Dancing Through the Fire—Cross-Examining the Breath Test Technician[1]

By Lauren McLane

"Do not be discouraged by the initial challenge of learning this science. Regardless of your background you ought to be able to develop a commensurate level of expertise. By knowing as much as possible about the applicable science, it is possible to effectively challenge breath tests. In addition, with knowledge comes the confidence to successfully meet the challenge of cross-examination in the courtroom."[2] I had *serious* doubts after I first read those words of Jon Fox and Ted Vosk in Chapter 13A—The Datamaster—in *Defending DUIs in Washington* before preparing my first cross-examination of a breath test technician.[3] "Yeah, right," is what I thought. There was no way I could learn all of those scientific concepts, much less apply them in some intelligible fashion at trial!! But, I kept reading. I kept learning. I kept cross-examining. And those words, for me, rose up off of the pages of a book and became a way of practice.

Are you with me when I proclaim that cross-examining a technician is one of the most daunting tasks in a DUI trial? If not, please contact me, I would like to take you out for a tea. Not only is it daunting, but it is also, next to voir dire, the most critical element in defending a DUI breath test case. Your theory about that .15g/210L breath alcohol concentration (BAC) test hinges, in large part, on what you are able to do in cross-examination of the technician.

It is dangerous. It is complex. It is unpredictable (no matter how well you think you know the testifying technician). Cross-examining a technician is like looking into a fire you must somehow pass through —unfortunately, not one of those fires that you roast your s'mores over! With all that being said, it is also exhilarating. Learning the science and then, most importantly, practicing how to apply it in the courtroom will change your DUI defense life forever. It is like dancing through the fire.

To help you dance through that fire, this article will focus on the important steps to a meaningful cross-examination of the technician. First, it is important that you interview your technician and test his or her knowledge, even if you have had prior experience with

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[1] Thank you Chris Jackson. My approach to the technician (and toxicologist) would not be where it is without you.

[2] Cowan, Douglas and Fox, Jon, also contributing author Vosk, Ted, Defending DUIs in Washington, Third Edition, LexisNexis, 2007, Jon Fox and Ted Vosk in § 13 A.8. This book taught me how to try a DUI case, so thank you Mr. Cowan, Mr. Fox, and Mr. Vosk!

[3] Hereinafter referred to as "technician."

that particular expert.[4] Unfortunately, in many jurisdictions, DUI defense lawyers are still being given three technician names just days prior to trial; that is inappropriate and it violates, *inter alia*, the court rule. Next, briefly covered, will be the "chapters"—some of the bullet points—that make up your technician cross-examination and how your theory for the BAC in your case informs what points will make the final cut. Lastly, applying all the scientific principles that you learn at trial can be treacherous; however, using the Pozner and Dodd Chapter Method and Three Rules for cross-examination provides a doable, mechanical approach to this science-to-courtroom application process.

Step 1: Force them to play by the rules—Enforce 4.7

In 2011, my supervisor, Chris Jackson, was able to successfully coordinate an arrangement in Seattle Municipal Court so that, upon defense request, one named technician (and toxicologist) must be revealed to the defense ten days prior to trial (i.e., at "DUI Readiness").[5] Unfortunately, in many jurisdictions, either the government is still providing counsel with multiple possible technicians who may be called to testify or defense lawyers are simply not demanding that one name be timely revealed.

Often, I have found that DUI trials are treated differently than others when it comes to the discovery process, by everyone. In challenging technicians and their claims regarding uncertainty and other scientific concepts, judges, prosecutors — and sometimes even defense lawyers— are guilty of living within the *status quo* when it comes to DUI cases. Any notion that "a technician is a technician is a technician," is entirely false. The technicians, in King County, for example, interview and testify differently from one another, depending on their level of knowledge, experience, and their own personal characteristics exhibited at trial. Further, depending on your theory of the BAC test in your particular case, your questions may become more specific and in depth, and the technician's responses to those questions will vary in important of ways depending on the technician testifying. In addition, I have found that technicians change their testimony over time; for instance, in one trial the technician may know nothing about breath temperature and its percentage impact on the test, and in the next trial that same technician is prepared to offer such a percentage impact. Uncovering and then effectively preparing for these differences among the potential technicians requires investigation by the DUI defense lawyer.[6]

There is *no* CrRLJ (or CrR) 4.7 exception for DUI cases. The prosecutor's mandatory, continuing discovery obligations include the disclosure of one technician witness in a timely fashion prior to trial. CrRLJ 4.7(a) states in relevant part:

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[4] I respectfully note that while I may refer to the breath test technician as an "expert," there are significant motions under ER 702 that we should be raising concerning the technician's depth of knowledge related to those things he or she professes during testimony. Another day, another article.

[5] I refer to this as an arrangement because, while Chris Jackson did plenty of argument on this point, it ultimately resolved as an agreement that the City would reveal one name ten days prior to trial. Feel free to contact me for more details about this approach.

[6] It is, indeed, worth noting there may be strategic reasons why you may choose not to interview a particular technician on a particular topic. That decision will be made after careful and thorough consideration by the Defense.

(1) Except as otherwise provided by protective orders or as to matters not subject to disclosure, the prosecuting attorney **shall**, upon written demand, disclose to the defendant the following material and information within his or her possession or control concerning:

(i) the names and addresses of persons whom the prosecuting authority **intends to call** as witness at the hearing or trial…

(vii) any expert witnesses whom the prosecuting authority **will call** at the hearing or trial, the subject of their testimony, and any reports relating to the subject of their testimony that they have submitted to the prosecuting authority.

The purposes of CrRLJ 4.7 are "to provide adequate information for informed pleas, expedite trial, minimize surprise, afford opportunity for effective cross-examination, and meet the requirements of due process." *State v. Copeland*, 89 Wn. App. 492, 497, 949 P.2d 458 (1998). To put it best, in the words of Chris Jackson:

> CrRLJ 4.7 does not allow a party to disclose a list of *potential* witnesses, and then ambush the other side with the *actual* witness on the day of trial. This is especially true where an expert is involved since the nature of the testimony will be more complex. No provision permits withholding of the identity of a witness in this manner, and the City's practice of doing so circumvents its obligations under the discovery rules. The rule's requirement that the prosecuting authority disclose in advance the identity of each witness, as well as the substance of his/her testimony and the materials relied upon, is meant to provide specificity in order to facilitate preparation of a defense *to that information*. No latitude is permitted for the City to hedge its bets by supplying superfluous information and forcing the defense to "chase shadows," all the while withholding the identity of its *actual* witness until the trial begins.

Chris Jackson, outline for Washington Defender Association 2011 CLE presentation, "Name that Tech and Tox."

Further, *State v. Burri*, 87 Wn. 2d 175, 550 P.2d 507 (1976), mandates an interview with every witness the government intends to call prior to trial. Critically, not an interview conducted at the last minute (i.e. the evening before your trial is to start when the government decides to reveal which technician can make it to testify the next day), but rather a meaningful opportunity to interview the technician. "[A] defendant is denied his right to counsel…if the actions of the prosecution deny the defendant's attorney the opportunity to prepare for trial. Such preparation includes the right to make a full investigation of the facts and law applicable to the case." *Burri*, 87 Wn.2d at 180.

Take a stand in your jurisdiction and demand one technician witness be disclosed.

Step 2: The "Chapters" of Cross

The most difficult task of cross-examining the technician is learning or, even more complicated, conceptualizing the scientific principles of breath testing. This requires a level of commitment that will really rock your world, especially if you are a public defender with limited amounts of time. To start, I took *Defending DUIs in Washington* home one Thanksgiving, and I returned to work a different DUI defender. Reading that book provides you with a very competent and sufficient base-level of knowledge. From there, your knowledge is only limited by the time you have available to try these cases. I am a public defender, so I feel your pain when it seems like there is no time to dig in. But, if you want to *really* cross-examine a technician, it is a price worth paying.

There are a wide variety of scientific (and not so scientific) points (chapters) that you can cover in your cross-examination of the technician. When I first started DUI practice, I threw about every possible issue with the Datamaster up on the wall to see what would stick during cross-examination. As my knowledge and practice evolved, and as I started to pay more attention to what jurors can really take in while seated in the box, I swiftly changed my technique. Now, I ensure my technician cross-examination has chapters that support my theory about the BAC test in my particular case. Anything else does not make the final cut.

For example, if I have a case where my client's performance on the field sobriety tests was stellar ("passing") and the stop related to minimal driving difficulty, I may employ an all-out assault on this lemon of a Datamaster machine — that approach may consist of almost every stinking problem I can come up with. However, if my client is diabetic or is a painter, then I may only focus on two principles — i.e., interference and, maybe, breath temperature for good measure (no pun intended). In lower BAC cases, your only cross examination may be related to uncertainty and Washington State Patrol's (WSP's) inadequate understanding and application of uncertainty by the technician.

These are just a few examples of how your theory about the BAC test (or machine) in your case drives what your chapters of cross-examination will ultimately be.

The points outlined below are only intended as suggestions — they are not exhaustive by any means, but also try not to exhaust your jurors if a particular point is unnecessary to highlight in your specific trial. Here are just a few examples of what you can seek in cross-examination of the technician.

A. Repair records—Machine's operability

In every case, the first stop is the WSP's breath test section website where I can get all the "goods" on my particular Datamaster. Significantly, not every repair need be documented under WSP's protocols; thus, it is particularly important to check the CAD logs to see how many times technicians were called to work on the machine versus how many repair records were kept. You will likely find that a technician was called to respond to a Datamaster more times than he or she left a paper trail of the work required on the machine.

When you do find repair records, there is much cross-examination fodder there. For example, in one case, my particular Datamaster had eight different repairs to its five-way valve required over the course of a few months of its life span. The five-way valve is a valve that directs the vapor flow path for the simulator solution and the breath sample into the sample chamber at the appropriate times. Simply put, if not working properly, the subject sample can be contaminated by the simulator solution.

I have had other cases where technicians were called out to the BAC Room because of power or voltage problems, resulting from police officers carelessly putting boxes of mouthpieces on top of the cord. Ultimately, this caused the Datamaster to go in and out of power and resulted in electrical concerns. The sample control board eventually had to be replaced at the technician's final outing. Significantly, the Datamaster works on electrical signals and currents; voltage issues, therefore, are problematic. What was happening to that Datamaster and all of its electrical parts due to variations in its voltages *before* the sample control board was replaced? That is my response when the technician says, "Well, the machine told us there was a problem and we fixed it!"

Check the Database, repair logs, CADs, and all other documentation related to your specific Datamaster in every case. I once had a juror who was a plumber tell me that he would not use the Datamaster in his line of work even if it was applicable. ☺

B. Breath temperature

The Datamaster is set to presume that the average human breath temperature is 34 degrees +/- .2 degrees Celsius; the simulator solution, which is used to mimic human breath and to serve as a reference point for the Datamaster during the breath test sequence, is set so that its temperature reads within those parameters. The 34 degrees Celsius presumption, relies upon 1950's research conducted by R.N. Harger, R.B. Forney, and H.B. Barnes in *Estimation of Level of Blood Alcohol from Analysis of Breath*, Journal of Laboratory and Clinical Medicine, Vol. 36, 1950, pp. 306-18. Since the 1950s, however, the scientific literature and research has expanded, and it is now readily accepted that average human breath temperature is at least 35 degrees Celsius. A.W. Jones, *Quantitative Measurements of the Alcohol Concentration and the Temperature of Breath During a Prolonged Exhalation*, Acta. Physiol. Scand., Vol. 11, 1982, pp. 407-12; Dale Carpenter, *Breath Temperature: An Alabama Perspective*, 9(2) News I. of the Int'l Ass'n for Chem. Testing 16, 17 (1998).

Breath temperature is a factor that Rod Gullberg, former head of the WSP breath test section, indicated was one of the biological variables to be accounted for when determining measurement uncertainty. For every 1 degree Celsius higher the subject's breath temperature is from the Datamaster's presumed average temperature, the estimated concentration of alcohol will be increased, conservatively, by 6.5%. A.W. Jones, *How Breath Technique Can Influence the Results of Breath-Alcohol Analysis*, Med. Sci. Law (1982) Vol. 22, No. 4, 275-80, at 275; *see also* Harger, *Estimation of Level of Blood Alcohol from Analysis of Breath*; and A.W. Jones, *Disposition and Fate of Ethanol in the Body*, *in* Medical-Legal Aspects of Alcohol 47, 85 (James Garriott ed., 4th ed., 2003).

The bottom line is: Breath temperature is considered an important biological variable in breath testing, so much so that technicians will readily admit this is a problem and then be quick to assert that WSP's uncertainty calculation accounts for this issue. Even though it is a problem, the Datamaster does not measure breath temperature. And recent testimony by technicians seems to indicate that WSP is electing not to activate this function when it equips our state with the new breath test machine — the Drager. Furthermore, no technician I have encountered has been able to adequately describe how the WSP uncertainty calculation is applied or how it accounts for the impact breath temperature has on BAC results.

C. Exhaled volume

This is commonly referred to as the concept of "the longer you blow, the higher you go." In other words, the longer a person exhales his or her breath during testing, the higher the alcohol concentration on his or her breath reported. Dr. A.W. Jones, Dr. Kurt Dubowski, Rod Gullberg, and many other scientists, including local experts Dr. Joseph Anderson and Dr. Michael Hlastala, have researched and written peer-reviewed articles supporting this well-known concept that as the exhaled breath continues in length, the concentration of alcohol increases over that period of time. In their article, *The Impact of Breathing Pattern and Lung Size on the Alcohol Breath Test*, Annals of Biomedical Engineering, Vol. 35, No. 2, February 2007, pp.264-72, Drs. Hlastala and Anderson found not only the commonly observed increase in alcohol concentration in breath during the exhaled breath, but also that alcohol exchange in the airways is dependent on lung size of the subject. The results in that study were further validated by C. Dennis Simpson, Jessica A. Kerby, and Scott E. Kerby in their article *Varying Length of Expirational Blow and End Result Breath Alcohol*, International Journal of Drug Testing, Vol. 3.

Significantly, Rod Gullberg's article, *Mathematical Analysis of Breath Alcohol Profiles*, Journal of Analytical Toxicology, Vol. 14, November/December 1990, 358-67, recognizes the well-established principle that alcohol concentration in breath increases as the breath continues in exhalation. As observed and written by many scientists in the field, independent of a subject examination and estimation of lung size, the exhaled volume factor is always present in breath testing. *See* Ohlsson, J., Ralph, D.D., Mandelkorn, M.A., Babb, A.L., and Hlastala, M.P., *Accurate Measurement of Blood Alcohol Concentration with Isothermal Rebreathing*, Journal of Studies on Alcohol, Vol. 51, No. 1, 1990, pp. 6-13; *see also* Grubb, D., Lindberg, Rasmussen, B., and Linnet, K., *Re: Grubb et al, Breath alcohol analysis incorporating standardization to water vapour is as precise as blood alcohol analysis*, Response Letter to Editor, Forens. Sci. Int., 216 (2012) 88-91, in response to Letter to Editor, Hlastala, Michael and Anderson, Joseph, *Re: Grubb et al., Breath alcohol analysis incorporating standardization to water vapour is as precise as blood alcohol analysis*, Forensic Sci. Int. 216 (2012) 88-91 ("It is well accepted that the absolute BrAC varies with exhaled volume and breath temperature.").

The bottom line is: The longer you blow, the more likely you are to be convicted in our state. I often encounter technicians responding, "Well, the result is not going to be more than what is in your system even though the longer you blow the higher the alcohol concentration. We are really trying to test that deep lung (alveolar) air." Do not shy away

from this answer! The technician just opened a *huge* door that he or she is likely not equipped to walk through. First, what does the technician mean by "your system?" From where is the technician hypothetically drawing blood for comparable analysis? Venous blood or arterial blood? Alcohol in arterial blood is the supposed target of breath testing since it is the source of alcohol in the alveolar ("deep lung") air. The authors of *Defending DUIs in Washington*, citing to the scientific literature on this point, note:

> …[A]fter consumption, alcohol is not only found in arterial blood, but in venous as well. The concentrations of alcohol in arterial and venous blood are not typically the same, though. In the postabsorptive state, the alcohol concentration of venous blood has been found to exceed that in arterial blood by an average of 1-2mg/100ml. As a result, if an individual's breath is composed of contributions from venous blood as well, its alcohol concentration would be expected to be pushed slightly higher.

See Defending DUIs in Washington, p13-9, citing relevant literature on this point.

The technician has also started a conversation about Henry's Law and the 2100:1 partition ratio; application of such ratio to the human respiratory system and the exchange of alcohol from blood to breath is like trying to fit into a coat two sizes too small (think of the movie *Tommy Boy* here). To learn more about Henry's Law (I just cannot fit it all in here!), you should read pages 13-3 to 13-5 in *Defending DUIs in Washington*.

Significantly, once all parameters are met for a sufficient blow, the Datamaster does not sound an alarm and shut down its sample chamber, indicating the subject can stop blowing. Instead, it allows you to blow far beyond the requisite parameters and 20-quarter seconds requirement. And, the icing on the cake, it only measures the last volume of breath, not the entire breath or its flow rate.

D. Pre-exhalation breathing patterns

It is well established and generally accepted that pre-exhalation breathing patterns (e.g., breath-holds) can impact the results of a breath test. Rod Gullberg has indicated that it is one of those factors that must be taken into account when determining the uncertainty of a breath test measurement. Dr. A.W. Jones researched and reported his findings about how breathing patterns can impact the results of breath testing for alcohol in his peer-reviewed article *How Breathing Technique Can Influence the Results of Breath-Alcohol Analysis*. Dr. Jones made these conclusions in addition to many other findings: (1) with breath-holding (30 seconds) before expiration, the concentration of alcohol increased by 15.7 +/- 2.24% and the temperature of breath rose by .6 +/- .09 degrees Celsius, and (2) keeping the mouth closed for 5 minutes (shallow breathing) increased expired alcohol concentration by 7.3 +/- 1.2% and the breath temperature by .7 +/ .14 degrees Celsius. *How Breathing Technique Can Influence the Results of Breath-Alcohol Analysis*, at 276-78.

Rod Gullberg has also recognized that breathing patterns prior to exhalation can significantly influence the breath test, citing to Jones's publication above as well as W.

Frankvoort, J.A.G. Mulder, and W. Neuteboom, *The laboratory testing of evidential breath-testing (EBT) machines*, Forensic Science International, 35: 27-43 (1987). Rod G. Gullberg, *The Mathematical Analysis of Breath Alcohol Profiles Generated During Breath Exhalation*, Journal of Analytical Toxicology, Vol. 14, November/December 1990, 358-67. Gullberg himself used mathematical modeling and statistical analysis to determine the difference between a normal exhalation sample and a breath-hold sample where the alcohol concentration increased sharply in the breath-hold sample. *Mathematical Analysis of Breath Alcohol Profiles*, at 362.

The bottom line: First, you might be wondering why I keep citing to Rod Gullberg; it is because he is readily accepted as authoritative in the area of breath testing by technicians. When you can impeach the WSP technician with Gullberg's articles, you are really dancing in the fire!

How a person breathes just prior to the BAC test can influence the BAC results. In particular, closed-mouthed (shallow) breathing during the 15-minute observation period and a breath-hold prior to providing a sample could certainly occur in our cases. Your client does not need to be experiencing hypoventilation or hyperventilation to make this point on cross-examination.

E. Interfering Substances

A person's breath test measurement may have been artificially increased due to the unaccounted for presence of interfering substances, such as toluene, acetone, xylene, and ethyl benzene, all chemicals found in paint thinners, paints, and other similar products. It is worth noting here that acetone is a naturally occurring compound on human breath, even non-diabetic, non-painter breath. So, while it may not always be the case that a particular defendant has been subjected to interference — such as toluene, xylene, or ethyl benzene —it is a fact that acetone is a compound that naturally occurs on everyone's breath to some degree. The issue of acetone is even more at play if your client is diabetic. Eventually, acetone on a diabetic's person's breath can convert into isopropanol, which presents huge problems for the Datamaster—is that isopropanol being accounted for in the "acetone basket" (i.e., filter) or the "alcohol basket" when your client's breath test ticket is produced?

Built into the Datamaster is an interference filter that the breath test technicians commonly refer to as the "Acetone filter." This filter exists because acetone has a very similar chemical structure to alcohol. Any WSP technician will testify that the threshold of detection for acetone in the Datamaster is .010; therefore, up to .010 of the reading may be reflected as alcohol when in fact it is acetone, without triggering the interference error and invalidating the sample. *See Washington State Patrol Breath Test Program, Calibration—Measuring Instruments Technical Manual*, Chapter 3, page 3-8, effective 10/15/12; *see also* Glenn A. Case, Sandra Distefano, and Barry Logan, *Evaluation of the ability of the BAC Verifier Datamaster to distinguish Ethanol from other Organic Solvents*, 47th Annual Meeting of the AAFS, Seattle 1995.

Acetone is not the only chemical compound that is similar in makeup to alcohol. The state toxicologists also readily testify that chemicals such as toluene, xylene, ethyl benzene, and isopropanol all have similar structures to alcohol. In the lab, the state toxicologists utilize gas chromatograph instruments that are arguably capable of separating out these compounds from alcohol. The Datamaster and other instruments that employ infrared spectroscopy, using minimal infrared wavelengths to detect compounds, have a much more difficult time in this necessary process — the "Acetone filter" is not a "catch-all" for every chemical compound. The Datamaster's use of only two infrared wavelengths to read compounds entering its chamber also complicates the ability to properly delineate and read alcohol separate and distinct from other similar chemicals. The risk is that, if unaccounted for, the presence of these chemicals on a person's breath will read as alcohol in the evidentiary result.

Two former head state toxicologists for the WSP (Case and Logan) presented on the Datamaster's ability to distinguish alcohol from other chemicals with similar chemical structure. Glenn A. Case, Sandra Distefano, and Barry Logan, *Evaluation of the ability of the BAC Verifier Datamaster to distinguish Ethanol from other Organic Solvents*, 47th Annual Meeting of the AAFS, Seattle 1995. Their findings ranged from no trigger at all by the Datamaster of some of these interfering substances; a trigger beyond the .010 threshold; to a trigger at the .010 threshold (note, however, that a trigger of the "Acetone filter" at .010 does not necessarily mean that a compound other than acetone was also at a .010 reading). *See id.* Interfering substances have also been researched on a variety of infrared spectroscopy machines, including the Intoxilyzer 5000. Edwards, Giguiere, Lewis, and Baselt, *Intoxilyzer Interference by Solvents*, Letter to the Editor, Journal of Analytical Toxicology, Vol. 10, May/June 1986; *see also* Jonathan Caldwell, M.Sc. and Nick D. Kim, *The Response of the Intoxilyzer 5000 to Five Potential Interfering Substances*, Journal of Forensic Sciences, 1997, 42(6): 1080-87.

F. Uncertainty

In my last WACDL DUI News article, I focused on the right to confrontation when there is no reliable state witness to testify accurately about WSP's uncertainty calculation. During trial, you can establish this point by questioning the technician with Rod Gullberg's 2003 paper; the technician will have insufficient knowledge about how (if at all) biological variables are accounted for in WSP's calculation. Meanwhile, he or she will try to tell the jurors not to worry about all those variables because they are covered by the uncertainty calculation (referencing that 2003 paper without actually realizing it). *How* are they covered? That is the question.

As I mentioned in the article focused on confrontation, uncertainty, in its most basic form, is calling out the breath test result and revealing its true colors — that it is just a number, but not the actual "true value" of your client's breath alcohol concentration. It is the search for an interval with a dispersion of values that can be said to be reasonably attributable to the measurand, i.e., breath test result, with a certain level of confidence. In metrology, the measurand is "the quantity whose value is sought to be determined by a

measurement."[7] Uncertainty is "the quantitative characterization of the dispersion of values that, based on one's universe of information concerning a measurement, are believed to be reasonably attributable to a measurand."[8]

To this date, I have yet to interview a toxicologist or a technician who is competent to testify about WSP's uncertainty calculation. When pressed, at trial, the technician is unable to testify how uncertainty — the coverage intervals and claimed 99% level of confidence—is calculated or how the WSP accounts for the significant contributors to uncertainty. The toxicologist deflects the question to the technician. The technician attempts to answer the question but falls short of any meaningful testimony on this scientific principle as required by ER 702.

Specifically, the most experienced of breath test technicians will only go as far as citing to the 2003 article authored by Rod Gullberg,[9] where the technician professes that WSP's uncertainty calculation is based on 92,000 past samples, where all the factors contributing to uncertainty, including the biological variables, must have been accounted for in the casting of that wide of a net. The technician readily testifies that pre-exhalation breathing patterns, breath temperature, exhaled volume, lung capacity, and even interference are accounted for in that study/WSP's uncertainty calculation. Careful scrutiny of that study, in preparation for trial and zealous use of it during cross-examination of the technician reveals that the technician has no idea what the study is actually about or *how* the factors he or she claims are "all covered" by the calculation are in fact accounted for.

Step 3: Applying your Scientific Knowledge in Cross-Examination—Pozner and Dodd style

The mass of scientific information and knowledge you can accumulate by attending CLE programs, reading books and articles, and watching other defense lawyers in trial is *huge*. It is a *huge* mass! And it can be overwhelming. The most difficult task for a DUI defender is in the application of science-knowledge to a trial. Flawed attempts at such application are most glaring during the technician's cross-examination. This is where you see the defense lawyer sitting, instead of standing, during cross-examination; where you hear open-ended questions; where you hear narrative and non-responsive answers by the technician; and where you, ultimately, see head-in-hands on the part of the defender.

In their book, *Cross-Examination: Science and Techniques*,[10] Larry Pozner and Roger Dodd teach an awesome cross-examination method that I have found allows me to stand and confidently cross-examine any technician at trial — I especially enjoy it when the most competent technician comes to testify because I know we will truly spar! The book is rather extensive; however, for our purposes, their "chapter method" and three rules of

[7] Vosk, Ted, *Measurement Uncertainty*, Foundations/Fundamentals, Encyclopedia of Forensic Sciences, Second Edition, 322-31, 322, 2013.
[8] *Id.* at 322.
[9] Gullberg, Rod G., *Breath alcohol measurement variability associated with different instrumentation and protocols*, Forensic Science International 131 (2003) 30-35.
[10] Pozner, Larry S. and Dodd, Roger J., Cross-Examination: Science and Techniques, Second Edition, LexisNexis, 2004. (Hereinafter cited as Pozner and Dodd).

cross-examination will provide a nice foundation for you to decide whether Pozner and Dodd will work for you too.

Often, defense lawyers cross-examine the technician (and perhaps other witnesses) as if cross-examination were a flowing discussion with a few purposes in mind. Pozner and Dodd remind us that, "[i]nstead the advocate must think of the cross-examination of any witness as a series of small discussions (chapters) on individual topics of importance to the cross-examiner." Pozner and Dodd, p9-2. In other words, our cross-examination of the technician is not an open-ended, unstructured conversation about science. It has structure. It is a disciplined conversation.

> A trial is a book of information. The individual witness examinations are themselves large accumulations of information. (Parts of the books.) The individual topics within the cross-examinations are the chapters of the book. Each chapter has a designed purpose or goal. The jurors can understand the purpose of each chapter as the cross-examiner assembles related facts into one logical sequence, designed to paint one picture . . ..
>
> Cross-examination is a series of goal-oriented exercises. Each of these individual exercises is a cluster of related facts grouped to establish one particular point useful to the questioning party. The chapters of cross-examination are each composed of a series of goal-focused, leading questions. Any one topic of cross-examination will be presented through one or more chapters of cross-examination.

Pozner and Dodd, pp9-2 – 9-3.

The technician offers a significant part of the book for your DUI trial. In that part, there are many chapters or topics. For instance, one chapter may be about the software that tells the Datamaster what to do and how. That chapter will have a purpose or goal in your cross-examination, such as, illustrating to jurors that the technician knows nothing about the software that controls the Datamaster or that the software is unreliable and outdated.

Rather than presenting all of your points together in one flowing discussion with the technician, it is more effective to establish a chapter for each point. Thus, your chapter about software will be separate and distinct from your chapter on breath temperature, for example. Each chapter will be carefully crafted, such that each chapter has specific leading questions/statements supporting your purpose for each chapter.

In each chapter, Pozner and Dodd's three rules should be applied.

Rule One: Leading Questions Only. I hear you. I know you are probably saying to yourself right now, "Lauren, I know I should only ask leading questions in cross-examination!" But, sit back, and think about it for just a second. How many cross-examinations have you seen or have you conducted where an open-ended question was asked? Perhaps the answer was somewhat favorable, but now the defense lawyer has failed to train the witness to consistently answer with short answers to leading questions

and to not provide a non-responsive narrative.[11] I concur with Pozner and Dodd when they say, "….many lawyers do not take advantage of this rule and insist on asking open-ended questions. This is unnecessary at best and foolhardy at worst. A skillful lawyer must never forfeit the enormous advantage offered by the use of leading questions." Pozner and Dodd, p8-9.

Significantly, in a cross-examination of the technician, leading questions allow you to be the teacher. It is your time to shine. You know the state's machine better than anyone else in the courtroom, including the so-called expert on the stand.

> The leading question positions the cross-examiner as the teacher, while the open-ended question positions the cross-examiner as a student. Through the open-ended question it is the witness who becomes the teacher. The open-ended question focuses courtroom attention on the witness. The leading question focuses attention on the cross-examiner. The cross-examiner seeks that attention not for ego gratification, but for the purposes of efficiently teaching the facts of the case.

Pozner and Dodd, p8-10.

I venture a guess that often we as DUI defense lawyers might ask open-ended questions because we truly feel like students. Because we do not feel prepared to teach. If you spend the time learning and applying the scientific concepts discussed above, you will begin to feel more like the teacher. The path to becoming the teacher in cross-examining a technician is paved with leading questions.

Rule Two: One New Fact per Question. "For every 1 degree Celsius that my client's breath temperature is higher than the assumed 34 degree Celsius by the Datamaster, the result is inflated by 6.5-6.8%."[12] That leading question has a ton of facts! To maintain control and clarity, the One New Fact per Question rule is imperative in cross-examining the technician. My leading question above leaves plenty of opportunity for the technician to explain away what I hope to be the fodder; that is, my question above is actually my end goal and would probably make a nice chapter. However, there is ripe opportunity for the technician to take off and run far away with this question to the land of narrative. The land of narrative is a real bad spot to find yourself in during cross-examination of the technician. Further, this may be one of the most critical points of my cross-examination and I have left the jury with a bunch of mumbo jumbo and narrative from the expert on the stand, not the expert who is asking the question (me). I have become the student, only

[11] Yes, absolutely. Sometimes, SOMETIMES, open-ended questions are of decent strategy. For example, when questioning a technician about an Uncertainty article that he or she has illustrated no knowledge of and yet makes certain assertions related to Uncertainty calculations. I have asked a technician to show me in the article where WSP's Uncertainty calculation accounts for specific biological variables (after citing the article in his testimony) with much success. But those open-ended questions (opportunities) are rare.

[12] Notice that, "isn't that correct" or "correct" is not included at the end of my question/statement. It is not necessary. And it takes away from your lesson that you are teaching on cross-examination if you have to stop every two seconds and ask for buy-in from the technician, "isn't that correct Mr. Technician?" Yes. It is correct, so why add it?! If objected to, just repeat your question/statement, but change the inflection of your tone at the end of your question/statement.

I am confused much like my jury. Pozner and Dodd teach this rule via Dr. Seuss's *Hop on Pop*:

> Hop
> Pop
> We like to hop.
> We like to hop on top of Pop.Stop. You must not hop on Pop.
>
> This teaching method is exactly that necessary to "teach" the witness to answer only "yes." The jury best learns a case this way, too.
>
> Three questions are offered as an example:
>
> 1. See Spot?
> 2. See Spot run?
> 3. See Spot run home?
>
> The initial question discusses one fact. Each succeeding question contains one additional or new fact to be added to the body of facts established by previous questions.
>
> By this method, the scope of the fact at issue is sharply controlled. As a result of the tight control over the scope of the question, the permissible scope of the witness's answer is tightly controlled.

Pozner and Dodd, p8-19.

At the end of this section, I offer an example of using the chapter method and each of the three rules in your cross-examination of the technician. Check out the differences between what I posed at the beginning of this Rule Two discussion versus that example when it comes to "One New Fact per Question."

Rule Three: Break Cross-Examination Into a Series of Logical Progressions to Each Specific Goal. If my end goal is for the technician to state "yes" to the concept that for every 1 degrees Celsius that my client's breath temperature is above the Datamaster's preset 34 degrees Celsius it raises the results by 6.5-6.8%, I need to map out a steady progression of leading questions with one new fact per question that gets me there. In order to do that, I need to provide a logical progression of questions to reach my specific goal.

> Cross-examination of a witness is not a monolithic exercise. Instead, the cross-examination of any witness is a series of goal-oriented exercises. The third technique of the only three rules of cross-examination is to break the cross-examination into separate and definable goals.
>
> Each section of cross-examination must have a specific goal. It must be so specific and so clear that the cross-examiner, if asked at any time without notice (as judges are inclined to do), can indentify the factual point she is

> seeking to make. Another way of envisioning this is to view cross-examination as a series of pictures that must be painted.
>
> The vast majority of cross-examinations have multiple specific goals [(see Chapter Method)]. However, the cross-examiner should proceed a chapter at a time in order to establish a single identifiable goal at a time. Cross-examination is a series of specific goals. Each goal, in turn, must be developed individually and fully before proceeding to the next specific goal.

Pozner and Dodd, p8-35 – 8-36.

For example, the statement "For every 1 degree Celsius that my client's breath temperature is higher than the assumed 34 degree Celsius by the Datamaster, the result is inflated by 6.5-6.8%" consists of more than one specific goal and more than one chapter. Specifically, that the Datamaster presumes 34 degrees Celsius is the average human breath temperature is a chapter all by itself. The specific goal there would be that the Datamaster presumes an outdated, ill-supported concept. The next chapter/specific goal would then be what the average human breath temperature actually is according to recent, more reliable literature. Next, what happens to the result then if the Datamaster is presuming your client's breath temperature is lower than it really is. Each one of these specific goals should consist of a logical progression of questions to reach the goal. "A logical progression dictates that the issue to be developed must proceed from the very general to the specific goal. Think of it as a funnel. The general questions funnel the witness to specifics." Pozner and Dodd, p8-37.

All of the sudden, you will find that the technician is "yessing" his or her way to your end goal, meanwhile you are the teacher, and you have all the attention of the jurors.

A. Sample Pozner and Dodd cross on Breath temperature[13]

a. The Simulator Solution mimics Human Breath (Chapter 1)

i. There is a simulator attached to the back of every Datamaster (DM)
ii. The simulator looks sort of like a Mason jar
iii. Inside of it is a solution
iv. It is a liquid
v. The liquid is prepared at the Tox Lab
vi. It is a mixture of alcohol and water
vii. It has a known quantity of alcohol in it
viii. During the test, that solution is heated

[13] *Significantly*, you should source each of your questions. That means, in parenthesis next to your questions/statements you should have the name of the source with the page number so that if your technician does not own up to the point you can either impeach her or have the source to impeach her as a learned treatise, etc, readily available. For the purposes of this article, I am simply running out of room to add sources to the sample cross!

ix. To a very specific temperature
x. To 34 degrees Celsius (+/- .2 degrees Celsius)
xi. When it's heated, it gives off a vapor
xii. That vapor has alcohol molecules in it
xiii. The DM measures those alcohol molecules
xiv. The DM measures the molecules in that vapor to make sure it is reading alcohol concentrations validly
xv. That vapor's purpose is to mimic human breath
xvi. Such as Mr. Client's breath

b. The DM erroneously presumes average breath temp is 34 degrees Celsius (Chapter 2)

i. As you just testified, the simulator solution must be heated to a specific temperature
ii. The temperature of the simulator solution is very important
iii. The officer must check a thermometer to note the temperature
iv. He or she must make sure it is at 34 degrees Celsius (+/- .2 degrees Celsius)
v. 34 degrees Celsius because the DM assumes that that is average breath temp (*You may be get some push back on "assumes," but keep going…)*
vi. The belief that 34 degrees Celsius is average breath temp is based on 1950's research conducted by R.N. Harger (*See footnote 10 about being prepared to source each of your questions/statements!)*
vii. Since then, the scientific research and literature on human breath temperature has evolved
viii. Latest research and literature has established that average breath temp is actually, on average, 35 degrees Celsius

c. Like the Simulator Solution, if human breath temp is higher, the alcohol reading will be higher (Chapter 3)

i. Now, if the simulator solution's temperature is higher than 34 degrees Celsius, the reading of the alcohol concentration in the solution will be higher
ii. So, as you previously testified…the simulator solution has to read on the BAC ticket as .072-.088
iii. If the temperature of the solution is higher than 34 degrees (+/- .2 degrees Celsius), then the simulator solution would read higher than .088
iv. And, as you testified, this simulator solution's vapor is set to mimic human breath
v. The temperature of a person's breath impacts a breath test
vi. So if Mr. Client's breath is higher than 34 degrees Celsius, then the alcohol reading by the DM will be higher

vii. The higher the person's breath temperature, the higher the BAC reading

d. For every 1 degree Celsius, there's 6.5-6.8% increase[14] (Chapter 4)

i. If my client's breath temperature is just 1 degrees Celsius higher than 34 degrees Celsius, his breath test results are increased by 6.5-6.8%.

e. The DM does NOT measure breath temperature (Chapter 5)

i. You do not know what my client's breath temperature was at the time of the test
ii. That's because the DM does not measure the person's breath temperature
iii. It only measures the simulator solution's temperature
iv. The new breath test machine, the Drager, will be able to measure breath temperature

Have fun out there! And, I wish you well as you dance through the fire!

[14] Obviously, there are plenty of strategic decisions to be made throughout trial. One decision is whether or not you are working with a technician who knows the 6.5-6.8% impact. If not, perhaps leaving the percentage impact open (knowing it cannot be enlisted during redirect) is more favorable to you than eliciting the specific impact on cross-examination. ALSO, note that some articles indicate a higher percentage impact. So you may wish to use a higher percentage.