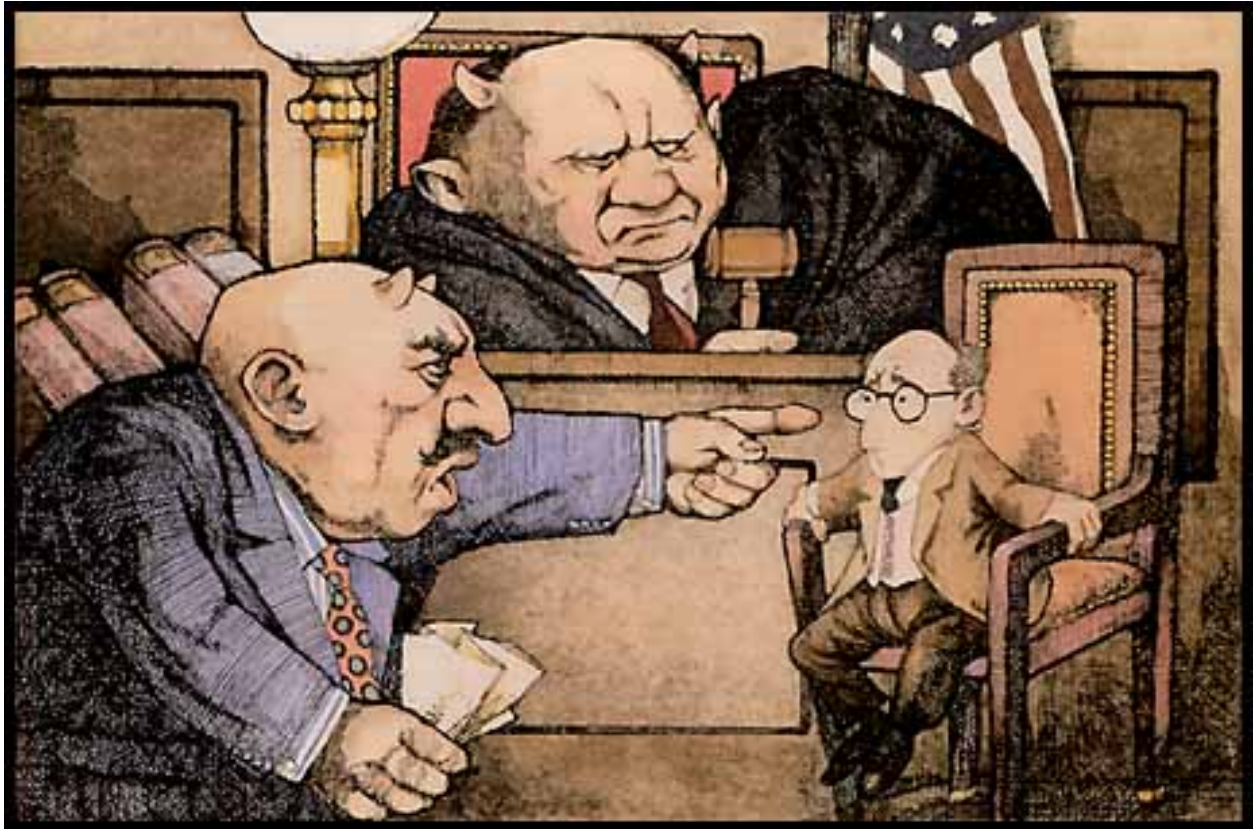


Dodging the Bullet:

Cross-Examination Tips for Computer Forensic Examiners



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What sets a *forensic* examination apart from any other exploration and reporting of the contents of a computer system is the prospect of presenting those findings in court under oath. Every step we take as forensic examiners, from acquisition to disposition, may someday need to be explained on direct examination and defended on cross-examination. *Cross-examination*...the part of the trial where the other side's lawyer publicly *attacks* you, challenges your *integrity* and *pounces* on your every innocent slip of the tongue. In the movies and on television, just a few salvos of cross-examination invariably reveal the witness as a liar or a buffoon. No wonder cross-examination is the part of the trial that makes so many expert witnesses sweat!

But not all expert witnesses flinch at the thought of cross-examination. For some, it's the best part of the job--the ultimate thrill ride that tests their skills and affords them the opportunity to shine. They understand that the jury reserves its closest attention for the cross-examination and that points made under fire leave the strongest impression.

Jury persuasion can be based on trust, education or a mix of the two. If a juror comes to believe that an expert witness is trustworthy, i.e., skilled and credible, that juror is inclined to accept the witness' opinions as fact on the strength of that trust. Alternatively, teach the jury the salient facts--instill knowledge in them--and the jurors will persuade *themselves* by the application of that knowledge. Most often, effective expert witness persuasion entails a measure of both.

As both trial lawyer and testifying computer forensic examiner, I've cross-examined veteran witnesses and been cross-examined by skilled attorneys. From that unique perspective, I can attest that the qualities of an effective expert witness are preparation, knowledge, experience, effective communication, integrity and demeanor. You can be a more effective witness and manage your anxiety about cross-examination if you understand the lawyer's agenda and prepare to meet the customary challenges. This paper explores those goals, describes common examination techniques and suggests strategies to come out on top.

The Lawyer's Goals in Cross-Examination

There are just two reasons a lawyer cross examines a witness: to strengthen one side of the case or weaken the other. The lawyer who cross-examines to impress a client, show off courtroom skills or hurt a witness who hasn't hurt their case will usually regret the effort. Knowing what to expect in cross-examination comes from understanding the principal approaches used by attorneys in cross, to wit:

The questioner may seek to bolster their side of the case by having you:

- a. Vouch for an opposing expert's experience, integrity and qualifications;
- b. Confirm facts and findings favorable to the questioner's theory of the case;
- c. Concede other outcomes are justified on different facts or viable alternative theories of the case;
- d. Acknowledge flaws in other witnesses or theories on your side of the case; and,
- e. Identify texts or articles as authoritative.

The questioner may seek to weaken your side of the case by showing you:

- a. Aren't qualified to offer the testimony;
- b. Missed something, used the wrong methodology or didn't have all the relevant facts;
- c. Made prior statements inconsistent with your testimony;
- d. Offered opinions in conflict with conventional wisdom in the field; or,
- e. Are biased, prejudiced or otherwise not credible.

Vouching for Opposing Experts

For now, the ranks of knowledgeable, experienced computer forensic examiners are small, and it's not unusual to know the other side's expert as an esteemed colleague or former instructor. So, what do you say when asked to agree that the other side's expert is well-qualified or experienced? How do you reply when asked if the opposing expert enjoys a good reputation for honesty and integrity? The answer is, *just tell the truth*. You don't have to gush about how much you admire and revere them—save that for the testimonial dinner—but it's fine to say, "I have a lot of respect for Jane Smith's experience and abilities, and I think she would say the same about mine." When facing off against an opponent with a more impressive C.V., you could point out that computer forensics is a relatively new discipline with emerging specializations, such that even though one practitioner has twenty years experience and another five, they may be equally experienced in the analysis of the NTFS file system. Further, computer forensics is a specialized field, and simply because one has years of experience as a programmer, network administrator or police officer, they are not necessarily better qualified as a computer forensic examiner.

What do you do when you *don't* hold the opposing expert in high regard or believe he or she isn't qualified to offer certain opinions? Here again, the answer is "just tell the truth," but with a caveat: jurors often respond negatively to one colleague bad-mouthing another, so you may want to be reticent about specific concerns and leave them to counsel's impeachment of the opposing expert. Jurors are well-attuned to damning with faint praise and will likely key in to your reluctance to praise the opposing expert.

Confirming Favorable Facts and Findings

Seasoned cross-examiners understand it's the rare opposing expert who can't do their case *some* good. It might be something as simple as confirming the presence of particular software installations or viruses or acknowledging that a forensic tool is widely accepted as reliable, but you're almost certain to agree with *some* aspect of the other side's case. Nervousness and suspicion may incline you to resist making any concessions, wondering if there might be some greater peril in the questions than appears on first blush. This is a win-win situation for the cross-examiner because you must choose between supporting parts of their case or appearing untrustworthy by refusing to concede undisputed facts. *The correct approach is to simply answer truthfully without worrying about how your testimony affects the outcome.* This puts the cross-examiner on the horns of a dilemma, for how aggressively can the examiner impeach you while still seeking to rely upon your concessions?

Conceding Alternative Theories

Every cross-examiner's dream is that their questioning will be so skillful the expert on the stand will come around to supporting the questioner's case. Though it sometimes occurs, it's usually

the result of poor planning on the part of the lawyer offering the witness or poor preparation by the witness. But experienced counsel recognizes that you don't need the opposing expert to switch sides to win. Often, it's sufficient if the opposing expert simply concedes the *viability* of alternative theories. *Be prepared to explain not only why your interpretation of the evidence is the correct one but also why proposed alternative theories are wrong.* For example, if the contention is that spyware or a virus caused contraband content to appear on a drive, you may have no choice but to agree that such malware exists and that it can be deployed in such a way as to unwittingly download illegal images. However, there are ways to guard against this tactic without appearing recalcitrant, for example:

Attorney: You'd agree that there are programs like spyware and viruses that can infect a computer without the user's knowledge?

Witness: Yes, if the user takes no steps to guard against them.

Attorney: Some of these programs can take control of a computer and cause it to do almost anything, right?

Witness: Almost.

Attorney: Including secretly downloading stuff from the Internet?

Witness: I wouldn't say "secretly," but many users might be unaware of the activity.

Attorney: Such a spyware or a virus could even download child pornography and a user might not be aware of it?

Witness: *That is not what occurred here*, but it might otherwise be possible.

Attorney: I didn't ask you if that's what occurred here. I asked you if it's possible. Isn't it true that it's possible?

Witness: *Not if you are asking about the defendant's computer, but perhaps on another system of another user.*

This example assumes that the witness has found evidence (e.g., gigabytes of carefully copied, moved and sorted contraband) which makes it clear that the virus and pop-up defense has no application. Though some would argue the attorney asked the "one-question-too-many," the witness properly distinguished the scenario from the facts in the case at bar. A smart attorney won't ask the obvious open-ended question ("*Why* isn't that what occurred here") because to do so would afford the witness the opportunity to launch into an uncontrolled narrative. Instead, the attorney is forced to either bully the witness to a concession everyone now understands is irrelevant or leave the unasked question floating about.

Injecting qualifiers in this manner must be done sparingly and only when it's clear that the concession sought strays dangerously far from the facts. If you become too enamored of this

tactic, it can easily seem like you are incapable of answering straight questions with straight answers. Qualifiers should serve to alert the judge and jury that more explanation is needed and to signal your side's counsel that these are matters to be addressed on re-direct examination.

Acknowledging Flaws

Of all the tactics used in cross-examination, my favorite had to be using one opposing expert to point up the errors of other opposing experts, underscoring flaws in my opponent's case. I found that often, expert witnesses were so primed to find fault with *my* experts, they often failed to distinguish *whose* expert they were trashing. In final argument, it was effective to point out that even the other side's own experts couldn't agree on the facts.

Your best defense here is simply to prepare sufficiently and be cognizant of what other experts have said in their reports and testimony. Bring such disagreements to your counsel's attention so that efforts can be made to explore the differences and reconcile them before you take the stand. Also, weigh each question before you answer to gauge whether it really falls within your area of expertise. Jurors respect experts who recognize and acknowledge the limits of their expertise. If the opportunity arises, it may be possible to explain that although you and the other expert disagree on some minor details, you are firmly in agreement on the ultimate issues.

Recognizing Authoritative Works

Jurors place an outsize value on information contained in published works, and the key to getting such contents admitted into evidence frequently hinges on the ability to prove the work is an authoritative text, often called a "learned treatise." Where possible, opposing counsel wants that recognition of authority to come from an opposing expert. When that occurs, that expert or others can be impeached by the contents of the authoritative work, and passages can even be offered as substantive evidence.

If you're thinking, "I just won't recognize any publication as authoritative," think again and consider the following scenario:

Attorney: I'm handing you a copy of "Computer Forensics: Incident Response Essentials" by Warren Kruse and Jay Heiser. Do you own a copy of this book?

Witness: I do.

Attorney: Was this book one you read in connection with your own training in computer forensics?



Witness: It was.

Attorney: Wouldn't you agree with me that this book is regarded as a reliable authority in the field of computer forensics?

Witness: I don't agree.

Attorney: You don't agree that this text used in your own training is a reliable authority?

Witness: That's correct.

Attorney: I now hand you a copy of "High Technology Crime" by Kenneth Rosenblatt. This is another book I believe you read in connection with your professional training?

Witness: Yes.

Attorney: So, you would agree that the Rosenblatt book is widely regarded as a reliable authority in the field of computer forensics?

Witness: No. It's ten years old.

Attorney: I see. [Bringing up large stack of books] Here are seven other reference works on computer forensics [naming them for the record]. These are books you've identified in prior testimony as those upon which you have turned to for answers in the past or read as part of your own professional training. Do you recognize *any* of these published works as a reliable authority in the field of computer forensics?

Witness: I do not.

Attorney: Is there any published work anywhere in any language that you *do* regard as a reliable authority in computer forensics?

Witness: I don't know.

Attorney: None?

Witness: Not that I recall.

Does this sound like a credible witness? Hardly! But, the *perception* might be different if the exchange had taken this turn:

Attorney: Is there any published work anywhere in any language that you *do* regard as a reliable authority in computer forensics?

Witness: Counsel, I respect and admire many of the books on the table. The authors are my friends and colleagues. They each have something valuable to say. But,

computer forensics is such a fast moving field that a book on the subject is out-of-date by the time it's published. To me, a reliable authority is one that can be trusted to be completely up-to-date and free of error. I'd expect that the authors themselves would agree that their books don't pass that test.

Attacks on your Qualifications

Under Federal Rule of Evidence 702, in order to testify as an expert, a witness must be shown to be qualified "by knowledge, skill, experience, training, or education." Clearly, this is a minimal threshold affording wide discretion to the court in terms of admission or exclusion. For scientific evidence, the traditional test for admissibility is called the *Frye* rule, which requires only that the evidence be based on scientific techniques generally accepted as reliable in the scientific community.

Federal courts and several states have abandoned the *Frye* rule in favor of the *Daubert* standard, named for the U.S. Supreme Court decision in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). Under *Daubert*, the party presenting an expert's testimony has the burden of showing that that testimony is both reliable and relevant. In accordance with Federal Rule of Evidence 104, the judge acts as a "gatekeeper" and decides threshold questions concerning an expert's qualifications and the admissibility of the evidence. Challenges to the qualifications of an expert witness are not usually dealt with before the jury but are addressed at a prior proceeding before the court called a "*Daubert* hearing." In a *Daubert* hearing, the judge weighs several factors going to the "theory or technique" underlying the expert testimony, including:

1. Whether the theory or technique has been reliably tested;
2. Whether the theory or technique has been subject to peer review and publication;
3. What is the known or potential rate of error for the theory or technique;
4. Whether there are standards controlling the theory's or technique's application; and
5. Whether the theory or method has been generally accepted by the scientific community.

Because computer forensics is a relatively new science, we've yet to see any unassailable certification of expertise (akin to an M.D. or C.P.A.) or any standardized tools emerge as the litmus test for qualification and admissibility. Though some tools aspire to universal acceptance in court, ultimately a tool is only as reliable as its operator, and qualifications of those claiming computer forensics expertise run the gamut from guru to goofball. Computer forensic examiners aren't licensed. No standardized exam establishes their competency. Anyone who knows a bit from a byte can put "computer forensic examiner" on their business card. Nevertheless, a cadre of formidably skilled and principled computer forensics examiners remains the core of the profession. The challenge for the cross-examiner is to tell one from the other and to help the judge and jury see the difference, too.

Though your qualification to testify will be decided by the court if challenged, your credentials may still be attacked before the jury in an effort to diminish the weight which the jurors should accord your testimony.

Because there is no one path to becoming a qualified computer forensic examiner, there's no surefire way to weather an attack on your credentials. Expertise in computer forensics may flow from extensive practical experience, from classroom training or self-study. Most often, it entails all three. The first place a thorough cross-examiner will seek ammunition is by checking your curriculum vitae for accuracy and embellishment. Witnesses are their own worst enemies where qualifications are concerned. Minor oversights, like not actually graduating from the school, not really being a member of the professional association and not truly having invented the Internet, will be major problems when brought to light in court.

A cross-examiner will look for membership in professional associations of computer forensic examiners, formal training and certification. The examiner will want to know if you've published articles on computer forensics or participated in list serves supporting the discipline. If so, a diligent attorney will find and review your articles and postings.

A solid CV demonstrating extensive training and experience is the best way to avoid a challenge to your qualifications. If sufficient, most cross-examiners will steer clear of an attack on your credentials to avoid triggering a litany of your accomplishments. Don't worry; the lawyer who engaged you will be sure the jury hears how great thou art.

Errors and Omissions

The most direct form of cross-examination is also the hardest to prevent: *You got it wrong*. This attack can take the form of minor gotchas cited to suggest sloppy recordkeeping or lack of skill. It can also involve misuse of forensic tools or misinterpretation of findings. We all make mistakes, but if we make them too often or in significant ways, we're not experts. Checking your work, validating your tools and having others validate your results are all best practices to avoid errors. When cross-examination turns up an honest-to-goodness mistake, the best approach is to simply acknowledge the error, correct it and move on. Often, expert witnesses are so shaken by being caught in a mistake they cease to focus or function. Yes, your credibility will take a hit, but if your work overall is sound, the jury will see the big picture.

A more serious concern is reliance upon flawed forensic tools. Which forensic tools are flawed? Truth be told, *all of them*. Bugs in complex software applications are a fact of life. Read the product support message boards for any of the major applications and you'll see that none are immune from bugs. If being an expert witness requires reliance on perfect tools, there are no expert witnesses. Instead, experts must appreciate the limits of their tools and take steps to detect errors and minimize their impact. For example, if a tool tends to produce false search hits under certain circumstances, the expert must be aware of the potential and be prepared to explain why the potential didn't impact the expert's findings. If the false hits error applies, the expert needs to detail additional steps taken to filter or disregard such hits and show that genuine hits were validated through a secondary effort (such as by manual confirmation using a hex editor). Don't be a Tool Tyke. Understand your tools, appreciate their limits and know how their scripts and automated processes work.

Perhaps the most devastating "you got it wrong" attack is the one that points up that the expert's conclusions all grow out of a fundamentally wrong assumption (e.g., the hard drive belonged to the defendant, no one tampered with it before examination, the image was acquired in a

forensically-sound manner, etc.). The testifying expert may not be responsible for the misinformation, but the expert is left holding the bag. Even when the misinformation isn't central to the examination, the fact of confusion or misinformation about important issues can substantially undermine the expert's credibility. This can occur when the attorney on your side fails to share all the background information the expert needs. Often, this is a penny wise-pound foolish effort to reduce costs, or it may stem from counsel's desire to paint the rosiest picture possible of the case. To avoid this, the expert has to ask questions and press for answers. Remember: The lawyer just loses a case. You can lose your good reputation.

Prior Inconsistent Statements

Written reports, affidavits, publications, prior testimony, deposition transcripts and Internet postings all present the potential for having said something in the past that is at odds with your courtroom testimony. A diligent cross-examiner will collect as much of this as can be found and be prepared to pounce on any significant deviation. Plus, even minor inconsistencies can be employed to make a witness so gun-shy as to be useless—the witness back-pedaling every time the lawyer reaches for the deposition transcript. Consequently, you need to review your prior testimony and be prepared to explain or distinguish apparent inconsistencies.



Internet postings deserve special mention because they're an important channel for candid communication and debate between colleagues. Anything you post on the Internet should be viewed as in the public domain, forever. Though we shouldn't hesitate to share knowledge and opinions via the online channel, we should pause before hitting the Send button to consider whether we would be comfortable with the posting if we had to testify about it in open court. Does the message demonstrate bias? Have you trashed the reputation of someone who could turn up on your side in a future case? Is your hasty posting so replete with misspellings and poor grammar that you look like you flunked first grade? A diligent cross-examiner will look for and find these postings; so, think before you click, know what's out there on the Net and be prepared to defend it.

The rules governing impeachment by prior inconsistent statement require the cross-examiner to take specific steps designed to insure the integrity of the impeachment process. Some lawyers play fast-and-loose with the process, and it's important for the counsel presenting you as a witness to object if the cross-examiner strays so far as to leave you unfairly exposed. The classic form of impeachment by prior inconsistent statement entails the cross-examiner asking the witness to confirm particular testimony given on direct (i.e., "*Mr. Witness, did I understand you to say that it is impossible for there to be two different files with identical MD-5 hash values?*"). Then, the witness is asked whether he has ever testified any differently to which the witness may respond, "yes," "no" or "I don't know (or remember)." If the witness says "yes," the cross-examiner can delve into the time, place and circumstances of the prior inconsistent

statement, but the impeachment is otherwise complete and no writing is used to demonstrate inconsistency. But, if the witness denies making an inconsistent statement, the cross-examiner is obliged to identify the time, place, and circumstances of the prior inconsistent statement for the witness (e.g., *“Do you recall giving sworn testimony by deposition in my office on September 1, 2004?”*). At that juncture, the witness may acknowledge the prior inconsistent testimony, but if the witness doesn’t do so, the examiner is likely to approach the witness brandishing a deposition transcript, identify a page and line number for the court, and proceed to compel the witness to read to the jury the prior inconsistent statement (i.e., *“Mr. Witness, please read what you said under oath when I previously asked you if there could be two different files with identical MD-5 hash values?”*).

I said “I wouldn’t use MD-5 for validation because Chinese researchers recently generated different files that hashed identically.”

At this dramatic moment, the jury has heard the lie. If the attorney has chosen well, the inconsistency will be material to the case and clear. The advantage is the lawyer’s to lose, and fortunately for the witness, this is the moment where lawyers often blow it. If you are the impeached witness, you’ll be seeking an opportunity to explain the inconsistency, and a smart cross-examiner won’t give it to you. Instead, the cross-examiner should move on to an entirely different line of questioning, leaving the lie hanging in the air like a bad smell. The canniest lawyer will say “no further questions” or shift immediately to key issues, hammering you when your credibility and your confidence have flagged.

But if you’re lucky, the lawyer won’t be able to resist flogging the victory and will mistakenly follow with an open-ended question or conclude with some dramatic flourish they heard on T.V., like, *“Were you lying then or are you lying now?”* This is your opening, your chance to blunt the impact of the impeachment. Explain: *“I didn’t understand the question.” “I thought you said SHA-1.” “The dog ate my message digest.”* It may be a lame excuse, but it’s better than the lie, and it gets the jury thinking there may be a reasonable explanation for the inconsistency.

Different Drummer Attacks

Sometimes experts just have their own unique way of seeing the world, and to the extent that your views or methods are out of step with your peers, the cross-examiner may focus on them to suggest error or impugn credibility. The cross-examiner may ask you to concede the schism, e.g., *“Can you name one other computer forensic examiner who shares your view that exposure of the drive to powerful magnetic fields can randomly generate pornographic images?”* More often, the impeachment will take the form of learned treatises, especially those the witness has identified as being a part of his own library or recognized as authoritative.

One way to deflect different drummer attacks is to be prepared to cite instances where the aberrant view came to be regarded as conventional wisdom, e.g., the fact that all scientific thinking once accepted the Sun as orbiting the Earth didn’t make it so. Another is to note that experts of comparable skill and training often disagree and that such disagreements are simply a healthy part of how science moves forward. In any event, you’ve got to do all you can to avoid seeming like a crank or a fool (unless of course you *are* a crank or fool, in which case put on

your tinfoil helmet and help the jury understand what the government and Microsoft are up to out at Area 51).

Bias and Prejudice

Though it would seem that the objective realm of bits and bytes shouldn't lend itself to bias and prejudice, in fact it's easy to let preconceived notions and attitudes get in the way of our objectivity. In criminal cases, the presumption of guilt can be so strongly held that exonerating factors may be overlooked or discounted.

Two common vectors for cross-examination are agenda bias and compensation bias.

Agenda Bias

In the criminal law, computer forensic examiners tend to testify exclusively for one side or the other. This polarization plays into the hands of the cross-examiner because it supports the argument, "Of course, the prosecution's expert found evidence favorable to the prosecution because in all prior testimony, *he always found evidence favorable to the prosecution.*" Ideally, an examiner can demonstrate a lack of agenda bias through a history of testifying for both sides, but commonly, those who testify for the defense in criminal matters are ineligible for membership in some of the most important professional associations for computer forensic examiners, and, of course, you're unlikely to see an examiner employed in law enforcement testify in any other capacity than supporting the prosecution. Accordingly, the polarization, and the perceived agenda bias, is institutionalized.

Even if you've only testified for one side, you may deflect an agenda bias attack by pointing out the times you've looked at electronic evidence and exonerated a defendant. You didn't testify for the prosecution in those cases because your testimony helped to clear the accused. It also helps to focus on the process by which media comes into your hands for analysis. Probable cause that a crime had been committed was established before the media was seized, so the likelihood that contraband will exist on the media is accordingly much higher than if the media were selected at random.

Compensation Bias

A common line of attack on private-sector examiners is to show that you're being "paid to testify." The thrust is you're just a hired gun prostituting your skills for filthy lucre. In fact, you're being paid for your time and expertise. *The bits and bytes don't change based on who pays the bills.* Still, compensation bias can be effective when the compensation seems outsized for the effort or when substantial sums remain unpaid at the time you testify. Prepare for an attack based on compensation bias by knowing what you've billed and for what services. Don't speculate. Bring the same precision you bring to the data on the disk to the time for which you've billed. Also, bring your billings and collections up-to-date to avoid taking the stand with a big bill outstanding.

Hypothetical Questions

A key distinction between the examination of a lay witness and an expert is that experts are permitted to answer hypothetical questions. The hypothetical question is a powerful tool for the cross-examiner because it enables the examiner to commit the expert witness to a different

outcome based upon assumed facts. If the cross-examiner anticipates that the evidence will ultimately persuade the jury of different facts than those assumed by the witness, the hypothetical question affords counsel the opportunity to argue that the opposing expert's opinion supports their case on the different facts. Another use of hypothetical questions is to demonstrate that an expert's opinions are so rigidly outcome-oriented as to change little (or not at all) despite much different facts.

Avoid being drawn into absurd hypothetical scenarios. If a hypothetical is premised on impossible facts or hinges upon circumstances so at odds with the actual facts as to be irrelevant, point it out. Conversely, don't be so wedded to your opinions that you fail to modify them to meet the changed circumstances of the hypothetical question. A lawyer may incrementally change the facts in a hypothetical to the point where your clinging to an opinion will seem like nothing but obstinacy. Listen carefully to the question. Clarify confusing issues by asking your own questions. Reject ridiculous assumptions. Record the variables to keep them straight in your mind. Then, don't be afraid to concede different outcomes if the changed assumptions make them plausible.

Don't Bamboozle

Though the cross-examining attorney likely won't know as much about computer forensics as you do, a dedicated cross-examiner will have studied the particulars that guide your testimony. It's common for smart lawyers to play dumb early in the examination and lull you into thinking you can bamboozle the questioner with jargon or offer questionable conclusions with impunity. It's also a tactic calculated to prompt a contemptuous or condescending demeanor from the expert. Beware. Patience and respect serve you best here.

The Quiet Cross

Sometimes the smartest cross-examination will consist of counsel announcing, "No questions, Your Honor." What happened? Is the other side simply conceding your brilliance and surrendering? Perhaps, but more likely the opposing counsel decided that your testimony didn't hurt their case or that you can be more effectively impeached through other evidence. Sometimes it's just seen as too risky to cross-examine you. The lawyer may expect you've held something back for cross and doesn't want to spring the trap, recognizing that jurors pay closer attention to cross. Else, counsel may think that cross-examination will simply underscore and reinforce your testimony through repetition. Remember that some jurisdictions don't permit re-direct examination absent cross-examination, so waiving cross may deny your side the chance to offer testimony reserved for re-direct. Plan accordingly.

Jekyll and Hyde

Don't underestimate the importance of your demeanor. Despite your best efforts, some jurors won't grasp computer forensics or will simply tend to tune out scientific testimony. For these jurors especially, what you say isn't nearly as important as *how* you say it. They are registering how you react to challenges and looking for signs of doubt or fear or deception. If an attack hurts your side's case, they may not recognize it unless you reveal it through a crestfallen demeanor. *Don't let them see you sweat.*

The biggest mistake I see expert witnesses make in cross-examination is they change their demeanor Jekyll-and-Hyde from helpful and responsive to sullen and combative. *Don't let this happen to you.* Nothing undermines credibility and reveals bias like a witness' sudden refusal to give straightforward answers to straightforward questions or a marked shift to jargon and eye-rolling exasperation. Sure you are working for one side and want that side to prevail; but, bits and bytes on the disk are objective facts and you are more credible when you stay objective about them. The jury will understand it when your demeanor finally changes in response to unwarranted attacks on your integrity or a contemptuous questioner, but don't jump the gun. Instead, *be the last person in the courtroom to get angry.* The jury doesn't know that the polite and deferential lawyer cross-examining you in trial was a smarmy jerk at your deposition; consequently, they won't understand why you suddenly became reticent and defensive. Instead, wait until the jury is rooting for you to push back and wondering why you are still being so nice.



Watch your body language. Witnesses careful not to change their spoken demeanor may nonetheless speak volumes through their posture, gestures and facial expressions. Some estimates suggest that 60% of what we communicate is non-verbal. If your arms weren't crossed on direct, maybe they shouldn't be on cross. If you made eye contact with the examiner on direct, the jury may feel you owe the same courtesy to the cross-examiner.

Explain Yourself

Experienced cross-examiners understand the need to control the witness on cross-examination, so they will use only leading questions and often seek to restrict the witness to “yes” or “no” answers. The goal is to keep you from explaining your answers, especially where those answers seem inconsistent with your direct testimony. This can be exasperating when you are the witness, but don't let it get to you. Keep in mind that the lawyer for your side will have an opportunity to re-direct and clarify any confusion occasioned by cross. More importantly, you are not obliged to adhere to a “yes-or-no” response when it's misleading. You are entitled to explain your answers; but, assert that right with judgment and finesse. *If you had no trouble giving unqualified answers to questions on direct, you don't want to quibble with every question on cross.* When an important issue requires you to respond, “Yes, but may I explain,” it's the rare court that will deny you the chance to do so if you haven't abused the privileged answering other questions. Don't be bullied, but remember that you only have so many “buts” before you start looking like one!

May I See It Please?

Whether from your report or a learned treatise, you're likely to be cross-examined from a document. When the cross-examiner brandishes an authoritative tome and appears to be reading from it, it's easy to be cowed into agreeing with the examiner's statements. Don't be.

Unless you agree with the statement, don't concede it until you've reviewed the document with your own eyes. It's a common ploy to make several genuine references to an authoritative work and then slip in something favorable as if it were "by the book." Here again, if you don't recognize the point as valid or if it seems out of context, check to be sure. Sworn testimony is not generally a test of your memory. Every witness who is cross-examined from a writing has a right to examine the writing, so don't hesitate to say, "May I see it please" before you answer.

Another sneaky tactic is to request that you turn over your notes. While it's true that counsel is entitled to see your notes and any other materials on which you rely or use to refresh your memory, it doesn't mean that counsel's privilege trumps your right to use those same notes and materials. Don't hesitate to ask for your notes to be returned before you answer further questions. It's a better idea to blunt this tactic from the start by coming to court or deposition with a copy of your file.

Don't Get Mad

Nobody likes being made to look stupid, dishonest or venal. It tends to make us angry. *But hold your temper.* For the cross-examiner, an angry witness is an easy target. The witness can't think straight and is going to make mistakes. The angry witness is prone to be emotional, snappish, rude, unfocused and forgetful. Sure, the lawyer is being a jerk, *but trust the jury to see it too.* It's essential that the witness be the last person in the room to be overtly exasperated with the cross-examiner. You can't show your ire until every last juror shares your irritation. Then, they'll be rooting for you. But don't assume this happens quickly, if at all. Jurors expect withering cross-examination, and they're disappointed when it doesn't come.

Prepare, Prepare, Prepare

The best advice for coming out on top in cross-examination is the most obvious: *prepare.* Most of the ways a cross-examination can go badly for you are minimized by diligent preparation. You'll be less nervous and make fewer mistakes. You'll exude confidence and mastery of the facts. You'll detect misdirection and be more articulate. And, it's all because you did your homework.

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