



DISPUTE RESOLUTION ALERT

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AN UPDATE ON WORLD DEVELOPMENTS IN MEDIATION AND ARBITRATION

The Secrets of Successful (and Unsuccessful) Mediators

By **Stephen B. Goldberg**
and **Margaret L. Shaw**

Introduction

This article reports the results of studies in an ongoing research project designed to determine how mediators succeed in assisting disputing parties to achieve settlements – and why they sometimes fail.

Study One

In Study One, (“Mediators Reveal Their Essential Techniques for Successful Settlements,” *Alternatives*, May 2006), we asked 30 experienced mediators, most of whom deal primarily with commercial, labor, and employment disputes, and nearly all of whom had mediated more than 100 disputes, how they accounted for their success. “What skills and techniques,” they were asked, “enable you to get settlements? . . . What

[do] you view as your essential strengths and techniques?” Seventy-five percent of the mediators responded that their ability to achieve rapport with disputing parties – a relationship of understanding, empathy, and trust – was central to their success in bringing about settlement. A majority of the mediators attributed their ability to achieve rapport to empathic listening, through which they conveyed the message that they truly cared about the parties’ feelings, needs, and concerns. Other mediators attributed their success in achieving rapport to their honesty, ethics, and trustworthiness.

The surveyed mediators also reported that once having achieved rapport, their most useful techniques for achieving settlements were to generate novel or creative solutions to the dispute, to display patience and persistence in encouraging settlement, and to use humor to reduce tension.

Study One was limited in that it was based entirely upon the personal observations and reflections of the mediators, with no participation from those who had used their services. Accordingly, in Study Two, we surveyed people who had participated in mediation as representatives of disputing parties (typically attorneys) to determine their responses to the question of what led to success in mediation. Then, in Study Three, we asked the same group

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of disputants' representatives about what constituted unsatisfactory mediator behavior, reasoning that this, too, might illuminate both the key ingredients of mediator success and what pitfalls should be avoided.

Study Two

Reasons for Mediator Success

In order to collect Study Two data, we asked each of the mediators who had participated in Study One to provide us with the names of the disputants' representatives in six mediations they had conducted – a total of 12 advocates per mediator. We received the names of 329 disputants and sent each a letter identifying the mediator who had provided us with his or her name. We asked each recipient of the letter to respond to two questions, with the assurance that we would not share those responses with the mediator in question:

Thinking back to your most recent mediation with [the named mediator], and any other mediations that you may have had with him/her, what personal qualities, skills, or techniques did [the named mediator] demonstrate that helped move the parties toward settlement?

How would you account for [the named mediator's] success as a mediator?

Of the 329 people we surveyed, 216 responded, for a response rate of 66 percent. Seventy percent (152 out of 216) of the respondents were lawyers, 22 percent (48 of 216) were union or management representatives in labor dispute mediations, and eight percent were either representatives of government agencies or public interest organizations in environmental and public policy disputes, or people who represented themselves in the mediation.

The most frequently cited behavior correlated to mediator success involved the mediator's ability to gain the confidence of the parties, albeit by different means. Tops on the list – referred to by an average of 60 percent of the mediation advocates commenting on the average successful mediator – was that the mediator was friendly, empathic, likable, etc. Examples of the respondents' comments include:

He is a genuinely nice guy. People like to be around other people whom they like – especially someone you have to spend hours with in a high stakes situation.

Because of his sincerity and likability, he is able to keep people talking when other mediators might lose them.

She demonstrates compassion for the client, which makes the client feel that she is working hard on her behalf and tends to make the client trust her.

The next most frequently cited reason for mediator success – referred to by an average of 53 percent of the mediation advocates – was that the mediator had high integrity, as demonstrated by his/her honesty, neutrality, trustworthiness, protection of confidences, etc. Examples of these comments include:

We had absolute confidence that he would not reveal information we did not want revealed to the other side.

Another essential quality is her personal integrity – as it is essential to any mediator. Both sides trust that the information she relays is accurate, and



that she's not putting a spin on things to help her get where she needs to go.

Rounding out the top three most frequently cited reasons for mediator success – referred to by an average of 47 percent of the mediation advocates – was that the mediator was smart, well-prepared, and/or knew the relevant contract or law. Examples of the responses include:

She has a knack for quickly grasping the factual situation and the legal issues involved, and they become the focus of her efforts, rather than the legalities that one side or the other may be pushing.

He was an extraordinarily quick study who was able to master the underlying facts and issues of a complex case well enough to be credible in his discussion of the strengths and weaknesses of each party's position.

The confidence-building attributes referred to above were cited by respondents as key elements of mediator success more frequently than were the various skills used by mediators to bring about agreement. The most frequently mentioned mediator skills were patience and persistence (referred to by an average of 35 percent of the mediation advocates), providing useful evaluations or reality-testing regarding the likely outcome of the dispute in court or arbitration (33 percent), and asking good questions and listening carefully to responses (28 percent).

The respondents also valued the following skills/attributes:

- *diplomacy and tact (21 percent)*
- *proposing solutions/being creative (19 percent)*
- *keeping the parties focused (15 percent)*
- *being candid/firm as necessary (15 percent)*
- *understanding people and/or relational dynamics (13 percent)*
- *being calm and/or deliberate (12 percent)*

A comparison of the advocates' views in Study Two with the mediators' views in Study One reveals both similarities and differences. The two skills that both the mediators and the advocates agreed were important were being patient and persistent, and proposing solu-

tions and being creative. They differed notably in the importance they assigned to mediator evaluation skills, a factor regarded as important by 33 percent of the advocates but by fewer than 10 percent of the mediators. Advocates then, appear to regard evaluation skills as more relevant to mediation success than do mediators.

Components of Individual Mediator's Success

In addition to determining which mediator skills and attributes were viewed by advocates as most important for mediator success, we also sought to determine whether the reasons for mediator success are the same for all successful mediators or whether different mediators succeed for different reasons.

In order to make this determination, we divided reasons for mediator success into five categories: evaluative skills (the mediator's ability to encourage agreement by evaluating a party's likelihood of achieving its goals outside of mediation, typically a prediction of the likely outcome if the matter were decided by a court or an arbitrator); process skills (those skills by which a mediator seeks to encourage agreement, not including evaluative skills), and three confidence-building attributes – friendly/empathic, high integrity/honest, and smart/well-prepared.

We analyzed the scores and found that the advocates viewed different mediators as achieving success as a result of different combinations of skills and attributes. Some of the mediators with the highest overall scores were rated as outstanding – more than one standard deviation above the mean – in the categories of being friendly/empathic and possessing excellent process skills or evaluative skills; others were rated as outstanding for possessing high integrity and excellent process or evaluative skills; while still others were rated as outstanding in the categories of being smart, well-prepared, knowing the relevant contract or law, and possessing excellent evaluative skills. The sole characteristic shared by nearly all the 13 mediators in the top half on the overall scores was that 11 of the 13 were a standard deviation above the mean on at least one of the confidence-building attributes. This corroborates the Study One finding about the importance of confidence-building attributes for

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mediator success.

We found no significant correlation between a mediator's gender and that mediator's overall score or that mediator's scores on any of the five skills or attributes. Female mediators were not cited significantly more or less often for being friendly and empathic than were male mediators, nor were female mediators cited significantly more or less often for their process or evaluative skills than were their male counterparts.

Nor do our results reveal any significant difference between the overall evaluations or individual skills/attributes scores of the four mediators who were former judges compared to those mediators without judicial experience. The former judges were not cited significantly more or less often for their evaluation or process skills than were other mediators. To be sure, the four former judges who participated in this study and the other mediators who did not represent all practicing mediators. Each of the mediators in Study Two is highly successful, and it seems likely that the process skills of the four former judges play some role in their success. In brief, whatever merit there may be to the view that former judges are more highly valued as mediators for their case evaluation skills than for their process skills, we found no support for that view among this small sample of highly successful mediators.

The only significant correlation between a mediator's score on one skill or attribute and that mediator's score on another skill or attribute is found in the relationship between the mediator being viewed as smart, well-prepared, knowledgeable about the relevant contract or law, and the mediator being viewed as providing useful outcome evaluations. Not surprisingly, those mediators who received high scores on smart/well-prepared/knowing relevant contract or law were significantly more likely to receive high scores for providing useful outcome evaluations – typically a function of knowing the relevant contract or law.

Study Three

Reasons for Mediator Failure

The fact that all the mediators in Studies One and Two are successful may reflect a weakness in those studies. In Study One, we could not compare the views

of successful mediators concerning their skills and attributes with the views of less successful mediators. Nor could we, in Study Two, compare the advocates' views of the skills and attributes of successful mediators with their views of the skills and attributes of unsuccessful mediators – no unsuccessful mediators were included in Study Two. Study Three was an attempt to compensate, at least in part, for this weakness by exploring the views of mediation advocates concerning the ways in which some mediators (not those participating in Study Two) failed to meet expectations.

In order to collect this information, we sent each of the 216 mediation advocates who responded to the Study Two Questionnaire a second letter in which we asked whether they had ever participated in a mediation in which the mediator had engaged in conduct that reduced the likelihood of a settlement, or after which they decided that the mediator was so unsatisfactory that they would never again use that mediator. We also asked what mediator conduct had reduced the likelihood of a settlement or persuaded them to refrain from using that mediator in the future.

The most common criticism, reported by 48 percent of the respondents, was that the mediator lacked integrity. Examples of such conduct include:

I had one mediator . . . disclose information provided in confidence . . . Once it surfaced that the mediator had breached confidence, clients and lawyer were outraged and mediation failed.

Dishonesty in reporting the other side's position – confirmed later in conversation with counsel.

I've had mediators come in and say to both sides that their case stinks. No credibility there.

The absence of other confidence-building attributes was also the basis of considerable criticism. Twenty percent of the advocates criticized mediators who lacked empathy, and appeared more interested in themselves than in the parties.

Seventeen percent of the respondents commented that the mediator did not understand the issues or the law, and/or was not well-prepared.

The process skills failure that was far and away the basis of the most criticism, referred to by 24 percent of

the advocates, was that the mediator was not forceful in seeking a settlement, but just went through the motions of mediation, doing little more than carrying messages back and forth between the disputing parties:

The mediator was virtually useless. That is, all he did was relay messages without ever pushing either side to get off of ridiculous positions – including push us when we more than deserved to be pushed.

We had a mediator who refused to take control of a mediation that was spinning out of control. We needed him to get the mediation back in control and even asked him to do so. The mediator responded that “you guys know the facts and parties better than I do”... The parties ended up further apart than before.

The absence of other mediator skills was not the subject of frequent advocate criticism. Only 11 percent commented on the unsuccessful mediator’s lack of patience/persistence, seven percent commented on poor evaluative skills, seven percent on a lack of flexibility in approach, three percent on a lack of creativity, two percent on not keeping the parties focused, and two percent on a poor sense of timing.

We suspect that the reason for the comparatively low frequency of these criticisms by the Study Three advocates is because the absence of these skills and attributes pales into insignificance when compared to the central Study Three criticisms:

- *that the mediator lacked integrity, cared more about himself/herself than resolving the dispute, or was unprepared/uninformed about the relevant issues and/or law; and*
- *that the mediator did not demonstrate any process or evaluative skills, but was merely a messenger, transmitting messages from one party to the other.*

Faced with these behaviors, it is hardly surprising that the respondents went no further in their criticisms, and their failure to do so is not necessarily inconsistent with the views of the Study Two advocates concerning the importance of skills such as patience/persistence, tact/diplomacy, asking good questions/listening carefully, and being capable of providing useful outcome evaluations.



Conclusion

The central conclusion to be drawn from these three studies is that a core element (and perhaps THE core element) in mediator success is the mediator’s ability to establish a relationship of trust and confidence with the disputing parties. Most of the Study One mediators thought that achieving such a relationship was a result of their convincing both parties that he or she truly cared about their needs and concerns; a few attributed their success to their honesty, strong ethics, and trustworthiness. The advocates in Study Two, however, assigned essentially equal importance to these different attributes as well as to the mediator’s knowledge and preparedness, suggesting that mediator success in gaining the trust and confidence of the parties is equally likely to be associated with any of these attributes.

Both the mediators in Study One and the advocates in Study Two regarded persistence and creativity as important for mediator success. Neither of those skills, however, was as widely regarded as important as were the mediator’s confidence-building attributes.

Study Two also suggests that different mediators can be highly successful on the basis of different types of skill sets – process skills for some mediators, evaluation skills for others – and nearly all highly successful mediators are widely viewed as possessing at least one of the confidence-building attributes.

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Study Three approaches the reasons for mediator success from a different perspective – asking why some mediators are not successful. The Study Three results reinforce the conclusions of Studies One and Two regarding the importance of obtaining the confidence of the parties. According to the advocates who responded to Study Three, the most common cause of mediator ineffectiveness was that the mediator lacked integrity – he/she disclosed confidences, gave inconsistent evaluations, was biased, etc.

Few of the Study Three respondents viewed a lack of mediator skill as a central element in the mediator's lack of success, with one prominent exception. Not surprisingly, the Study Three respondents reported they would be unwilling to use a mediator again if that mediator contributed essentially nothing to the search for a resolution to the parties' dispute other than to relay messages from one party to the other.

The common theme running through Studies One, Two, and Three, then, is that gaining the trust and confidence of the parties is the most important element in mediator success. The mediator's skills are also important, but these were less often cited as reasons for mediator success than were the mediator's confidence-building attributes. Finally, and of considerable importance, there is no single model of the successful mediator. Different mediators succeeded on the basis of different combinations of attributes and skills.

Implications for Mediators, Trainers, and Advocates

Perhaps the most important finding of this research for the practicing or aspiring mediator is that the key to mediation success is quite straightforward:

- obtain the trust and confidence of the disputing parties by being friendly and empathic, by demonstrating high integrity, or by being intelligent, well-prepared, and/or knowledgeable in the relevant law or contract, and
- be capable of taking advantage of the trust and confidence of the parties to assist them in resolving their dispute.

Some aspects of achieving success as a mediator can be achieved by training but others cannot:

- The mediation trainer cannot train aspiring mediators to be smart or to know the relevant law or contract, but he or she can emphasize the importance of being well-prepared for mediation. Similarly, the trainer can emphasize the importance of integrity, for example, by using simulations to put trainees in situations in which they are tempted to act inappropriately by breaching a confidence in the hope that doing so will aid in obtaining a settlement.
- The instructor cannot teach empathy – the mediator's genuine concern for the needs of each party – but he or she can teach ways of showing genuine concern through demonstrations and interactive exercises.
- Many process skills can and are being taught and practiced in mediation training. Although some aspiring mediators will demonstrate greater aptitude for some of these skills than for others, it is worth remembering that the most widespread criticism made by the Study Three advocates was not of mediators who lacked a particular skill, but of the mediators who were perceived as doing *nothing* to assist the parties other than relaying messages.

Finally, the findings of these studies could be useful to advocates, such as attorneys and labor negotiators, who engage in mediator selection. It is commonplace for advocates in search of a mediator to inquire about a particular mediator from others who have used that mediator's services. Most often, the inquiry consists of asking, "How good a job did X do for you in the ABC mediation?" or words to that effect. Based on this research, however, we advise advocates to ask more pointed questions relating to the mediator's empathy, integrity, knowledge of the relevant contract or law, persistence, etc., focusing on those skills or attributes that the advocate believes would be most useful in resolving the particular dispute for which a mediator is being sought.

CONTINUING EMPLOYMENT IMPLIES ASSENT TO ARBITRATE

Seawright v. American General Financial Services, Inc. (6th Cir., November 13, 2007)

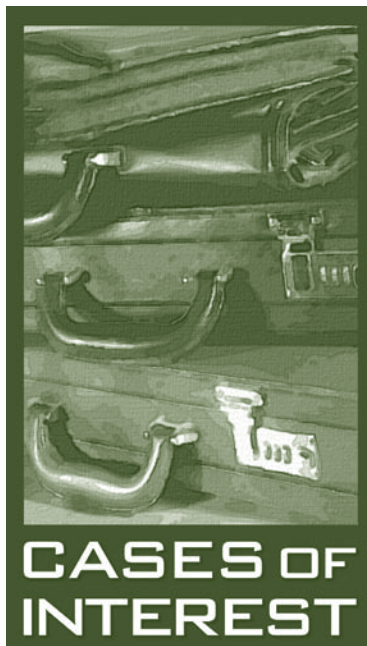
American General Financial Services instituted an Employee Dispute Resolution Program by circulating a brochure to its employees. The program was the sole means of resolving all employee-employer disputes. The brochure stated that continuing employment with AGF constituted acceptance of the agreement. After the institution of the program, Lisa Seawright was fired and soon thereafter she filed a wrongful termination lawsuit in Federal court. AGF moved to compel arbitration and the trial court denied the motion holding that Seawright had not assented to arbitration; that there was no bargained-for exchange; and the agreement was adhesive and unconscionable. AGF appealed to the Court of Appeals for the Sixth Circuit, which held that Tennessee law recognized "acceptance through action" and thus continuing employment was sufficient to indicate assent; the requirement to arbitrate was binding on both parties and this constituted valuable consideration; where Seawright showed no evidence that she'd be unable to find comparable employment the contract was not adhesive; and unequal bargaining power does not, by itself, constitute procedural unconscionability.

DON'T MESS WITH TEXAS – SHOW UP AT MEDIATION

In re Magallon (Tex. App., Oct. 11, 2007)

Rudolfo Magallon retained the Spurlock Law Firm to defend him in a personal injury case. The trial court ordered the parties to mediation, and instructed each party or a representative with authority to settle to attend with "counsel of record." Neither defendant nor his counsel of record attended the mediation, although an associate from Spurlock attended. The court held defendant and counsel jointly and severally liable for failing to attend mediation, and ordered them to pay a

fine of \$500 within 30 days. After 30 days had passed without payment, the trial court ordered that Spurlock be prohibited from practicing law in that court and refused to file documents for any Spurlock cases pending in the court, Spurlock appealed. The Court affirmed the fine, holding that defendant violated the mediation order, and reasoned that defendant's failure to attend the mediation could have been attributable to his counsel. However, the Court ruled that prohibiting Spurlock from practicing law violated due process, and that refusing to file documents in other Spurlock cases also violated due process because the court's ministerial duties included receiving papers for filing.

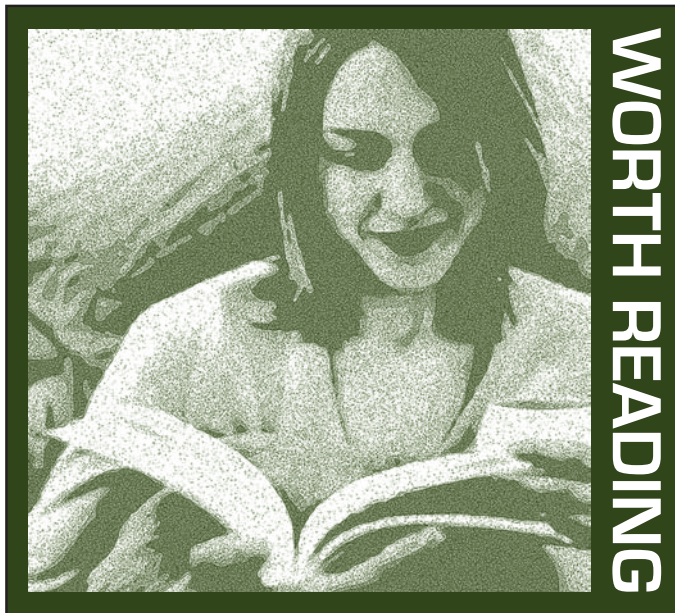


ARBITRABILITY AND ILLEGALITY; WAIVER AND GMO POTATOES

Sleeper Farms v. Agway, Inc. (1st Cir., November 2, 2007)

The Sleepers grew potatoes and Agway bought them. The agreement between the parties included an arbitration clause. One shipment of potatoes was rejected by Agway and a payment was withheld (the shipment contained a mix of GMO potatoes with non-GMO potatoes). The Sleepers filed suit in Federal court and Agway successfully moved to compel arbitration. At the hearing on the motion to compel, the District

Court found "clear and unmistakable" evidence that the arbitrator was to decide the scope of the arbitration clause. The arbitrator awarded the Sleepers the amount of the withheld payment plus some \$30,000. Agway moved to confirm the award and the court approved. The Sleepers appealed to the First Circuit arguing that the arbitration was improperly ordered and confirmed. The Sleepers argued that the contract was illegal and therefore void ab initio. The Court indicated that this case should be treated no differently than *Buckeye Check Cashing* (US Supreme Court 2005) which held that the arbitrator can decide whether the contract was illegal. As to the argument that Agway waived its right to arbitration by withholding the payment, the Court reaffirmed that material breach is an issue for the arbitrator, not a waiver.



Calculated Risks: How to Know When Numbers Deceive You

by Gerd Gigerenzer
Simon and Schuster (2002)

Reviewed by Richard Birke

The only sure things in life are death and taxes. Everything else is a risky proposition. So said Ben Franklin. And also so repeated Gerd Gigerenzer, who wrote the object of this issue's review: *Calculated Risks*. The book is not brand new – five years old, in fact (“don’t you review new books?”), but Gigerenzer is showing signs of breaking out of academia into the popular press, having been “discovered” by Malcolm Gladwell, and we thought you should start reading his books so you can say, “I read him before he was famous.”

Besides, here at the *Alert* we care about risk, and we care about how people perceive and misperceive risk. Lawsuits are risky propositions. Sometimes you win, sometimes you lose, sometimes you get the green and sometimes you get the blues.

Litigants dislike risk. We know that from observation – time and time again. Bearing risk wears one down. And it’s not good for one’s credit rating either. Risk is

less fun than certainty. Cases settle in part because people dislike risk and because settlement creates more certainty.

Certainty is very attractive. Plaintiffs wish they were certain they’d win their lawsuits. They would negotiate differently – if at all. Same with defendants. However, both sides sometimes pretend to be certain that they will win – if the case goes to trial (which it won’t – only 1.8 percent of all filed matters proceed to verdict) – but the litigants are, after all, only pretending to be certain because they don’t like risk and they would prefer to believe it didn’t exist (and they like to bluff).

Here’s a simple example that shows how much people abhor risk. You may recall the name Daniel Ellsberg. He released the Pentagon Papers. But before he did that, he was a decision theorist. In his most famous work, he had groups of people decide between two urns full of balls. Each person was assigned a color – red or blue. They were then told that one ball would be chosen out of one of two urns, and if the ball matched their color, they would get a prize. Urn One had 50 red balls and 50 blue balls. Urn Two had an undisclosed mix of 100 red balls and blue balls. When the people chose, they almost all chose Urn One. Would you have chosen Urn One? Would you care which urn the ball came from?

You probably care – and like the majority, you probably would choose Urn One. But you should be indifferent between Urns One and Two even if you aren’t. Why should you be indifferent? Because Urn Two might have 100 balls your color. Or it might have 100 balls the other color. Or it might have 50 of each. And on average, the odds are 50/50 – just like Urn One.

People prefer Urn One because they don’t like uncertainty (not even knowing the odds). They prefer risk (knowing the odds). Of course they’d prefer certainty, but when certainty is unavailable, known odds are better than unknown odds. Many a dollar has been spent in discovery trying to pursue elusive certainty, and then settling for movement from uncertainty to risk.

This uncertainty aversion leads to overspending, but the matter is worsened because people aren’t very good at calculating risks. Ellsberg’s subjects couldn’t tell one 50/50 proposition from another. Do litigants perceive risks associated with trial any better than Ellsberg’s subjects did?

Gigerenzer argues and demonstrates persuasively that expert presentations of risks are unlikely to communicate much useful information and they may even cause more harm than they do good. Experts fail to use natural language and natural frequencies to communicate, relying instead on probabilities and relative frequencies.

Here's an example. Breast cancer screenings do more harm than good. It's the way that the information has been presented that has you convinced that the opposite is true. Not lies – not damned lies – it's the third kind of mistruth – statistics.

Most literature about breast cancer promotes a 25 percent reduction in breast-cancer fatalities if a regular screening process is part of a patient's health regimen.

Imagine this presentation. "The probability that a woman of age 40 has breast cancer is about one percent. If she has breast cancer, the probability that she tests positive on a screening mammography is 90 percent. If she does not have breast cancer, the probability that she nevertheless tests positive is nine percent. What are the chances that a woman who tests positive actually has breast cancer?" Most people say "90 percent."

This makes screening look worthwhile, right?

Here's an alternative presentation. "Think of 100 women. One has breast cancer, and she will probably test positive. Of the 99 women who do not have breast cancer, nine will also test positive. Thus, a total of 10 women will test positive. How many of those who test positive actually have breast cancer?"

In the second example, presented in natural frequencies, it's clear that the odds are 10 percent that a positive test will be a "true positive."

What about the 25 percent reduction in deaths? Doesn't that justify testing? No. Here's the real truth. Of millions of women studied over long periods of time, the average rate of death from breast cancer in the "screen" group is three per 1000. In the "non-screen" group, it's

four per 1000. That's the 25 percent reduction. One per thousand.

Isn't a 25 percent reduction worth it? Isn't one life saved worth all the cost and problems? Hmm ... is one life saved worth all the cost and problems? Hmm ... is one life saved? Is there a net saving of life? Probably not. About nine of 10 "positive tests" are "false positives." That is, a great many women who are perfectly healthy will be told they have cancer, and they will endure everything from worry to radical mastectomies as a result. Another large number of the positive tests will find cancers that are either not growing at all or growing so slowly that something else will kill the woman (most likely a heart problem) before the cancer will. And finally, there's a chance that the increased radiation inherent in a testing regime may have deleterious health

impacts. The "reduction in risk" statistic leaves out any cost-benefit analysis.

For women aged 50-60, testing produces the most benefits. Before and after that, the false positives and the fact that something else is likely to be the cause of death outweigh the benefits.



Why do we fall prey to misleading probabilities? Gigerenzer suggests that we are "innumerate." We (1) are ignorant of risk (2) miscommunicate risk and (3) engage in clouded thinking.

The cure for the first is data gathering and research. The antidote for the second is representations that facilitate understanding. The cure for the third ... caffeine? No ... it's "mind tools" such as natural frequency depictions of risk.

Gigerenzer offers a three-part opera in which act one is a problem statement entitled "Dare to Know." In the four scenes in this act, the reader is thrust into the dramatic world of uncertainty. The entry to the story is a patient misdiagnosed with AIDS. During the period prior to her discovery that the test was a false positive, "Susan" broke off a sexual relationship with her HIV-negative partner, engaged in unprotected sex with other AIDS positive people ("why not?") and she

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refused various relationships and situations (jobs, housing). A horrible result, and all the product of poor math skills. Why did her doctors fail to encourage a second test? Stay in your seat until you get to act two!

Part one continues with chapters entitled "The Illusion of Certainty" (People have made statements. Later retracted, that there are no mad cows in Germany, that DNA fingerprinting is foolproof, and that medical tests give sure direction.); "Innumeracy" (covered above); and "Insight" (in which we learn that probabilities are a relatively recent invention – imagine trying to multiply in Roman numerals? Or express percentages in a base 12 system?). Part one ends, like all good first acts, with more questions than answers – more tension than resolution.

In part two, the plot thickens. The reader is treated to (or tortured through) seven real-life examples of how poorly the expert world deals with risks and probability. The chapters deal with breast cancer, informed consent on medical tests and procedures, AIDS counseling, spousal abuse, expert testimony, DNA fingerprinting and violence-prone people. I've already described some of the breast cancer information, so you have an idea of the extent of the problem. Let me offer a few highlights from the rest of part two.

DOCTORS AND TESTS

There is "no evidence that early detection (of prostate cancer) reduces mortality ... More men die with prostate cancer than from prostate cancer." But physicians fear more than anything the idea that they will "miss a cancer (and endure) the emotional distress at having had the power to detect a cancer and missing the opportunity." Malpractice fears also play a role. (Any attorneys reading this may want to consider whether similar incentives play into decisions about discovery!)

"At a conference on AIDS held in 1987, former Senator Lawton Chiles of Florida reported that of 22 blood



donors in Florida who were notified that they had tested HIV-positive....7 had committed suicide." The test used was later found to be only 50 percent accurate – i.e., half of all positives were false positives.

LAWYERS AND NUMBERS

Alan Dershowitz was successful in helping defend O.J. Simpson by preventing evidence that wife battering is linked to murder. He argued that "as many as 4 million women are battered annually ... yet in 1992 ... there were only 1,432 homicides." The rates suggest that only one in 2,500 battering relationships will there be a murder. However, "if a woman has been battered by her husband and later murdered, the case against the batterer is in fact fairly strong." This is because of 100,000 battered women, we can expect 45 to be murdered in any given year. And of those, 40 will be murdered by their partners and only five will be murdered by a stranger. Thus, the true odds were that Nicole Brown was murdered by O.J. were eight out of nine, not one out of 2500. And this evidence was not even allowed to be presented to the jury because of the defense's skillful manipulation of the statistical information.

EXPERT WITNESSES AT TRIAL

Experts are supposed to be better at predictions than laypeople. That's why they are allowed to give opinions at trial. But experts fall prey as readily to problems in statistical interpretation, and the resulting flawed opinions are often the most persuasive testimony at a hearing. Compare the following conditional probability with the equivalent natural frequency representation:

"The expert testifies that there are about 10 million men who could have been the perpetrator. The probability of a randomly selected man having a DNA profile that is identical with the trace present at the crime scene is .0001 percent. If a man has this profile, it is practically certain that DNA testing will

show a match. If a man doesn't have this profile, the odds of a match are only .001 percent. A match has occurred. What is the probability that this is a true match? What is the probability that the person is the source of the trace? Guilty or not?"

versus

"The expert testifies that there are about 10 million men who could have been the perpetrator. Approximately 10 of these men have a DNA profile that is identical with the trace recovered from the scene. If a man has the profile, the test is practically certain to identify him. If he doesn't have the profile, about 100 men in a million will nonetheless be positively identified. A match has occurred. How many of the men with a reported match actually match? How many of the men with a reported match are the source of the trace? Guilty or not?"

If you are like me, the first description leads to a guilty verdict while the second fails to be proof beyond a reasonable doubt.

VIOLENT PEOPLE

In the chapter on the ability of experts to predict future violence, Gigerenzer discusses two important concepts – reference groups and category effects. Reference groups are the group to which the statistical information is meant to apply – but the offerer of the statistic may have a different reference group in mind (doctor thinks percentage of problems associated with a given drug is 20 percent because his reference group is "all patients taking the drug under my care." Patient thinks percentage refers to percentage of time this patient will suffer this side effect). Category effects are the effects caused by the creation of categories. For example, if a person is asked how many hours of television they watched per week five years ago, they wouldn't remember exactly (unless the answer was "none"), but

they may remember themselves as a moderate television watcher. They would then be likely to check a box in the middle of the scale – independent of whether the category was most accurate. When experts asked to predict future likelihood of violence in a particular individual – a "single event probability" – were presented a 1-100 scale, they rated on average 30 percent for a given subject population. When presented with a 0-40 scale, they dropped to 20 percent. Moreover, when expressed as a percentage, the number was higher than when presented as a natural frequency. ("This group has an X percent chance of offending" vs. "Of 100 people in this group, X are likely to commit another offense.")

This second set of chapters is sprinkled with hints on how to overcome the problems associated with poorly presented or poorly understood information about risk. But it's not until the third part of the book that the answers are revealed.

And even then, the third part starts with more scary stories. Chapter 12 is entitled "How Innumeracy Can be Exploited." Topics include Getting Funding, Selling Your Treatment, Raising Anxiety, Making Money, and Presenting Losses as Gains. This chapter includes a story about Mexico repainting a four-lane road into a six-lane, boasting a 50 percent increase in capacity. After too many wrecks, they repainted back to four lanes, and moaned a 33 percent loss of capacity. At the end of the day, they reported a net gain of 17 percent – despite an increase in accidents and the costs of paint.

So ... how do we get out of the problems? One – draw "frequency trees." If you start a tree with 100 people and you ask "how many have the disease" and you divide into two branches and then parse out false

positives and false negatives, you have a much-easier-to-digest set of possibilities than if you look at aggregate probabilities. What works for medical diagnosis works for lawsuits equally well.

Don't ask whether a switch in tactics will pay off. Instead, ask "in how many cases" does

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switching pay? (This is a response to the famous "Monty Hall Problem." Google "Monty Hall Problem" if you don't know what it is. You'll be glad you did.)

All is revealed in chapter 14 – Teaching Clear Thinking. The advice is pithy but spot on. Step one – stop thinking about "yes/no" and start thinking about natural frequencies. It's not "will it rain" but rather "how many times out of 10 would it rain in these conditions?" Step two – gather information about risk. Despite efforts by some organizations to perpetuate false beliefs (Cigarettes don't cause cancer. But if they did, we didn't know. But if we knew, we fixed it with light cigarettes. Which don't work. But we didn't know that. And cigarettes aren't addictive ... and so on), Gigerenzer suggests that there are three primary sources of fear – preparedness, disasters, and unknown hazards. If you identify the things about which you are most concerned and you educate yourself, at least your risk calculations will be founded in real data. Step three is to communicate and reason in simple and accurate statistical terms. Educate yourself about statistics if you can, but at least communicate in natural frequencies instead of percentages.

How do numbers deceive you? Now you know – or at least you know where to find out more information. I think there's a better than 95 percent chance that you will like this book ... er, let me restate that. I think that if 100 of you read this book, more than 95 will find it Worth Reading!

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