### In New York, a party may not introduce treatises or articles or studies into evidence or read from them during the direct examination of an expert.

witness must establish "that the processes and methods employed in arriving at his or her opinions are methods or processes deemed reliable in the biomechanical engineering community. This is usually accomplished by establishing that the methods or processes used by the engineer in formulating his or her opinion have been extensively tested under proper testing conditions and that the tests and the results have been published and peer reviewed."<sup>18</sup>

Unfortunately, in New York, counsel proffering an expert can be seriously hamstrung by the state of the law concerning the admissibility of scientific studies, peer reviewed or otherwise. In the federal courts and in the 41 states that have adopted the Federal Rules of Evidence, such as New Jersey, learned treatises and scientific studies are inadmissible. But in New York, they are considered hearsay on the direct examination of an expert witness, but may be used on cross-examination for the purpose of impeachment.<sup>19</sup> However, even on cross-examination, the substance of the treatise or study may only be put before the jury if the expert witness first agrees that the material is "authoritative" on the subject. Even if admitted into evidence during the cross-examination of a witness, the jury must be told that the study is not offered as proof of the information therein.<sup>20</sup> Thus, in New York, a party may not introduce treatises or articles or studies into evidence or read from them during the direct examination of an expert. Nor may an expert testify about his or her research of the scientific literature on direct examination. As a result of this evidentiary rule in New York, a biomechanical engineer is unable to testify about the studies which support his conclusion on the "theory of causation." This is precisely why the *Frye* hearing (or foundation hearing) is so important. It is only at the hearing, held outside the jury's presence, that the expert may present the studies he or she has relied on and which support the conclusions he or she intends to present to the jury. Without this information, which enables the judge to determine whether the witness has a proper basis for his or her conclusions on the "theory of causation" concerning the plaintiff's claimed injuries, only the expert's analysis of the "first accident," that is,

date, upheld a trial court decision which precluded a biomechanical engineer from testifying without first holding a hearing outside of the jury's presence.<sup>22</sup> All four Appellate Departments have affirmed trial court judges who have permitted biomechanical engineers to testify, provided the testimony had a proper foundation.<sup>23</sup>

The published New York trial court decisions which concern motions *in limine* seeking to preclude a biomechanical engineer witness from testifying at trial are almost equally divided between those that after a hearing find the witness' testimony on the issue of causation admissible and those that find it not admissible.<sup>24</sup> One jurist opined that there was no basis to preclude on the grounds that it is "junk science," as biomechanical engineers are generally accepted, without making the appropriate inquiry as to the foundation for the testimony.<sup>25</sup> To be clear, while in a motor vehicle accident case there is no doubt that the testimony of a biomechanical engineer is based on scientific principles or procedures which have been sufficiently established to have gained general acceptance in the particular field, one of the prongs of a *Frye* inquiry, the court still must make a determination that the processes and methods employed by the expert in formulating his or her opinion adhered to accepted standards of reliability within the field, a different "prong" of a *Frye* inquiry.

On the point of whether a scientific theory is generally accepted, the findings of New York trial courts should be consistent. Indeed, "a party proffering expert testimony may demonstrate reliability by pointing to existing judicial decisions that announce that particular evidence or testimony is generally accepted in the scientific community."<sup>26</sup> As all four Appellate Departments in New York have found biomechanical engineers to be proper witnesses in motor vehicle accident cases, this issue should be deemed decided in New York.

Some courts have precluded the testimony of a biomechanical engineer regarding the cause of a party's injuries while permitting testimony about the forces involved in the collision and allowing the expert to speak in general about the types of injuries those forces could cause.<sup>27</sup> The courts that follow this reasoning do not permit

the expert witness to opine as to whether the accident caused or did not cause the plaintiff's specific injuries.<sup>28</sup> On the other hand, where the biomechanical engineer was also a medical doctor, the witness was permitted to testify whether "there was an injury mechanism present in the rear impact in a sufficient magnitude of force as well as an appropriate direction of force so as to cause the plaintiff's injuries as alleged."<sup>29</sup>

In Phillip Good's article, *Refuting the Testimony of Biomechanical Experts: A Guide for Personal Injury Attorneys*,<sup>30</sup> he lists the information that, in his opinion, must be provided by a biomechanical engineer at a hearing, and indicates that if it is not, the witness' conclusions should be considered unreliable and suspect. This includes:

1. Was the population in the study relied upon by the expert relevant to the case? Mr. Good points out that the participants in the studies must not only be live humans, and not cadavers or crash test dummies, but they must be of similar age, sex and pre-accident physical condition as the plaintiff. He cites studies that show that women are more likely to suffer whiplash and are more severely affected by rear-end collisions than men, and have post-accident symptoms for a longer period of time than male motor vehicle accident victims. Therefore, for example, a study which only includes healthy young men is not applicable to an accident involving two older women.
2. How large is the sample in the study? A study of only a handful of people is not reliable, but sometimes the studies cited only include a small sample. According to Mr. Good, the failure to state how many participants were in the study makes the study unreliable.
3. The forces involved in the accident must be calculated and the information relied on and calculations used must be disclosed at the hearing.
4. Other factors. Additional factors to consider are: the make and model of the vehicles, how and where the plaintiff was sitting in the vehicle, whether there was a lap belt, a lap and shoulder belt, or no seatbelt, the direction of the impact, and the velocity of the impact.
5. Mr. Good concludes that, in addition to the above, the guidelines of the Society of Automotive Engineers (SAE) must be followed, or the "testimony is suspect." He points out that these guidelines are updated regularly. In particular, he cites SAE J885 ("Human Tolerance to Impact Conditions as Related to Motor Vehicle Design") and SAE J1460/2 ("Human Mechanical Impact Response Characteristics"). All of the society's papers can be purchased online at SAE.org. Mr. Good's article also cites a number of scientific studies concerning humans in motor vehicle accidents.

Additionally, it is very helpful if the expert witness is able to inspect the vehicle, instead of just looking at pictures. This information is useful in determining the speed involved in the collision. Of course, it is important that the vehicle be unaltered between the time of the accident and the expert's inspection, which requires the chain of custody to be proven. If there is too much time between the accident and the inspection, the validity of the inspection suffers. If the vehicle was damaged in the tow, if the "jaws of life" were used to remove the injured people, if the car was repaired before the inspection, or was in another accident, this information must be provided to the expert. It is also important that the expert know the condition of the road surface at the time of the accident.<sup>31</sup> If the road was resurfaced before the site inspection, it affects the reliability of the expert's conclusions.<sup>32</sup>

It is not merely that the absence of sufficient information upon which to form an opinion renders the expert's opinion suspect, and therefore useless in assisting the trier of the facts, but that the absence of sufficient information upon which to form an opinion should result in the preclusion of that opinion from being put before the jury at all. In this author's opinion, a hearing is necessary in every instance when a party in a motor vehicle accident case wants to call a biomechanical engineer to testify and the adverse party requests a hearing. This is because the basis for his or her opinion cannot be properly vetted before a jury under New York's rules of evidence. Of course, if the adverse party does not make a motion to preclude *in limine*, it is waived.<sup>33</sup>

## Conclusion

When a party proffers the testimony of a biomechanical engineer in a motor vehicle trial on the issue of damages, if the adverse party moves *in limine* to preclude the testimony, a hearing must be held. Following the hearing, the court may permit the testimony as to the first accident, that is, between the vehicles, or may permit the testimony as to both the first accident and the second accident, that is, between the vehicle and the plaintiff's body. Even if the court permits testimony as to the "second accident," the judge may preclude the witness from testifying as to whether the accident could have caused the claimed injuries on the grounds that the witness is not a doctor, and may only allow the witness to testify as to the forces involved in the collision and allow the expert to speak in general about the types of injuries those forces could cause.<sup>34</sup> Whether a biomechanical engineer who is not a medical doctor may testify that the plaintiff's alleged injuries were not caused by the accident is still an unresolved issue in New York courts. The Court of Appeals has not issued any guidelines on this issue. ■

1. Matthew Bender & Co., Scientific Evidence § 27.10(a), The Admissibility of Accident Reconstruction Testimony.

2. *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923).

3. 7 N.Y.3d 434 (2006).

4. *Id.* at 447. See Michael J. Hutter, *Toxic Mold Case: Experts, Gate Keeping, Admissibility*, N.Y.L.J., June 6, 2014.
5. See *Cornell v. 360 W. 51st St. Realty LLC*, 22 N.Y.3d 762 (2014), citing *General Electric Co. v. Joiner*, 522 U.S. 136 (1997).
6. *Caton v. Doug Urban Constr. Co.*, 65 N.Y.2d 909 (1985).
7. *Withrow v. Spears*, 967 F. Supp. 2d 982 (U.S.D.C. N.D. Del. 2013).
8. *Wellman v. Norfolk & Western Ry.*, 98 F. Supp. 2d 919 (U.S.D.C. S.D. Ohio 2000).
9. *Id.*
10. See, e.g., *White v. Grocery Haulers, Inc.*, 2014 N.Y. Misc. LEXIS 738 (Sup. Ct., N.Y. Co. 2014).
11. *Parker v. Mobil Oil Corp.*, 7 N.Y.3d 434 (2006), citing *People v. Wesley*, 83 N.Y.2d 417 (1994).
12. 22 N.Y.3d 762 (2014).
13. *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 590 (1993). This holding has been codified in Federal Rule 702.
14. 194 N.J. 6 (2008).
15. In *Suarez v. Egeland*, 353 N.J. Super. 191 (App. Div. 2002), a witness who based his opinion on studies involving cadavers was precluded from testifying.
16. *Hisenaj*, 194 N.J. at 24.
17. *Ratner v. McNeil-PPC, Inc.*, 91 A.D.3d 63 (2d Dep't 2011).
18. Robert Glick and Sean O'Loughlin, *The Rise of Biomechanical Experts at Trial*, N.Y. St. B.J., Nov/Dec 2010 at p. 49.
19. CPLR 4515 allows experts to testify as to opinions without specifying the data/studies upon which it is based, leaving that inquiry for cross-examination. Of course, the data/studies must be reliable.
20. See PJI 1:90.2 and the cases cited in the commentary thereto, and see Eric Dinnocenzo, *I Don't Need Your Authority – The Use of Learned Treatises in New York State Courts*, N.Y. St. B.J., June 2010, at p. 9. In his article, Mr. Dinnocenzo notes that New York law “has slowly inched toward the federal rule, though its roots still remain firmly in the 19th Century.”
21. See, e.g., *White v. Grocery Haulers*, *supra* note 10.
22. See, e.g., *Abramson v. Pick Quick Foods*, 56 A.D.3d 702 (2d Dep't 2008).

The one published decision, *Vargas v. Sabri*, 115 A.D.3d 505 (1st Dep't 2014), upheld a trial court's denial of a *Frye* hearing. However, the plaintiff opposed the expert on the grounds he did not have a medical license. It thus seems the party who moved to preclude didn't raise a sufficient issue for the court to direct a hearing.

23. *Shifrel v. Singh*, 61 A.D.3d 401 (1st Dep't 2009) (biomechanical engineer permitted to testify that it was unlikely that plaintiff's left shoulder impacted the steering wheel); *Valentine v. Grossman*, 283 A.D.2d 571 (2d Dep't 2001) (biomechanical engineer should have been allowed to testify that the force in the accident was insufficient to cause a herniated disc); *Cocca v. Conway*, 283 A.D.2d 787 (3d Dep't 2001), *lv. denied*, 96 N.Y.2d 721 (2001) (witness allowed to testify that the impact between the vehicles did not have enough force to cause the injuries claimed by the plaintiff); *Martell v. Chrysler Corp.*, 186 A.D.2d 1059 (4th Dep't 1992) (plaintiff properly permitted to call biomechanical engineer to testify in products liability action). See also Richard M. Sands, *Using Biomechanical Science in Labor Law and Premises Cases*, N.Y.L.J. Nov. 3, 2010.
24. *Shifrel*, 61 A.D.3d 401; *Gaona-Garcia v. Gould*, 31 Misc. 3d 1237A (Sup. Ct., Bronx Co. 2011). See also *Santos v. Nicolos*, 24 Misc. 3d 999 (Sup. Ct., Bronx Co. 2009); *Clemente v. Blumenberg*, 183 Misc. 2d 923 (Sup. Ct., Richmond Co. 1999).
25. *Martell v. K & K Auto and Towing Corp.*, 2013 N.Y. Slip Op. 31950(U) (Sup. Ct., Queens Co.).
26. *Hisenaj v. Kuehner*, 194 N.J. 6, 17 (2008).
27. *Smelser v. Norfolk S. Ry Co.*, 105 F.3d 299 (6th Cir. 1997); *Bowers v. Norfolk S. Corp.*, 537 F. Supp. 2d 1343 (U.S.D.C. M.D. Ga. 2007); *Berner v. Carnival Corp.*, 632 F. Supp. 2d 1208 (U.S.D.C. S.D. Fla. 2009).
28. *Kelham v. CSX Transp. Inc.*, 2015 U.S. Dist. LEXIS 93669 (U.S.D.C. N.D. Ind.).
29. *Harden v. Haven*, 2014 Fla. Cir. LEXIS 815 (Circuit Ct. of 18th Jud. Dist., Brevard Co.).
30. statcourse.com (2009) (available as an e-book on Amazon.com).
31. *Rose v. Truck Ctrs., Inc.*, 611 F. Supp. 2d 745, 751 (N.D. Ohio 2009).
32. *Knox v. Simmons*, 838 S.W.2d 21 (Mo. Ct. App. 1992).
33. *Cocca v. Conway*, 283 A.D.2d 787 (3d Dep't 2001), *lv. denied*, 96 N.Y.2d 721 (2001).
34. *Neat v. Pfeffer*, 2013 N.Y. Misc. LEXIS 4185 (Sup. Ct., N.Y. Co.).

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