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MULTIPLE FAILURES: THE DIFFERENCE BETWEEN SCIENCE AND MAGIC

While many of the cases we deal with on a day-to-day basis may appear to be somewhat straight-forward, many times we are confronted with losses that involve multiple failures leading to the claimed damages. Multiple failures are quite common within the practice of failure analysis, whether there are two simultaneous failure conditions culminating in catastrophic failure, or a cascade of failures set forth by a primary failure.

Understanding the causality of failures and the division of responsibility among multiple parties is important to claims, litigation and subrogation. Equally important is the determination of the characterization of an alleged set of failures as negligent, accidental, and/or fraudulent. The proposed roundtable discussion will focus on alleged multiple failures and how they may fall into one of three general categories: the possible, the plausible, and "magic". Focus will be placed on the allegations and hypotheses that defy science and engineering with the proposition of a mystery condition or highly improbable causation, which conveniently leaves no trace within the body of supportive evidence. The roundtable will discuss how to deal with an unqualified opposing expert or a peddler of junk science and how they often build their arguments on the layman's intuition, which sounds correct, but to the trained professional is a house of cards.

I. Multiple Failures Involving "Good" Science but Difficult Results

In the best case scenarios, when multiple failures are involved, the experts on both sides agree to protocols and testing methods and can agree to the proper methods and processes to evaluate and make conclusions. While it is likely that they will reach different conclusions in support of their relative side and positions, the methods and analysis used by all parties is relatable and accepted by the overall community and supported by all involved experts.

II. Multiple Failures Where the Science is not as Exact and Plausibility of Analysis is Key

However, especially in cases with multiple failures, sometimes the experts can have a hard time with the science involved when the outcomes lead to low probability outcomes. In these cases, either the causation is hard to determine or an agreeable protocol can be hard to define. These can lead to circumstances where the experts have to be more open-minded and work to determine what conclusions are the most plausible.

The biggest problem as you reach this stage is that the qualifications of the testing, and many times the experts themselves, are not proper for trial. That is when the pre-trial expert challenges become a very significant and costly part of the litigation budget. Most states have adopted one of two methods for determining the reliability of experts and expert testimony, the *Daubert* and *Frye* standards. While most of you may be familiar with one or both, the distinctions and method of analysis are crucial to understanding how the use of "inexact" science can affect your case.

It is important to know to what standards your case jurisdiction applies and, more importantly, how they apply it. The biggest problem is that many times the Court does not rule on these issues until close before trial, as many of these issues have to be flushed out in expert witness discovery. Having your expert's opinions and testimony stricken can have an enormous impact on your case, while striking opposing experts can also be enormous in turning the tide in your favor.

A. Daubert v. Frye Standards

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These two major governing standards can be found in the two seminal cases from which they are named; a D.C. Circuit Court case, *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), and a U.S. Supreme Court decision, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). The federal court system exclusively follows *Daubert*, while state courts are divided between the two. However, even within each system, each state has taken on its own interpretation of the two standards, making the admissibility of expert testimony more variable between jurisdictions. It is crucial to have a working understanding of these standards, their specific jurisdictional variations, and any recent, applicable case law when considering experts and their use at trial.

The Court in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923) set forth a ruling that an expert's opinion is admissible if the scientific technique on which the expert based his opinion is "generally accepted" as reliable in the relevant scientific community. The Court affirmed the trial court's decision to strike expert testimony

concerning a lie detector test. The test, which was based on changes in systolic blood pressure, was considered to have "not yet gained such standing and scientific recognition among physiological and psychological authorities." also referred to as the "general acceptance" test. The Court best expressed it as:

> Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while the courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.

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While *Frye* was decided in 1923, the case was not cited for over ten years following the decision. The standard continued into the 1970s, where it was used primarily in criminal cases. It then began being cited in civil cases, starting mainly in toxic tort suits. However, many criticized the Frye test as too vague and that it could not reliably manage complex scientific testimony. The U.S. Supreme Court overruled *Frye* in In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the Supreme Court held that that the case law was inconsistent with the applicable evidentiary rules, most notably, Rule 702 of the Federal Rules of Evidence. Instead, in *Daubert*, the Court held that the two evidentiary standards of Rule 702, relevance and reliability, were not compatible with the stricter "general acceptance" test.

With *Daubert*, the trial judge is given the "gatekeeping responsibility" when admitting expert testimony. This responsibility is based on a non-exhaustive list of factors to consider such as:

1) whether the expert's technique or theory can tested and assessed for reliability,
2) whether the technique or theory has been subject to peer review and publication,
3) the known or potential rate of error of the technique or theory,
4) the existence and maintenance of standards and controls, and
5) whether the technique or theory has been generally accepted in the scientific community.

Under this new standard, the Court encouraged a more liberal approach to admitting expert testimony, stressing the importance of subjecting expert witnesses to vigorous cross-examination of their methods and basis for opinions. The *Daubert* standard was examined more in *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), where the Supreme Court emphasized the importance of expert methodology, opposed to focusing solely on the conclusory opinion, finding that "conclusions and methodology are not entirely distinct from one another." The Court also stated that, "while the Federal Rules of Evidence allow district courts to admit a somewhat broader range of scientific testimony that would have been admissible under *Frye*, they leave in place the 'gatekeeper' role of the trial judge in screening such evidence." The Court "rejected the notion propounded by several circuits that they should engage in especially stringent review of decisions excluding scientific evidence proffered by plaintiffs in toxic tort and product liability cases."

Importantly, the Supreme Court also held, in *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999) that the *Daubert* standard applies to expert testimony that is not scientific in nature. Broadening the range of cases to which *Daubert* pertains, the Supreme Court held that the standard applies to witnesses that have non-scientific "technical, or other specialized knowledge" as specified in Rule 702. The Court found no relevant distinction between experts who rely on scientific principles and those who rely on "skill- or experienced-based observation," citing Rule 702 of the Federal Rules of Evidence, which also makes no distinction between scientific knowledge and "technical or other specialized knowledge."

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III. Multiple Failures Where Opposing Experts Are Using "Junk Science"

While good experts and good analysis can still find their way into a Court battle under either Frye or Daubert, it becomes even more important, especially in complex multiple failure cases, to fight against the "junk science" that can wander into a Courtroom. Proper scientific research seeks results that are reproducible, falsifiable, and have predictive power, as all scientific fields are in a state of continual growth and development. Hypotheses arise, are tested repeatedly, and over time are either discarded, amended, or rise to the more reliable level of theories. At any given time, the results of one or more studies may be explained by two or more competing theories as to the origins of those results, their causes, or outside factors that may influence them. But, like junk food, junk science is devoid of substantive, useful

content, no matter how appealing or how beneficial to your case it might seem in the moment.

IV. Three Classes of Investigation for Multiple Failures

When a system of failures occurs resulting in the need for a technical investigation, the professional experts representing parties related to each particular failure have the objective of understanding the causality of the subject failures for the primary purpose of determining the division of responsibility among multiple parties regarding the subject incident. The technical expert is also equally charged with the task of determining characterization of each failure amongst the alleged set of failures as negligent, accidental, fraudulent, and/or undetermined.

A. The Probable

An investigation where patterns and sequences of failures that quickly resolve into objective agreement among experts tends to carry an ideal investigative scenario that mitigates the manifestation of junk science. When a robust professional agreement among opposing experts quickly develops, underqualified experts have less of an opportunity to assert hypotheses and arguments that lack proper foundation for the sole purpose of quickly absolving their client.

B. The Plausible

For the purposes of this discussion we will assume the individual opposing experts are all qualified technical experts. Investigative scenarios often arise where opposing experts carry strong arguments and sound hypotheses that contradict the establishment of a primary failure mode amongst a set of failures. In these situations, an expert's theory of primary failure mode may fall within the realm of being plausible. The plausible explanation of causality may be met by an opposing qualified expert in one of two ways. The opposing expert may rest on their tried and true experience of similar failure modes and dismiss the plausible hypothesis, or the opposing expert may be open to additional testing that discriminates and singles out the prevailing hypothesis of causation.

Even when opposing experts agree on furthered testing for a plausible hypothesis, the logistics of cost must be weighed against the value of the results for the case.

C. Junk Science Magic

Junk science is a persistent evil in the realm of technical investigations. It thrives in the realm of quick settlements and its guise as real science hinges on its appeal to laymen intuition. Arguments can be overly simplified and quick: "Why did this motor catch on fire? There wasn't enough air blowing past it to cool it, so it caught on fire." Conversely, arguments can be overly convoluted and employ

superfluous testing: "This 3D simulation shows the incident occurred". The well-trained expert can typically topple these fragile arguments: "The motor has a thermal cutoff switch shown to still be working, it's cutoff temperature is 100 degrees, and there was nothing in the vicinity that catches fire at 100 degrees"; and "The 3D simulation is an animation that does not obey the laws of physics."

Junk science is quite successful and is often associated with the lowest bidder. This has a drastic effect on the demand for quality work, and it continuously narrows the pool of well-trained experts through competitive costs.

V. Multiple Failure Claims Outside the US

While the majority of claims we handle take place in the United States and its various jurisdictions, with the world becoming more interconnected and globalized, claims are going to occur in jurisdictions we are not as familiar with, especially outside the US.

We will briefly touch on the role of experts for claims outside the US specifically focusing on Europe, as Latin American and Asia-Pacific countries often look to it for "case-law". We will also speak to insureds and not wanting to admit issues with products due to repercussions outside of the pending claim.

VI. ANSI vs ESO (CEN, CENELEC and ETSI)

We will look briefly at the different standardization organizations in the US and Europe and how they interact.

VII. Multiple Failure Causes

A. Possible causes – where run of the mill expert testimony with sound science is present and both experts agree.
B. Plausible – where experts disagree on hypothesis and significant testing comes into play
C. "Magic" Junk Science examples will be discussed, such as a logic control sensor, heating unit failure v. fireplace, dropped neutral of utility connection v. electrostatic filter failure

VIII. Strategies for Handling Experts

In any complex case, but especially one involving complex issues and multiple failures, it is crucial to identify as early as possible what experts you will need, as well as what testing you will need. Throughout the process, a clear picture of the methods and instruments used by your experts and those of all of the other parties will likely be a large issue once the case becomes postured for trial. Making sure we can defend our expert's opinions and testimony and strike or knock down the Plaintiff's can turn the tide on the "junk science" that a Plaintiff may try to use against us.