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OVERCOMING THE “ESSENTIAL PARADOX” OF EXPERT TESTIMONY: TEACHING
ATTORNEYS HOW TO BECOME BETTER TEACHERS

Ernest J. Pribanic (Exam # [REDACTED])

I. Introduction.

Expert testimony encompasses myriad issues: what is the appropriate standard of admissibility; whether judges or jurors should determine the reliability of expert testimony; and to what degree of certainty must an expert opinion be rendered, among others. However, one larger, global question has engendered considerable debate, both anecdotally and empirically based, about whether jurors understand expert evidence in a trial setting and what that means in a legal culture where juries are the ultimate arbiters of fact. As anecdote yields to data, though, the answer to this question of juror competence to understand expert testimony is becoming clearer. This paper will examine the issue of juror competence to understand complex expert testimony, outline the arguments on both sides of the issue, and conclude that while expert testimony may present a challenge to jurors in rendering a verdict, jurors are, nevertheless, capable of understanding such testimony if attention is paid to the method by which that testimony is delivered. This paper will then suggest that, going forward, attorneys and their expert witnesses should focus on the method by which they present their message at trial and that in borrowing pedagogical concepts from the field of education, attorneys and their experts can clarify and refine their message such that jurors may understand it and better evaluate the competing theories proffered by opposing parties at trial.

II. The issue of juror competence to understand complex expert testimony.

In the context of modern litigation, the presence of expert witnesses at trial is almost a certainty. Research shows that expert witnesses appear for plaintiffs in civil trials ninety-two percent of the time and for defendants seventy-nine percent of the time.¹ Moreover, jurors hear, on average, testimony from three expert witnesses in the typical civil trial.² In addition to the increased frequency of expert testimony at trial, that testimony has become more complex as topics like medical causation, epidemiology, and DNA match evidence become not the exception but the norm in modern trials. Legal scholars agree that this increase in the presentation of complex expert testimony represents a challenge for jurors in assessing the evidence and, ultimately, rendering a verdict.³ Indeed, much of the dialectic arising from this question of jury competency to understand expert evidence is related to a general concern for the reliability of jury verdicts where expert evidence is presented to aid juries in resolving key legal issues at

¹ Carol Krafska et al., *Judge and Attorney Experiences, Practices, and Concerns Regarding Expert Testimony in Federal Civil Trials*, 8(3) Psychol. Pub. Pol'y & L. 309, 311 (2002).

² Samuel R. Gross & Kent D. Syverud, *Getting to No: A Study of Settlement Negotiations and the Selection of Cases for Trial*, 90(2) Mich. L. Rev. 319, 337 (1991) (examining the prevalence of expert testimony in a survey of 529 California civil jury trials).

³For a sampling of the many scholarly works examining this issue, see Neil Vidmar & Shari Seidman Diamond, *Juries and Expert Evidence*, 66 Brook. L. Rev. 1121 (2000-2001); Shari Seidman Diamond, *How Jurors Deal with Expert Testimony and How Judges Can Help*, 16 J.L. & Pol'y 47 (2007-2008) [hereinafter Diamond, *How Jurors Deal*]; Jane Goodman-Delahunty & Kosuke Wakabayashi, *Adversarial Forensic Science Experts: An Empirical Study of Jury Deliberation*, 24 Current Issues Crim. Just. 85 (2012); Valerie P. Hans, *Judges, Juries and Scientific Evidence*, 16 J.L. & Pol'y 19 (2007-2008).

trial.⁴ Neil Vidmar and Shari Seidman Diamond provide an excellent description of what is expected of jurors in receiving and applying expert testimony:

In evaluating the evidence they should give attention to the characteristics of the expert that bear on the expert's credentials, reliability, and truthfulness, but they should not give undue weight to the credentials. They must consider using the evidence in their decision making only if it is judged to be reliable, and they must not automatically defer to the expert's opinion.⁵

Even a moment's consideration of Vidmar's and Diamond's description of a juror's task produces the realization that jurors must understand the expert testimony they hear at trial to perform that task.

Concerns about juries' abilities to assess expert testimony are directly related to the task charged to them at trial. If we expect jurors to render a reliable verdict based upon a rational decision of whether expert testimony is reliable, then they must understand that testimony. If jurors cannot understand that testimony, then they cannot reliably perform their function. This truth has given rise to a focused effort on the part of legal scholars to determine whether jurors can understand complex expert testimony.⁶ Efforts to determine whether jurors understand complex expert testimony, or even whether jurors are capable of understanding such testimony, often focus on the way in which jurors cognitively process the information they receive in the

⁴ E.g. Allan Raitz et al., *Determining damages: The influence of expert testimony on jurors' decision making*. 14(4) L. & Hum. Behav. 385 (1990) [hereinafter *Influence of Expert Testimony*] (suggesting that jurors may simply defer to one expert or another where cognitive load overcomes jurors' ability to understand expert evidence).

⁵ Vidmar and Diamond, *supra* n. 3, at 1135.

⁶ See generally *supra* n. 3.

courtroom,⁷ and the primary analytical construct utilized by scholars to explain the possible ways in which jurors might receive and evaluate complex expert testimony has been borrowed from the field of social psychology. Legal scholars have adopted two theories, the Elaboration Likelihood Model⁸ (ELM) and the Heuristic-Systematic Model⁹ (HSM), that inform their examination of juror reception of expert testimony.¹⁰ Indeed, the central divergence within the scholarly discourse on the issue of how jurors react to expert testimony fits within the similar dichotomic concepts contained in these two models.¹¹

The ELM and HSM are similar theories: they both explain the possible cognitive avenues that a recipient of a persuasive message may take when attempting to assess persuasive

⁷ Raitz, *supra* n. 4 (asking whether jurors reason their way through expert testimony or simply defer to one expert or another based upon some superficial reason); Richard Lempert, *Experts, Stories, and Information*, 87(4) Nw. U. L. Rev. 1169 (1993) (suggesting that juries use expert testimony to inform their understanding of the larger story of the case); Richard Lempert, *Civil Juries and Complex Cases: Taking Stock after Twelve Years*, 181-247 (Robert E. Litan ed., The Brookings Institution 1993) [hereinafter Lempert, *Taking Stock*] (reviewing juror performance in the face of complex expert testimony); Sanja Kutnjak Ivkovic & Valerie P. Hans, *Jurors' Evaluations of Expert Testimony: Judging the Messenger and the Message*, 28 L. & Soc. Inquiry 441 (2003) [hereinafter *Judging the Messenger*] (interviewing jurors who participated in civil trials where expert testimony was presented to determine what method the jurors used to assess expert testimony).

⁸ Richard E. Petty & John T. Cacioppo, *Communication and Persuasion: Central and Peripheral Routes to Attitude Change* (New York: Springer 1986).

⁹ Shelly Chaiken et al., *Heuristic and Systematic Information Processing within and Beyond the Persuasion Context*, in *Unintended Thought*, 212-252 (James S. Uleman & John A. Bargh eds., Guilford Press 1989).

¹⁰ For a detailed discussion of the two theories *supra* ns. 5 & 6, see Richard E. Petty & Duane T. Wegener, *Attitude Change: Multiple Roles for Persuasion Variables*, in *The Handbook of Social Psychology* vols.1 & 2, 323-390 (Daniel T. Gilbert et al. eds., 4th ed., McGraw-Hill 1998). For more on cognitive processes and their application to decision making, see Chris Guthrie et al., *Blinking on the Bench: How Judges Decide Cases*, 93(1) Cornell L. Rev. 2 (2007) (discussing cognitive process theories and analyzing judicial decision making within a dual-processing construct).

¹¹ Compare e.g. Joel Cooper et al., *Complex Scientific Testimony: How do Jurors Make Decisions?*, 20 L. & Hum. Behav. 379 (1996) (utilizing the Heuristic-Systematic Model to explain juror decisions and finding jurors relied on heuristics when assessing expert testimony) with e.g. *How Jurors Deal*, *supra* n. 3 (utilizing the Elaboration Likelihood Model to explain juror decisions and finding that jurors centrally processed expert testimony).

information that they are receiving. Within the ELM, these two possible cognitive processes are called central and peripheral processing.¹² Petty and Cacioppo describe central processing as a “diligent consideration” of the content of information received with the goal being to assess that information. Peripheral processing, on the other hand, occurs when a recipient of information uses non-content cues, whether positive or negative, such as the perceived credibility, power, esteem, and attractiveness of the messenger to assess the information received.¹³ The authors further explain that it is the recipient’s motivation to meaningfully engage with the content of the information and accurately assess its validity that determines which cognitive process is used.¹⁴ Thus, the theory goes, when recipients of information have reason to engage with the content of the information presented to them, they will likely utilize central processing; however, when motivation is low, e.g., the content of the message lacks relevance to the listener, recipients will likely engage in peripheral processing, which allows them to make an assessment of the message without actually considering its content.¹⁵ But another time when peripheral processing may be utilized is when recipients of the message are unable to centrally process the information because they lack an adequate foundation for understanding the message, i.e., they lack the prior knowledge or experience and, thus, an analytical framework within which they might reasonably analyze the content of the material presented.¹⁶

¹² Richard E. Petty et al., *Personal Involvement as a Determinant of Argument-Based Persuasion*, 41(5) J. Personality & Soc. Psychol. 847 (1981).

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.* at 848.

¹⁶ *Id.* at 853-854.

Similarly, the HSM also presents a cognitive process dichotomy to explain how recipients of information assess that information: in this model, systematic processing occurs when a recipient of persuasive information engages deeply with the content of the information, using significant cognitive effort to understand and assess the validity of the information received, and while non-content cues may still be utilized, they are not central to the decision making process.¹⁷ As with the ELM and peripheral processing, the HSM explains that those on the other side of the dichotomy use very little cognitive effort in assessing information, relying instead on non-content cues that are essentially mental shortcuts called heuristics in determining whether to accept the information as valid.¹⁸ Examples of heuristics that may be used are the perceived status, credibility, likeability, and attractiveness of the person delivering the message.¹⁹ Generally speaking, a message recipient will use systematic processing when she is motivated to determine the reliability or validity of the message being received; however, where the need or desire for thrift in assessing the message arises, it is likely that the recipient will rely on heuristic cues.²⁰ Obviously, the desire for thrift in cognitive work may arise where there is little motivation on the part of the recipient to do the work necessary to evaluate the content of a message, yet the need for an easier way to assess the validity of a message may arise where a person is unable to comprehend the message for some reason. Ultimately, what this means is that those who employ systematic processing are motivated and, therefore, more likely to determine the validity and reliability of the content of the information received rather than to

¹⁷ Shelly Chaiken, *Heuristic versus systematic information processing and the use of source versus message cues in persuasion*, 39 J. Personality & Soc. Psychol., 752 (1980).

¹⁸ *Id.*

¹⁹ *Id.* at 753.

²⁰ *Id.* at 754.

accept the validity and reliability of the information received based upon non-content heuristics.²¹

With the ELM and the HSM serving as an analytical paradigm, a question for legal scholars has become whether jurors process complex expert testimony systematically or whether they rely instead on heuristic cues to assess information advanced by experts, or the experts themselves, at trial?²² However, the most important question for these scholars is not necessarily whether jurors are motivated to understand expert testimony—data clearly show that they are²³; rather, the question is whether jurors can understand and thus fairly evaluate expert testimony rather than simply defer to a particular expert based upon one or more heuristic cues such as credentials, likeability, or appearance. In short, the question is can juries do their job?

Arriving at a conclusion on whether jurors can perform their charge in relation to expert testimony, however, is not the end of the inquiry. Once we arrive at an answer, if our concern with this issue arises from our desire to ensure reliable verdicts, the question becomes what then? For some who believe that jurors lack the ability to understand complex expert evidence and thus rely on heuristic cues in evaluating expert testimony, the answer lies with circumventing the

²¹ *Id.* at 764.

²² Given the similarity between the Elaboration Likelihood Model and the Heuristic-Systematic Model and the tendency among legal scholars to use both interchangeably, this paper will, wherever possible and for the convenience of the reader, use the language of the Heuristic Systematic Model for further discussion, i.e., systematic processing and heuristics.

²³ See e.g., Joseph Sanders, *The Jury Deliberation in a Complex Case: Havner v. Merrell Dow Pharmaceuticals*, 16 Just. Sys. J., 45, 65 (1993) (qualifying the conclusion that the jurors interviewed did not understand the scientific evidence in the case with the statement that this was not because of any lack of diligence on their part); Vidmar & Diamond, *Juries and Expert Evidence*, *supra* n. 3, at 1148; Richard Lempert, *Experts, Stories, and Information*, *supra* n. 7, at 1177; *Judging the Messenger*, *supra* n. 7, at 476 (finding that jurors, when faced with opposing experts, focused on the experts' credentials and biases as well as the content of their testimony); and Cooper et al., *supra* n. 11, at 390.

traditional jury construct by using so-called blue-ribbon juries comprised of more highly educated jurors, using panels of scientists to resolve the expert issues in the case, or avoiding a jury altogether by way of a bench trial.²⁴ But for those scholars who have found that juries are not only motivated to understand expert evidence but capable of understanding as well, the answer lies in utilizing tools to aid juries in understanding complex expert testimony such as juror notebooks, allowing jurors to take notes and ask questions of experts, and allowing jurors to discuss the testimony and evidence as a case progresses.²⁵ Each of these possibilities has merit; however, before we can fashion a solution to ease our concerns for the reliable resolution of trials that feature complex expert testimony, we must first understand how well jurors perform the work we expect of them and the boundaries of any problems they may have with that work if, indeed, any exist.

III. Competing arguments on the issue.

Despite the scholarly split on the issue of juror competence to understand expert testimony, the weight of the research shows that jurors are capable of understanding expert evidence at trial. However, if the concern with the constant and inevitable collision of seemingly ubiquitous expert testimony and the modern jury hinges, as it should, on the reliability of jury verdicts and thus the reliability and credibility of the American legal system, the data arising from studies focusing on jury competency to understand complex evidence do reveal a potential problem. Data from these studies reveal that while juries are driven to systematically process the

²⁴ See e.g., Lempert, *Taking Stock*, *supra* n. 7, at 192; Graham C. Lilly, *The Decline of the American Jury*, 72 U. Colo. L. Rev. 53, 80 (2001); and Joseph Sanders, *supra* n. 23.

²⁵ See e.g., Hans, *Judges, Juries and Scientific Evidence*, *supra* n. 3 at 41; Diamond, *How Jurors Deal*, *supra* n. 3, at 64-65.

expert evidence they hear and see at trial and are capable of understanding that evidence when the presentation is well done, they may, nevertheless, rely on heuristic cues when that same evidence is or becomes incomprehensible.²⁶ Thus, saying that juries can comprehend expert evidence is not enough—if we want to ensure that jurors utilize expert testimony correctly rather than simply defer to one expert or another based upon heuristic cues, we must examine how best to convey expert knowledge; we must examine how best to overcome what has been described as the “essential paradox” of expert testimony at trial, i.e., how best to relate to laypersons that which experts are called to provide at trial?²⁷ After examining research on the issue of juror competency to understand expert evidence and concluding that jurors are capable of comprehending and, therefore, fairly evaluating such evidence, this paper will discuss how theories from the field of education, when employed by advocates and the experts they call at trial, can help jurors meet the challenge of understanding and then assessing expert testimony.

First, we know that jurors are motivated to do what is asked of them at trial, and using the two cognitive-process models described above, we know that for jurors to perform their charge as it relates to expert testimony, they must first be motivated to engage with that testimony. Even those authors who conclude that jurors are unable to understand and assess complex expert testimony concede that jurors are motivated to fairly evaluate that testimony.²⁸ Joseph Sanders,

²⁶ Several studies focused on jurors’ ability to comprehend expert testimony have found that jurors can and do systematically process complex expert testimony; however, some of those same studies acknowledge that jurors may rely on heuristic cues when, as the ELM and HSM theories suggest, the evidence is or becomes too difficult to understand. These studies will be discussed in further detail *infra*.

²⁷ See e.g., *Judging the Messenger supra*, n. 7, at 474.

²⁸ Sanders, *supra* n. 23, at 65; Richard Lempert, *Experts, Stories, and Information, supra* n. 7, at 1177.

in analyzing his post-trial interviews with the *Havner v. Merrell Dow Pharmaceuticals*²⁹ jurors, ultimately concluded that the *Havner* jurors did not adequately grasp the difficult scientific evidence in the case. He admits, though, after reviewing individual juror's descriptions of the deliberation process, that this was not due to "any lack of diligence or effort on the part of the *Havner* jurors."³⁰ Sanders' depiction of the *Havner* jurors reveals a jury diligently working with the expert evidence in the case, considering whether the expert testimony made sense to them, and balancing that testimony with other evidence to reach what it believed to be a fair decision.³¹

Richard Lempert, too, describes jurors working diligently towards a rational resolution of trials featuring expert evidence.³² Lempert suggests that jurors evaluate expert testimony by "arriving at a story that best explains the testimony."³³ Thus, according to Lempert, jurors evaluate expert testimony by considering it within the context of the all of the evidence in the case and making a determination as to whether that testimony fits within a plausible story that is more likely than not true. The inference then, from Lempert's depiction of jury decision making, is that jurors are motivated to evaluate expert testimony, at least to the extent that it comports

²⁹ *Havner v. Merrell Dow Pharmaceuticals* was a Bendectin case where jurors heard expert testimony on epidemiological and toxicological evidence on the issue of whether Bendectin was a teratogen and, if so, whether it caused the plaintiff's birth defect. Sanders uses the case as an example of juror inability to comprehend complex scientific evidence.

³⁰ Sanders at 65.

³¹ *Id.* at 62-63.

³² Lempert, *Experts, Stories, and Information*, *supra* n. 28.

³³ *Id.* at 1177.

with their understanding of what is the most plausible story of the case based upon the facts presented at trial.³⁴

Juror motivation to engage with expert testimony is important because it is essential to a systematic assessment of the message that he or she is receiving. That motivation is apparent in several studies on juror competency that suggest that jurors generally use rational, and therefore systematic, methods to evaluate expert testimony. Lempert, as mentioned above, finds that analyzing expert testimony within the larger story of the case to determine plausibility is a rational and, therefore, systematic treatment of such testimony.³⁵ Similarly, Daniel Shuman and his coauthors conclude that jurors, rather than deferring to experts based on status, utilize reasonable criteria to evaluate expert testimony.³⁶ Shuman and his fellow researchers conducted surveys of 156 jurors who had sat in civil trials where expert testimony was presented.³⁷ The authors asked questions of these jurors that focused on how the jurors assessed expert witness “believability.”³⁸ Jurors in the study reported that they considered the testifying experts’ credentials, whether experts exhibited familiarity with the facts of the case and exhibited clear reasoning in reaching their conclusions, and whether the experts appeared to be impartial or

³⁴ For further scholarly commentary on juror motivation to engage with expert testimony, *see e.g.*, authors and articles noted *supra* n. 23.

³⁵ Lempert, *Experts, Stories, and Information*, at 1178.

³⁶ Daniel W. Shuman et al., *Assessing the Believability of Expert Witnesses: Science in the Jurybox*, 37 *Jurimetrics* 23 (1996).

³⁷ *Id.* at 25. *See* author’s n. 8, at 25 where the authors explain that out of a total of 288 jurors who were sent a letter asking for participation, 156 (54%) responded. The authors note that because the 54% of jurors who participated in the study could “differ in systematic ways” from those who did not respond to their study “should be considered exploratory rather than definitive.”

³⁸ *Id.*

advocatory when testifying. Thus, the authors conclude that jurors did not fall victim to heuristics or “white coat syndrome.”³⁹ The findings in this study demonstrate that jurors who sat in these trials engaged with the testimony they heard and were motivated to systematically process the content of that testimony rather than simply defer to expert witnesses based on their status or expertise alone.

Juror’s tendency to engage with expert testimony has been linked their understanding of the stakes of the trial process.⁴⁰ Vidmar and Diamond posit that perhaps jurors engage deeply with the evidence they hear at trial because “the gravity of the [jury’s] decision is reinforced throughout the trial by the procedures and formal atmosphere of the courtroom.”⁴¹ Whatever the reason, though, it is clear that a high level of juror engagement exists with respect to expert testimony. An excellent example of juror willingness to engage with expert testimony exists in the research conducted by Jane Goodman-Delahunty and Kosuke Wakabayashi.⁴² Their study included twelve separate juries that witnessed a live, simulated criminal trial featuring either a single prosecution forensic science expert or opposing experts.⁴³ Transcripts of jury deliberations were taken and then text mined, which is a process whereby researchers analyze the frequency of words used in relation to particular topics.⁴⁴ The authors explain that a high

³⁹ *Id.* at 30.

⁴⁰ Vidmar & Diamond, *Juries and Expert Evidence*, *supra* n. 3, at 1132.

⁴¹ *Id.*

⁴² *Supra* n. 3; *see also How Jurors Deal*, *supra* n. 3, at 57 (discussing the nature of juror questions to expert witnesses in a jurisdiction where they were permitted and concluding that 94.2% of the 257 juror questions to experts focused on the content of the expert testimony).

⁴³ *Id.* at 88.

⁴⁴ *Id.* at 89.

frequency of words related to a specific topic correlates to a high rate of discussion that, in turn, demonstrates the level of engagement and, thus, systematic processing on the part of the jurors.⁴⁵ Text mining revealed that each jury discussion of the evidence focused on the content of expert evidence, and that the few comments that jurors made that could be said to relate to juror reliance on heuristics were actually deflected back to the content of the testimony by other jurors.⁴⁶

The studies above demonstrate that jurors are inclined to systematically process expert testimony. But if we reconsider the ideal jury process posited by Vidmar and Diamond at the beginning of this paper, systematic processing only gets the jury halfway to meeting that ideal. For jurors to “consider using the [expert] evidence in their decision making only if it is judged to be reliable,”⁴⁷ they must understand the expert testimony before entering into that consideration. Research demonstrates that jurors can understand expert testimony and thus perform the process expected of them.

Neil Vidmar documented juror understanding of complex expert testimony through a series of post-trial interviews.⁴⁸ Vidmar observed three medical malpractice cases and interviewed individual jurors after the trials concluded.⁴⁹ The first of the three cases, and arguably the most scientifically complex, featured a plaintiff who brought negligence and lack of informed consent claims against her surgeon after undergoing a sacral rhizotomy only to have

⁴⁵ *Id.*

⁴⁶ *Id.* at 96 & 101.

⁴⁷ Vidmar and Diamond, *supra* n. 5.

⁴⁸ Neil Vidmar, *Medical Malpractice and the American Jury*, Ch. 12. University of Michigan Press (1995).

⁴⁹ *Id.* at 127. In the next two trials Vidmar observed, an intrauterine hypoxia case and a bowel perforation case, Vidmar interviewed jurors post-trial and his conclusion was the same, the expert testimony in each case on the medical issues was not beyond the jury’s understanding. *Id.* at 142.

continued urinary incontinence with the addition of rectal incontinence subsequent to her operation.⁵⁰ The primary issues in the case were whether the plaintiff was adequately informed of the surgical risks prior to consent to treatment, whether the sacral rhizotomy was the appropriate treatment course in relation to the plaintiff's illness, and whether the plaintiff's rectal incontinence was a result of a negligently performed rhizotomy by the defendant.⁵¹ Expert testimony was complex, but supported with demonstratives, exhibits, and tutorial testimony on interpretive skills for reading both.⁵² One particularly complex issue was the difference between stress and urge incontinence and the treatment options for both—the plaintiff's experts testified that a misreading of a cystometrogram led to a misdiagnosis of the plaintiff and, thus, a sacral rhizotomy where something less severe and presenting less risk would have been the appropriate treatment course.⁵³ In spite of this complex expert testimony on behalf of the plaintiff, the jury rendered a defense verdict. Vidmar subsequently interviewed seven of the twelve jurors in the case.⁵⁴ He found, in comparison with his own understanding of the medical evidence, that jurors exhibited "considerable sophistication about the medical issues" in the case, discussing the difference between urge and stress incontinence and the known difficulty of diagnosing one or

⁵⁰ *Id.* at 127-128. A sacral rhizotomy severs nerves relating to urinary function in an attempt to control urinary incontinence.

⁵¹ *Id.* at 128.

⁵² *Id.* at 129.

⁵³ Vidmar, *supra* n. 48, at 129.

⁵⁴ *Id.* at 131.

the other from a cystemetrogram.⁵⁵ Thus, the jurors had used what they learned from the expert testimony to determine the reliability of the claims made by the plaintiff's expert.

Additionally, research shows that not only can jurors understand expert testimony but that they can distinguish between expert testimony that is helpful and expert testimony that is unhelpful or redundant.⁵⁶ Delahunty and Wakabayashi conducted a study where 144 jury-duty eligible volunteers watched a live simulation of a criminal trial in which the accused had been charged with five counts of murder for leaving a bomb on a train.⁵⁷ A prosecution expert witness testified at the trial about bomb residue found on the defendant's duffel bag, pieces of which had been recovered at the scene. The prosecution's expert also used a computer animation that matched his conclusions on the explosion and provided a visual of his theory of how the explosion occurred.⁵⁸ The defendant also called an expert who testified that the bomb residue originated from a cardboard box that had been left under the seat in which the defendant had been sitting while a passenger on the train.⁵⁹ The study then manipulated which experts, one or both, supported their testimony with computer animations: in the first version, only the prosecution's expert used computer animation, and in the second version of the trial, the defense

⁵⁵ *Id.*

⁵⁶ Delahunty and Wakabayashi, *supra* n. 3 (examining, among other things, juror comprehension of forensic science testimony among twelve separate juries after watching a live simulated trial). *See also* Neil Vidmar, *Are Juries Competent to Decide Liability in Tort Cases Involving Scientific/Medical Issues—Some Data From Medical Malpractice*, 43 *Emory L. J.* 885, 902-903 (1994) (concluding, after conducting post-trial interviews, that juror comprehension exists even where opposing testimony is presented).

⁵⁷ Delahunty and Wakabayashi, *supra* n. 48, at 89.

⁵⁸ *Id.*

⁵⁹ *Id.*

expert also used computer animation.⁶⁰ A final variation in the trials was that in some of the trials where only the prosecution expert used the computer animations, the jury received a judicial instruction informing them of their ability to disregard expert opinions.⁶¹ Where jurors were unaware that they could be critical of the expert testimony (the no jury instruction trial), they spent little time critically analyzing the testimony. But in the trials where they received the judicial instructions and the trials where the defense expert's presentation was roughly equivalent to the prosecution's, the deliberations focused sharply on the content of the expert testimony.⁶² Juror comments revealed that they were focused on how the expert testimony informed their understanding of the primary issue in the case, identity, and revealed that they did not use the more advanced computer simulations as a heuristic device, but rather, the simulations were viewed either as informing the expert testimony itself or as being redundant.⁶³

Similarly, research has shown that juries can differentiate between conclusions that flow from invalid scientific methods and those that have greater scientific validity.⁶⁴ Kaye et al., conducted a trial simulation study where jurors watched a videotaped trial that featured actual lawyers and judges and expert testimony on mitochondrial DNA (mtDNA) evidence.⁶⁵ Juror participants in the study were 480 actual jurors from a Delaware jury pool who were arranged in

⁶⁰ *Id.*

⁶¹ *Id.* at 96.

⁶² Delahunty and Wakabayashi, *supra* n. 48, at 90.

⁶³ *Id.* at 97-99 (reporting the results of their text mining approach and providing direct quotes from jurors who participated in the study).

⁶⁴ David H. Kaye et al., *Statistics in the Jury Box: How Jurors Respond to Mitochondrial DNA Match Probabilities*, 4(4) *J. Empirical Leg. Stud.* 797 (2007).

⁶⁵ *Id.* at 805-806.

juries of eight.⁶⁶ The prosecutor in the simulated trial called an FBI analyst to testify as to the random match probability that someone other than the defendant left the genetic evidence in the case at the crime scene.⁶⁷ The defendant's expert, however, explained to the jury the appropriate method of calculating random match probability, which factors must be taken into consideration in doing so, and how the FBI analyst had not appropriately accounted for one of those factors.⁶⁸ The authors point out that two-thirds of the jurors, after deliberation, understood that the calculation methodology utilized by the FBI analyst was flawed.⁶⁹

Valerie Hans participated in the mtDNA study above and reports in a separate article that not only did the juries in this study understand the mtDNA evidence well, but also they understood it as well as sixty-five judges who took part in a later phase of the study.⁷⁰ After viewing the trials, jurors and judges were asked questions specifically targeting their comprehension of the mtDNA evidence: they were asked to provide definitions of mtDNA, rate their own understanding of the testimony they heard, and answer true or false questions on both the evidence and inferences that could flow from the evidence.⁷¹ In particular, the eleven true or false questions were designed to assess comprehension of the "basic science" behind mtDNA

⁶⁶ *Id.*

⁶⁷ *Id.* at 807.

⁶⁸ *Id.*

⁶⁹ *Id.* at 808.

⁷⁰ Hans, *Judges, Juries, and Scientific Evidence*, *supra* n. 3.

⁷¹ *Id.* at 28.

evidence and understanding of the various “inferences that could be drawn from the mtDNA evidence.”⁷²

The results of the study are telling: post deliberation, jurors, on average, answered 8.26 of the eleven questions correctly, while judges answered an average of 8.69 of the questions correctly.⁷³ Comprehension results from individual jurors showed that forty-two percent and forty-seven percent of jurors answered ten and eleven questions correct respectively.⁷⁴ The best juror comprehension scores were actually superior to those of the judges, twenty-two percent and twenty-six percent of whom answered at best nine and ten of the eleven questions correct respectively.⁷⁵

However, despite evidence indicating that juries can perform their function with respect to complex scientific evidence, there are legal scholars who suggest that the opposite is true. Proponents of this belief have suggested drastic reforms to the jury system including blue-ribbon juries, bench trials, and expert science panels in place of traditional juries.⁷⁶ The argument underlying the belief that juries are incompetent in cases featuring complex expert testimony is that they lack the ability to understand the evidence presented at such trials, and when that is the case, their only recourse is to rely on heuristic cues to determine whether to defer to an expert’s conclusions.

⁷² *Id.* at 36.

⁷³ *Id.* at 38.

⁷⁴ *Id.* at 39.

⁷⁵ Hans *supra* n. 70, at 40.

⁷⁶ See *e.g.*, Lempert, *Taking Stock* and Lilly, *supra* n. 24 (discussing possible solutions for the problem of juror inability to comprehend complex expert testimony).

A common supporting argument for the statement that juries cannot understand complex expert testimony is that individual jurors lack the appropriate educational or occupational experience to adequately assess the content and validity of expert testimony.⁷⁷ This is important because “[e]ducation and occupation are correlates of juror competence,” and because juries generally lack these essential foundations, they lack someone who might provide competent, intelligent leadership when the time comes to deliberate.⁷⁸ Proponents of this belief argue that this problem is particularly troubling in the case of dueling experts. Where juries as a whole have no personal experience with the expert evidence presented at trial—and, thus, cannot comprehend the evidence—they lack an adequate basis for choosing between conclusions rendered by opposing experts, and where that is the case, juries may be forced to rely on heuristics to resolve the issue.⁷⁹

Joseph Sanders argues that a jury’s collective lack of ability to understand complex expert testimony led to an erroneous verdict in the *Havner* case.⁸⁰ The *Havner* jurors heard scientific evidence on the teratogenicity of Bendectin from five different scientific categories: epidemiology, *in vitro*, animal studies, structure activity, and secular trend.⁸¹ Sanders’ conclusion that the *Havner* jury was wrong in returning a plaintiff’s verdict rests, in part, on the fact that jurors did not understand the relative weights that should be given to the various

⁷⁷ *Taking Stock*, *supra* n. 6, at 192.

⁷⁸ *Id.*

⁷⁹ *Id.* at 193.

⁸⁰ *Supra* n. 23. According to Sanders, the *Havner* jury awarded \$3.75 million dollars in compensatory damages and \$30 million punitive damages in a separate punitive damages trial. The punitive damages award was later reduced by half to comport with the Texas cap of \$15 million in punitive damages. *Id.* at 55-56 and author’s note 27.

⁸¹ *Id.* at 62.

categories of scientific evidence that they heard.⁸² This conclusion was reached after Sanders asked the four jurors he interviewed to rank the categories of evidence from most to least important, and the epidemiological evidence was in the middle of the pack at best or at the bottom;⁸³ however, according to Sanders, most experts would agree that epidemiology should have been at the top of the list.⁸⁴ The jurors discounted epidemiological evidence in favor of other evidence despite the fact that the epidemiological evidence in the case favored the defendant by a clear margin.⁸⁵ The plaintiff's verdict, then, did not follow what many would call the best evidence in the case, evidence that tended to show that Bendectin was not a teratogen.

Similar to the argument that jurors cannot understand expert testimony because of their lack of prior knowledge is the argument that jurors cannot be made to understand expert testimony through the trial process. In a study aiming to prove that a science-informed cross examination could mitigate any juror reliance on heuristics, the results fell short of the goal.⁸⁶ Margaret Bull Kovera and her fellow researchers conducted a trial simulation based upon a gender discrimination case where 340 undergraduate students viewed trials with multiple variations.⁸⁷ These mock jurors heard expert testimony that focused on hostile work

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Id.* author's note 40.

⁸⁵ *Id.* at 63.

⁸⁶ Margaret Bull Kovera et al., *Reasoning About Scientific Evidence: Effects of Juror Gender and Evidence Quality on Juror Decisions in a Hostile Work Environment Case*, 84(3) J. Applied Psychol. 362 (1999) [hereinafter *Effects of Evidence Quality on Juror Decisions*]; see also Lora M. Levett & Margaret Bull Kovera, *The Effectiveness of Opposing Expert Witnesses for Educating Jurors about Unreliable Expert Evidence*, 32 L. & Hum. Behav. 363 (2008) (discussing juror reliance on heuristics and the limited ability of both opposing experts and cross examination to educate jurors on complex scientific evidence).

⁸⁷ *Effects of Evidence Quality on Juror Decisions*, *supra* n. 86, at 367.

environments and that was manipulated to vary the level of general acceptance of the studies utilized by the plaintiff's expert, to vary whether the studies utilized by the expert had been peer reviewed, and to vary the ecological validity of the studies used by the expert.⁸⁸ The study also manipulated the depth of the cross examination of the expert by defense counsel: one version of the cross examination dealt primarily with legal issues while the other, "scientifically-informed," cross examination focused on the lack of construct validity in the study relied upon by the expert.⁸⁹ After viewing the trial simulation, the mock jurors answered a trial questionnaire without deliberating.⁹⁰

Kovera's group identified the factors of general acceptance, peer review, and ecological validity as heuristics upon which the jurors would rely, but they also predicted that jurors would benefit from the science-focused cross examination and thereby be better able to assess the validity of the study used by the plaintiff's expert.⁹¹ The results of the study showed support for the theory that jurors would rely on previously identified heuristic cues and peripherally process the expert's testimony: jurors found the expert's methods to be more reliable and the testimony to be more trustworthy where the expert's research had been generally accepted and was ecologically valid.⁹² However, the results of the study indicated that the science-focused cross examination had no significant effect on enabling jurors to assess the validity of the expert's testimony. Thus, jurors with no educational or occupational experience with respect to hostile

⁸⁸ *Id.*

⁸⁹ *Id.* at 368.

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Effects of Evidence Quality on Juror Decisions*, supra n. 86, at 372.

work environments, arguably a topic more easily understood than others requiring expert testimony, were not aided by the teaching tool of cross examination.

Further evidence that jurors rely on heuristics when assessing expert testimony is the relationship between highly credentialed experts whose testimony is perceived as complex and verdicts favoring the parties who call such experts.⁹³ To test this concept, Joel Cooper et al., conducted a toxic tort trial-simulation study that varied both the level of complexity of the expert testimony and the measure of credentials possessed by the expert witnesses.⁹⁴ The expectation in the study, premised on the belief that jurors rely on heuristics in the face of complex scientific testimony, was that individual juror decisions on which party prevailed would vary significantly in response to the credential and complexity-heuristic manipulations.⁹⁵ The results supported this hypothesis: ninety-one percent of jurors found for the plaintiff where a highly-credentialed expert used highly-complex testimony; whereas, sixty-four percent of jurors found for the plaintiff when a less qualified expert presented the same testimony.⁹⁶

IV. What do these studies reveal about juror competence to understand expert testimony?

Evidence that jurors are incompetent to perform their function with respect to expert testimony does exist in the studies mentioned above; however, the conclusions made from those studies are only as valid as the methods used to reach them. Juror understanding of complex testimony is a multifaceted subject, and to determine whether juries—not just individual jurors—

⁹³ Cooper et al., *Complex Scientific Testimony: How do Jurors Make Decisions?*, *supra* n. 11, at 392.

⁹⁴ *Id.* at 382-383.

⁹⁵ *Id.* at 383.

⁹⁶ *Id.* at 387.

can understand complex expert testimony each of those facets must be taken into account and tested. What informs a jury's decision? Within the jury, it is the collective understanding of the jurors—post deliberation—that ultimately moves a verdict one way or the other. What informs that understanding is the message itself, or the delivery of the message, and the messengers, i.e., the attorney and the expert; therefore, any study that purports to assess jury comprehension of expert testimony must consider each of these facets in tandem with juror understanding before arriving at a conclusion as to the ability of a jury to reach a reliable verdict. Put simply, if a study produces data that allow for a conclusion that jurors did not understand the expert testimony they heard, the next question should be why did they not understand.

As mentioned above, Joseph Sanders concluded that the four *Havner* jurors he interviewed could not have understood the scientific evidence offered in that case because those interviews revealed that juror understanding did not match the commonly held belief in the scientific community that epidemiological evidence is more reliable than other expert evidence in toxic tort cases.⁹⁷ From this evidence, Sanders explains that if we agree with the assertion that epidemiological studies carry more weight than animal studies or *in vitro*, then the logical inference is that the jurors he interviewed did not understand that fact.⁹⁸ But Sanders never asks the obvious question: why? Perhaps the answer is as simple as this: no one ever taught the *Havner* jurors that epidemiological evidence was more reliable—stated another way, perhaps they understood the evidence well, and it was the presentation of the evidence that was lacking. We cannot know. As Vidmar and Diamond point out, the problem with studies like Sanders' is

⁹⁷ Sanders, *supra* n. 82.

⁹⁸ *Id.*

that there is no baseline against which we can measure juror understanding, i.e., we don't know what a "rational response to the evidence would have been."⁹⁹

Yet in empirical studies where baseline data have been obtained, clear answers to the why question appear.¹⁰⁰ Lynne ForsterLee and her fellow authors conducted a study designed to assess whether variation in the method of presentation influenced juror comprehension of expert testimony. The thorny issue for jurors in this mock trial simulation was the consolidation of four plaintiffs with injuries differing in severity. The authors explain that past research demonstrates that where the number of plaintiffs reaches four, juries have difficulty differentiating between them with respect to compensatory awards and have difficulty recalling evidence.¹⁰¹ The trial itself was on damages—the parties stipulated as to liability, and the jurors were placed into three different groups: one that received a "bottom line summary" of the expert's testimony before hearing her testimony,¹⁰² one that received the same summary after hearing the expert testify, and another that did not receive the summary at all.¹⁰³ With respect to a base line, a group of law

⁹⁹ Vidmar and Diamond, *supra* n. 3, at 1148.

¹⁰⁰ Lynne ForsterLee et al., *The Bottom Line: The Effect of Written Expert Witness Statements on Juror Verdicts and Information Processing*, 24 L. & Hum. Behav. 259 (2000); see also Dale A. Nance & Scott B. Morris, *Juror Understanding of DNA Evidence: An Empirical Assessment of Presentation Formats for Trace Evidence with a Relatively Small Random-Match Probability*, 34(2) J. Leg. Stud. 395, 435 (2005) (concluding, after analyzing control and test group data, that juror ability to understand statistical DNA evidence may depend on the level of instruction, or lack thereof, that is used in the presentation of the evidence); Shari Seidman Diamond & Jonathon D. Casper, *Blindfolding the Jury to Verdict Consequences: Damages, Experts, and the Civil Jury*, 26(3) L. & Socy. Rev. 513, 521 (1992) (explaining that statistical models may not convey complex and abstract concepts as well as concrete models do).

¹⁰¹ ForsterLee et al., *supra* n. 100, at 262.

¹⁰² The bottom line summary was approximately 750 words long. The summary named the expert, provided the expert's credentials and position, and provided the "bottom line" facts that would be relayed by the expert. *Id.* at 268.

¹⁰³ *Id.*

students evaluated the evidence in the case to determine the extent of the damages in relation to each of the four plaintiffs.¹⁰⁴ The results of the study revealed that those two groups that received the summary were able to reliably differentiate damages as between the four plaintiffs while the no summary group was not.¹⁰⁵ Thus, in this study, the method of presentation of the expert evidence was the answer to why jurors did or did not understand the testimony. The ForsterLee study goes a long way in demonstrating that the proper focus might be on the message itself rather than the recipient when we are considering juror comprehension. Thus it seems that Richard Lempert is correct in saying that education is correlated to juror competence; however, it may not be necessary that education occur before a juror actually shows up for jury duty—it seems clear that the necessary education can occur during the trial process.

Another facet of the trial process that is overlooked by those who conclude that jurors ultimately rely on heuristics in assessing expert testimony is the deliberation process: deliberations are conspicuously absent from these studies, but the deliberation process has been shown to increase both juror comprehension of the expert testimony as a whole and to reduce reliance on heuristics.¹⁰⁶ Assessing juror comprehension of expert testimony pre-deliberation leaves out a fundamental trial process that enhances juror understanding of the evidence. And while it is true that individual juror comprehension of expert testimony may vary, those jurors

¹⁰⁴ *Id.* at 264.

¹⁰⁵ ForsterLee, *supra* n. 100, at 268.

¹⁰⁶ Hans, *Judges, Juries and Scientific Evidence*, *supra* n. 3, at 36 (explaining that deliberation is an essential facet of the jury fact-finding process and demonstrating very good juror comprehension of complex expert testimony post-deliberation); Delahunty & Wakabayashi, *Adversarial Forensic Science Experts: An Empirical Study of Jury Deliberation*, *supra* n. 3, at 96 (explaining that statements made in deliberations suggesting the possibility of reliance on an expert's opinion because of her expertise, i.e., reliance on a heuristic, were offset by statements rejecting that method of decision making); Kaye et al., *supra* n. 64, at 815-817 (discussing the jury's post-deliberation shift from a pre-deliberation rating of a 69% probability of guilt to 75%).

who achieve a greater understanding of the evidence at trial will aid others in their own comprehension during deliberations.¹⁰⁷ We know that to be true, but neither Kovera et al.,¹⁰⁸ nor Cooper et al.,¹⁰⁹ permitted jurors to deliberate in their studies before reaching the conclusions that they did.

Similarly, studies suggesting that jury verdicts are unreliable because of juror reliance on heuristics often do not actually measure juror understanding of the expert testimony¹¹⁰; rather, the authors of these studies extrapolate their conclusions from individual juror verdicts. The Kovera et al., study is an example: the authors varied the construct validity of the study relied upon by the plaintiff's expert in their mock trial, and where that construct validity was suspect, relied upon cross examination to convey those weaknesses to the jury.¹¹¹ Contrary to Kovera's expectations, however, verdicts still predominantly favored the plaintiff.¹¹² From these results, the authors extrapolate the conclusion that the jurors "were not sensitive" to variations in the construct validity of the study upon which the expert relied, i.e., the jurors simply did not understand and resorted to relying on heuristics to make their decision.¹¹³ Yet, the possibility that jurors were sensitive to the construct validity was not tested, and thus, once again, the why

¹⁰⁷ Diamond, *How Jurors Deal*, *supra* n. 3, at 62.

¹⁰⁸ Kovera et al., *Effects of Evidence Quality on Juror Decisions*, *supra* n. 87, at 368 (determining that jurors rely on heuristics without allowing them to deliberate).

¹⁰⁹ Cooper et al., *Complex Scientific Testimony: How do Jurors Make Decisions?*, *supra* n. 11, at 384 (determining that jurors rely on heuristics without allowing them to deliberate).

¹¹⁰ See also Vidmar & Diamond, *Juries and Expert Evidence*, *supra* n. 3, at 1156 (Discussing the importance of comprehension tests in determining shifts from systematic/central processing to peripheral processing/heuristics).

¹¹¹ Kovera et al., *supra* n. 108, at 372.

¹¹² *Id.*

¹¹³ *Id.*

question remains unanswered. One of the answers to that question could certainly be that jurors were indeed sensitive to the variations pointed out by defense counsel, but they discounted them for some reason, e.g., perhaps counsel did not ask questions that elicited answers that taught the jury about how construct validity affects probative value, or perhaps counsel did not argue that point well in closing.¹¹⁴ Another possible answer to the why question is provided by Kovera and her fellow researchers: perhaps the cross examination was poorly conducted and failed to educate and, thus, sensitize the jurors to the construct validity issues in those trials where they existed.¹¹⁵

Jurors themselves tell us that it is a failure on the part of the attorneys and their experts to educate them that often leads to difficulty in decision making.¹¹⁶ Sanja Kutnjak Ivkovic, Valerie P. Hans, and their research assistants conducted tape-recorded interviews with fifty-five jurors with the goal being to assess how jurors received expert testimony and to determine how that testimony was used in making a decision.¹¹⁷ Unfortunately, Ivkovic and Hans could not create a rubric for assessing juror comprehension in this study because they did not know the actual content of the expert testimony,¹¹⁸ so we are left with the jurors own self-assessments of their ability to understand the substantive content of the testimony that they heard. Yet, the juror responses are revealing: jurors honestly gauged their own understanding of the expert testimony

¹¹⁴ See Vidmar & Diamond, *Juries and Expert Evidence*, *supra* n. 3, at 1154 (discussing the results of the Cooper et al., study *supra* n. 11 and explaining that where comprehension tests are not taken, many possibilities, including the possibility that jurors systematically processed the testimony, remain).

¹¹⁵ Kovera et al., *Effects of Evidence Quality on Juror Decisions*, *supra* n. 87, at 372.

¹¹⁶ *Judging the Messenger*, *supra* n. 4, at 455.

¹¹⁷ *Id.* at 479.

¹¹⁸ *Id.*

and then described how they proceeded to evaluate the experts and their testimony based on that understanding or lack thereof.¹¹⁹ These juror comments reveal that where the expert was a good teacher, making use of demonstratives, bridging the gap between complex medical terminology and more accessible language, and streamlining testimony to the pertinent question to which their testimony is relevant, jurors believed they had a firmer grasp on the substantive content of the expert testimony and were more confident in their decision making.¹²⁰

Considering all of the above together, we have seen that jurors are motivated to and do systematically process complex expert testimony at trial, and we have also seen that jurors are capable of and often do understand that evidence well enough to perform the task demanded of them at trial; however, certain studies, and jurors themselves, tell us that where they cannot understand that evidence, it is often the result of expert testimony that is unclear, and the result is either a wholesale discounting of the evidence,¹²¹ or reliance on heuristics.¹²² Thus, a problem with respect to the reliability of jury verdicts does exist—recall that this paper suggested above that answering the question of whether jurors were capable of understanding complex expert testimony was not the end of the inquiry. The answer begs the question: what then?

V. Educational principles to overcome the essential paradox of expert testimony.

¹¹⁹ *Id.* at 455 & 477.

¹²⁰ *Id.* at 475-476.

¹²¹ Levett & Kovera, *supra* n. 87, at 370 (explaining that the presence of an opposing expert may make a reliability assessment so difficult for jurors that they discount the testimony and anchor their verdict on the other evidence in the trial).

¹²² Vidmar, *supra* n. 48, at 172; Raitz et al., *supra* n. 4, at 394-395; Levett & Kovera, *supra* n. 87, at 365.

Knowing what we do about a jury's ability to understand complex expert testimony, the goal of trial attorneys should be to try to determine how best to overcome the essential paradox of expert testimony, i.e., trial attorneys must determine how best to present complex expert testimony to laypersons. For some, jury reform tools are a clear choice in overcoming the paradox and have been shown to increase juror comprehension of complex evidence.¹²³ Jury reform tools provide a clear advantage to jurors in performing their charge with respect to expert testimony; however, more can and should be done. A starting point might be located by listening to jurors themselves describe what informed their understanding of expert testimony:

Where I could, I used the experience and knowledge that I had. Where I couldn't, which was more the case than otherwise, I went on the level of detail that the person had, the train of thought the person carried, the confidence with which the person gave their answers, the willingness to field any questions without belligerence, you know, with a degree of confidence, saying, "I know what I'm talking about." And that's basically how I did it. I didn't know any other way.¹²⁴

The quote above comes from a juror who was describing the methods she used in trying to assess the reliability of the testimony she heard at trial when confronted with

¹²³ For a summary of the research on jury reform tools and their ability to aid jurors in understanding complex expert testimony, see Diamond, *How Jurors Deal*, *supra* n. 3, at 64-65 (discussing some of the positive research results in studies focusing on increasing juror comprehension of expert testimony through the use of a variety of jury reform tools); see also ForsterLee et al., *supra* n. 100, at 268 (discussing the effectiveness of summaries of expert witness testimony in aiding jurors in understanding complex expert testimony); Hans, *Judges, Juries and Scientific Evidence*, *supra* n. 3, at 41 (discussing the beneficial effect of juror notebooks and checklists on comprehension of mtDNA evidence).

¹²⁴ Ivkovic & Valerie P. Hans, *Judging the Messenger*, *supra* n. 7, at 477.

conflicting expert testimony.¹²⁵ The method of reasoning described by the juror is a rational and perhaps necessary methodology for choosing between opposing experts. However, conspicuously absent from the factors considered by the juror are the methods by which they experts reached their conclusions or the data on which the experts relied; instead, what we see is a juror using heuristics to judge the expert testimony because, as she admits, she “didn’t know any other way.” Perhaps that is because the attorneys and the experts in the case never taught the juror how to measure reliability; or perhaps that is because she did not understand the testimony provided by the experts. But maybe she could have.

In contrast, consider the following two juror comments:

[He] was a neurologist. . . . He was just excellent and convincing, and he could speak to the court and the jury in lay terms. . . . He really made things very clear. And I believe he does some teaching, and he was in fact teaching us, showing us, you know, what the systems were, what an X ray looks like in one case and what it looks like in another case. . . . And [he] made himself very clear.¹²⁶

Had it not been explained as well as it was . . . there are certain things I wouldn’t have understood. There were medical terms I would not have understood.¹²⁷

According to these jurors, experts who were able to streamline their testimony, who tutored while they testified, and who used demonstratives that aided in concretizing abstract

¹²⁵ *Id.*

¹²⁶ *Id.* at 455.

¹²⁷ *Id.* at 474.

concepts made the challenge of understanding the expert testimony they heard that much easier.¹²⁸ The question becomes, then, how do we present expert testimony in such a way as to allow jurors to understand and adequately assess the reliability of the testimony.¹²⁹

Educators have faced a similar hurdle ever since the first teacher put chalk to chalkboard. Scholars in the field of education have explored innumerable ways to convey new, abstract concepts to students, and while a complete summary of the various methodologies formulated by educational scholars to that end is beyond the scope of this paper, this section of the paper will discuss one of the basic methods educators use to aid novices in completing a task that is foreign to them. That method will then be applied to one of the mock trial scenarios discussed above to suggest that juror understanding of the expert testimony could have been cultivated if approached correctly.

The field of education has a term that describes a method for walking novices through the basics of a new skill—the term is “scaffolding.” The term was coined by Wood et al., in an article exploring the best method by which someone who is “expert” in a particular topic, subject, or field, might aid or “tutor” someone who “less expert” in that topic, subject, or field.¹³⁰ Appropriate scaffolding allows a learner to span the gap between his present capability and a task that would be beyond that ability if he attempted the task unassisted.¹³¹ This is achieved by “controlling those elements of the task that are initially

¹²⁸ *Id.* at 475-476.

¹²⁹ Vidmar and Diamond, *supra* n. 3, at 1135.

¹³⁰ David Wood et al., *The Role of Tutoring in Problem Solving*, 17 *J. Child Psychol. Psych.* 89 (1976).

¹³¹ *Id.* at 90.

beyond the learner's capacity, thus permitting him to concentrate upon and complete only those elements that are within his range of competence."¹³² Thus, the expert instructor breaks the new task down by teaching its constituent parts, which are within the ability of the learner, and as the learner assimilates this new knowledge and completes these smaller, more easily digestible tasks, he eventually has the ability to engage with and complete the whole task.

An excellent example of scaffolding at work can be seen in an experiment conducted by Rob J. Nadolski et al., the goal of which was to determine the optimal number of steps into which a complex skill should be broken down to engender a best level of authentic learning.¹³³ The authors of this study begin by acknowledging that new "whole tasks" are difficult for novice learners without some form of simplification.¹³⁴ The whole task in this study was "preparing and pleading a case in court," and the learners or novices were law students.¹³⁵ The question the authors hoped to answer was whether optimizing the number of steps or individual tasks it takes to learn this whole task will increase comprehension of and ability to perform the whole task.¹³⁶ Thirty five law students with no prior experience with this task were divided among three groups: no steps, intermediate number steps, and

¹³² *Id.*

¹³³ Rob J. Nadolski et al., *Optimizing the Number of Steps in Learning Tasks for Complex Skills*, 75 *British J. of Educ. Psychol.*, 223 (2005).

¹³⁴ *Id.* at 224.

¹³⁵ *Id.*

¹³⁶ *Id.*

high number of steps.¹³⁷ Additionally, those students who were in a scaffolded-learning group received “process worksheets” that outlined the tasks to be performed at each step of the process—these sheets operated as further guidance through the learning process.¹³⁸ The law students then went through the learning process, and the authors tested each group’s ability to perform the whole task at the conclusion of the learning process.¹³⁹

The results of the study clearly demonstrated that those students who were in the scaffolded-learning groups performed the whole task, pleading a case in court, better than the group where the learning process had not been broken down into steps.¹⁴⁰ Further, as between the high number of steps group and the intermediate number of steps group, the intermediate step group demonstrated the highest level of performance.¹⁴¹ Thus, the authors conclude that their study demonstrates, in addition to the positive effects on learning and performance that a stepped-learning, or scaffolded-learning process offers, too many or too few steps can actually lead to decreased performance because either option presents a task that increases in difficulty.¹⁴² The results of the Nadolski study, then, converge with ELM’s and HSM’s theories of cognition, i.e., that recipients of a message, or a lesson, will often be unable to comprehend or perform where it becomes too difficult to do so, and as others have demonstrated, when this happens for jurors, the end result may be jurors who rely on

¹³⁷ *Id.* at 227.

¹³⁸ Nadolski et al., *supra* n. 133. at 234.

¹³⁹ *Id.* at 231.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² *Id.* at 234.

heuristics as opposed to jurors performing the content driven reliability assessment that the legal system expects of them.

Scaffolding can easily be applied by attorneys and experts in their trial presentations and by researchers in their experiments. Return for a moment to the Kovera et al., study where the authors concluded that a science-informed cross examination provided little benefit in aiding a jury in understanding the flaws in the method utilized by an expert in reaching her conclusion.¹⁴³ Also recall that the authors posited in that study that jurors who are motivated and able to systematically process expert testimony should be sensitive to the tutelage of a cross examination designed to educate them on the construct validity of the study on which an expert anchors her conclusion.¹⁴⁴ The plaintiff's expert in the mock trial, a gender discrimination case, described a study she had conducted that found that a man who views "sexualized advertisements" is more likely to engage in sexually charged behavior towards a woman: viewing such an advertisement will cause the man "to sit closer to her, to evaluate her more negatively, and to ask her a greater number of sexually inappropriate questions."¹⁴⁵ From this study, the expert concluded that the existence of sexualized advertisements "in the plaintiff's workplace increased the likelihood that her coworkers had engaged in discriminatory behavior" toward her.¹⁴⁶

¹⁴³ Kovera et al., is discussed *supra* pages 13-14.

¹⁴⁴ Kovera et al., *supra* n. 87, at 366.

¹⁴⁵ *Id.* at 367.

¹⁴⁶ *Id.*

Viewing the Kovera et al., study through the lens provided by Nadolski et al., above, the whole task at which the jurors supposedly failed was assessing the construct validity of the study on which the expert relied.¹⁴⁷ Where the construct validity of the study was at issue, the expert had only used one measure of whether the behavior was sexually discriminatory—the alleged victim’s rating of that behavior.¹⁴⁸ However, where greater construct validity existed, the expert utilized a greater number of measures to ensure the reliability of her results.¹⁴⁹ Where the defense attorney cross examined this expert on the construct validity of her study, the attorney simply asked whether the method used to determine that men who viewed sexualized advertisements were more likely to discriminate based on gender was valid, and depending upon the trial condition, the expert answered that she had only used the one measure or the greater amount.¹⁵⁰ From this answer, jurors who likely had little to no experience with the concept of construct validity were supposed to divine the reliability, or lack thereof, of the study. It is a small wonder that the jurors missed this important fact in their decision making. The authors themselves at the conclusion of their paper wonder that perhaps a more thorough cross examination may have had greater efficacy in educating the jury as to the lack of construct validity.¹⁵¹ While one can only speculate until further research is conducted, it seems likely that they are correct in that wondering.

¹⁴⁷ *Id.* at 367-368.

¹⁴⁸ *Id.* at 368.

¹⁴⁹ *Id.*

¹⁵⁰ Kovera et al., *supra* n. 144, at 368.

¹⁵¹ *Id.* at 372.

Imagine if the authors had scaffolded juror understanding of construct validity as Nadolski et al., did in their experiment. The defense attorney could have begun by prompting the expert to explain the basic principles that underlie a reliable study. The attorney could have focused in on construct validity and asked the expert to explain its importance in ensuring reliable research results, breaking the concept into its discrete elements as Wood et al., explain is so crucial to tutoring novices embarking on learning a new task.¹⁵² Once a thorough examination of that process was completed, the attorney could have then asked the expert to explain whether construct validity was present in the study on which she based her conclusion that the presence of sexualized advertisements in the plaintiff's workplace made it more likely that the plaintiff was the victim of gender discrimination. Recall, too, that in the Nadolski study, students were given process worksheets to guide their learning.¹⁵³ These process worksheets are similar to jury-reform tools shown to increase juror understanding.¹⁵⁴ Combining a scaffolded approach to the concept of construct validity with jury-reform tools such as note taking, check lists, and expert summaries could only have increased juror comprehension of this topic.

Even for those who have never sat through a course on educational best practices, the concept of scaffolding will not seem foreign. Anyone who has ever sat through a well taught class will recognize the concept of scaffolding immediately, and recall in that recognition its worth. Think back to the first juror quoted above who explained the process

¹⁵² David Wood et al., *supra* n. 130, at 90.

¹⁵³ Nadolski et al., *supra* n. 133. at 234.

¹⁵⁴ See *supra* n. 123 for articles discussing the role of jury-reform tools in engendering juror comprehension of complex expert evidence.

she used to reach a determination on expert testimony, ending with the simple truth that she “didn’t know any other way.”¹⁵⁵ If we want jurors to make reliable determinations on expert testimony, and thus reliable decisions at trial, attorneys and the experts they call at trial must provide jurors with another way. Scaffolding is but one of countless ways by which attorneys can do this. For those searching for answers to the questions raised by studies examining the problems jurors sometimes have with expert testimony, educational theories, in combination with jury-reform tools, may provide the answers sought.

VI. Conclusion.

It seems clear that jurors have the potential to understand and evaluate complex expert testimony. We know that jurors recognize that one of their assigned tasks is to understand such testimony and that they are strongly motivated to do so. The ELM and the HSM theories of cognitive processing tell us that when recipients of a persuasive message are highly motivated to understand the message presented to them they will engage with the message and make rational determinations about its reliability. Jurors can do this.

Nevertheless, worries about whether jurors are rendering accurate verdicts based upon well-reasoned deliberations are understandable. Given what empirical data tell us, however, circumventing the traditional jury trial in cases featuring complex expert testimony is not necessary to quiet these worries. Rather, attorneys concerned with whether the messages they and their experts proffer at trial are understood should focus on the way in which those messages are delivered. The field of education can provide attorneys and experts with ways to convey complex testimony to jurors who lack any prior experience with the subject matter of the

¹⁵⁵ Ivkovic & Valerie P. Hans, *Judging the Messenger*, *supra* n. 124, at 477.

testimony so that they not only understand the testimony, but are taught how to evaluate that testimony as well. Learning how to do this will require a little work, but if the end result of the work is a jury that truly understands the expert evidence in the case, it will have been well worth the effort.