"Expert Testimony: From Dr. Snow, Cholera & the Pump Handle, to Daubert, 2011 Wisconsin Act 2, and the New Ch. 907 Rules"

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I. The story of the Pump Handle, or the importance of how an expert arrives at an opinion:

A. During the London cholera epidemic of 1854, prevailing experts held that cholera spread through the air, rather than water.

B. Dr. John Snow examined maps of cholera cases. He traced the disease to water from a local pump.

C. Dr. Snow asked community leaders to remove the pump's handle to prevent further exposure, but faced criticism from others in the science community, not to mention resistance from the water companies.

D. Community leaders finally removed the pump handle, and the number of cholera cases went down.

E. The pump handle example demonstrates that the tension between new discoveries (in science and other areas of specialized knowledge) and status quo thinking and how society integrates and uses new thinking—whether in public health or in the justice system—is not a new issue, but one that science and society in general has long struggled with. This outline is an update of the current struggle with such issues in Wisconsin.

II. When expert testimony is being considered there are three things you need to think about:

Who is doing the listening?

What is being talked about and listened to?

Who's doing the talking?

A. Who's listening to the testimony of experts -- Juries -- and why that is an important factor

1. National Science Foundation annual science test results

a. Few people -- less than 15% -- describe themselves as well informed about science & tech -- 30% described themselves as poorly informed on S&T

i. Well founded because the average score on the basic science concepts & terms test is

barely 63% (13 T-F questions, 3 multiple choice & 2 open ended questions)

(a) Less than 50% know that the earth orbits the sun yearly

(b) Only 9% know what a molecule is

(c) Only 21% can define DNA

(d) Only 5% can explain acid rain

(e) Only 27% can pass more than 9 questions on the test: that's a mere 70% grade

(f) Unchanged since the 1990s

ii. Only 33% surveyed can provide a good explanation of the scientific method, how experiments are conducted and probability -- 50% are unsure of what "margin of error" means even though 40% of all respondents say margin of error is useful

iii. Beliefs in various forms of pseudoscience is common with 60% believing in ESP and 41% believing astrology is at least somewhat scientific

iv. What makes this particularly dangerous is the level of confidence in science -- favorable attitudes toward science is 72%

b. The anecdote which humorously describes this is an episode in the Penn & Teller HBO series

i. A young woman signs up numerous citizens to ban a chemical compound

ii. She explains that this compound is found in lakes and rivers, it remains on fruits and vegetables after they're washed, it makes you sweat

iii. The compound is dihydrogen monoxide

iv. Of course dihydrogen monoxide is simply water

B. <u>What</u> is being talked about — <u>science</u> — the <u>substance</u> of expert testimony

1. Science is inherently changeable

2. Science predictions and studies

a. Coffee: 1986 linked to heart disease -- 1990 study found no relationship

b. Aspirin: 1988 one study says reduces risk of heart disease -- another says increases risk of heart disease and kidney cancer

c. Bacon and hot dogs and the new car smell: allegedly carcinogenic because of nitrosamines -- then exonerated

d. Oat bran -- Wilford Brimley as spokesman -- reduces cholesterol levels -- two competing studies: one yes and one no

e. Spinach -- the healthiest food in the world -- Popeye ate it because it made you strong -- all based on a scientific error -- the decimal point was in the wrong place for iron -- 10 times more iron that actually is in spinach -- honest mistake but generations have believed it -- <u>because in poll after poll scientists are trusted more than any other profession</u>

b. Can give examples all day including formal retractions of studies

i. The retractions of course never receive the prominence of the original publicity

3. Part of this is the nature of science and learning more

4. Part of it is "Fast Food" Science vs Good Science

a. Fast food science is what this bill keeps away from juries

b. Good science is what this bill gives to juries

c. It's the same as food in terms of nutritional *value*

5. One example you do need to know about that was formally retracted by the authors publicly saying their work "was never corroborated by subsequent studies" was part of the evidence relied on by a jury in Ohio awarding $5.1mm against Ortho Pharmaceutical

a. The study suggested that spermicides might cause birth defects

b. The authors in their retraction years later said:

i. "The study's definition of exposure to spermicide near the time of conception was grossly inaccurate"

ii. "Our article never should have been published"

iii. "In our present litigious environment, the reservations and qualifications written into a published report are often ignored, and the article is cited as "proof" of a causal relationship"

6. Trials & justice need the best science not the lowest common denominator science for juries

C. <u>Who's doing the talking</u> -- "<u>Experts</u>" -- the warning signs about experts that are a good reason for the <u>Daubert</u> standard being adopted

1. Problems with scientific accuracy have always been with us

a. Estimates in scientific circles suggest that data massage and research fabrication could exist in as much as 90% of all studies either negligently or intentionally -- see Deception in Scientific Research, Woolf, 29 jurimetrics Journal, 67 and *Abbs v. Sullivan* (7th Cir. 1992)

2. Fellowship applications

a. University of Pittsburgh Medical school applications for fellowships

i. 20% lied about research publications

ii. 30% claimed false publications -- articles not published -- in non-existent journals

iii. Also found 12% of all yellow page ads for doctors misrepresent board certification status

3. When it comes to the magic words that every expert has to say "it is my opinion to a reasonable degree of probability and certainty" the New Eng. Journal of Medicine found that

a. 67-70% of medical professionals equated probable to likely

b. Only 70% said probable had a distinct meaning

III. <u>Daubert v. Merrell Dow Pharmaceutricals, Inc.</u>, 509 U.S. 579 (1993).

A. Before Daubert most courts followed Frye v. U.S., 293 F. 101, 34 A.L.R. 145 (D.C. App. 1923), under which scientific evidence could be admitted only if had attained "general acceptance" in the relevant scientific community.

B. Wisconsin had a unique approach to the admissibility of expert testimony: the "relevancy" test.

1. Expert testimony was admissible if it is relevant, the witness is qualified based on his or her "specialized knowledge," and the testimony will assist the trier of fact in better understanding the evidence or determining a fact in issue. See State v. Peters, 192 Wis. 2d 674, 534 N.W. 2d 867 (Ct. App. 1995).

2. The scientific validity of the expert witness's opinion was not a required subject for an admissibility determination.

C. Daubert held that federal courts applying Fed. R. Evid. 702 should take a three pronged approach:

1. Courts are to consider the "validity" or "reliability" of the evidence in question

a. A number of factors are to be considered in this reliability determination, which are listed below.

2. The evidence's degree of "fit" to the facts and issues in the case; and

3. the risks or dangers that the evidence will confuse the issues or mislead the jury (the concerns of Fed. R. Evid. 403 and Wis. Stat. § 904.03).

IV. 2011 Wisconsin Act 2.

A. Admissibility of expert witness testimony hinges on compliance with the same standard set forth in Federal Rule of Evidence 702 and Daubert.

B. The trial court will consider five factors to determine whether the methodology used by the expert witness is valid, including:

1) whether the theory or technique in question can be and has been tested;

2) whether it has been subjected to peer review and publication;

3) its known or potential error rate;

4) the existence and maintenance of standards controlling its operation; and

5) whether it has attracted widespread acceptance within a relevant scientific community.

Additional reliability factors which can be considered under Daubert case law:

6) whether the expert is testifying about matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying;

7) whether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion;

8) whether the expert has adequately accounted for obvious alternative explanations;

9) whether the expert "is being as careful as he would be in his regular professional work outside his paid litigation consulting"; and

10) whether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert would give.

C. This provision first applies to an action or special proceeding that is commenced on the effective date of the legislation, **February 1, 2011.** Thus, the provisions will not apply to cases pending on the effective date.

V. "Validity" / "Reliability" Determination

A. No single factor is necessarily dispositive of reliability of an expert's findings.

B. Lack of consensus in a field is not fatal to testimony.

C. Court has leeway in making reliability determination:

1. Not focus solely on witness's qualifications

2. Rather, focus on witness's principles and methods

D. Witness must reliably apply otherwise-reliable principles and methods

1. Avoids an expert incorrectly applying a solid methodology.

2. Avoids a "creative" expert who applies reliable methodology in a "unique" way that puts into doubt the end result.

E. Applies to any specialized knowledge: scientific and non-scientific

VI. The Daubert Hearing Itself

A. Usually taken up in a separate hearing before the trial begins pursuant to Wis. Stat. § 901.04 – to determine questions of admissibility generally.

1. decided by judge alone

2. evidentiary rules do not apply (e.g. hearsay)

3. must be determined by a preponderance of the evidence

4. reviewed by appellate court under abuse of discretion standard

B. Daubert does not require one particular form of hearing.

C. Presentation of issues relating to admissibility of scientific or technical evidence made in the form of:

1. Briefs
2. Affidavits
3. Live testimony
4. Deposition transcript references
5. Expert reports

D. Ultimately, the burden of satisfying Daubert rests on the proponent of the evidence.

E. Ask the Court for detailed findings: mixed questions of fact and law, such as:

1. witness's qualifications

2. helpfulness of testimony

3. opinion sufficiently supported by facts and data

4. reliability of witness's principles and methods

5. whether witness applied principles and methods in a reliable manner.

F. Important question: Is the pivotal issue presented by proffered expert testimony already resolved in cases definitive on this point?

E.g. – lie detector evidence

G. Such a hearing is a double-edged sword: test the other side's expert, but also reveals much about your strategy as well.

VII. How to raise a Daubert Challenge

A. Takes the form of a motion.

B. Identifies and describes the objectionable proffered testimony.

C. Attempts to establish that the proffered evidence lacks scientific validity and reliability. This done by reviewing the four "scientific knowledge" factors:

1. ability to test the theory

2. peer review and publication

3. known or potential rate of error

4. extent of acceptance

Present detailed and specific evidence on each of these criteria.

D. After demonstrating lack of scientific validity, make the "fit" argument:

Done by showing that proffered evidence – even if it does reflect scientific knowledge – fails to advance a material aspect of the case.

E. Checklist for challenging an expert under Daubert from Bradshaw ex rel. Hayes v. Marine Health Care, Inc., 2008 WL 2004707 (N.D. Miss. 2008):

1. Did the opinion witness turn in an expert report?

2. Did the expert report contain:

(a) a complete statement of all opinions?

(b) the basis and reasons therefor?

(c) the data considered in forming the opinion?

(d) any exhibits to be used as a summary of opinions?

(e) the qualifications of the witness?

(f) publications authored by witness in the last 10 years?

(g) compensation

(h) other cases in which the expert has testified in the last 4 years?

3. Were the opinions supplemented?

4. Is the witness qualified by knowledge, skill, experience, training, or education?

5. Is the testimony based on sufficient facts?

6. Is the testimony the product of reliable methods?

7. Did the witness apply those methods to the facts reliably?

8. Can or has the theory/technique been tested? Can the theory/technique be challenged or is it a subjective, conclusory approach?

9. Is the theory/technique subject to peer-review or publication?

10. Is there a known or potential rate of error of the theory/technique when applied?

11. Were standards and controls used?

12. Did the theory arise from litigation or independent research?

13. Is there "too great an analytical gap between the data and the opinion proffered," that is, does the theory "fit" with the facts of the case?

14. Did the expert adequately consider alternative explanations?

15. Was the expert "as careful as he would have been in his regular professional work outside his paid litigation consulting"?

16. Is the expert's field of expertise known to reach reliable results for the type of opinion proffered?

VIII. Expert witness preparation and Daubert

A. Fully explore the opinions offered by the expert in advance of the motion hearing in light of the criteria discussed above:

1. The bases for these opinions

2. The principles and methods used to reach these opinions.

3. The application of those principles and methods to this particular case which resulted in these particular opinions.

B. Fully explore possible weaknesses in these opinions

C. Areas of inquiry which the expert will likely face at a Daubert hearing:

1. All documents reviewed or relied upon by the expert.

2. Preparation for the hearing.

3. The expert's qualifications to render an opinion in this subject matter.

4. Previous Daubert challenges to expert and the outcomes of those challenges.

5. The extent of the expert's engagement by the client—other cases.

6. The expert's time spent on the case.

7. The expert's conclusions or opinions about the case.

8. The basis for each conclusion in the expert's report.

IX. Fields Daubert has been be applied in:

A. "Hard" sciences, such as engineering

B. "Soft" sciences, such as psychology or economics.

C. Examples:

1. Toxic tort cases - illnesses or deaths alleged to have been exposed by exposure to chemicals or other foreign agents trigger battle of the experts.

a. Courts appear to set the bar high.

2. Product liability cases - issues of causation and alternative design.

3. Drug and medical device cases

X. Practical Effects of 2011 Wisconsin Act 2:

A. May be more Daubert hearings challenging the admissibility of expert opinions before cases go to trial. The change may also make lawsuits more efficient by preempting lawsuits without sufficient scientific basis, and avoiding jury trial time for the same reason.

B. Federal district courts and most states' trial courts handle Daubert hearings within their normal motion dockets. As the rules provide with regard to other evidentiary determinations, trial judges will decide what is legitimate scientific expert opinion testimony.

XI. Resources

A. http://www.daubertontheweb.com/links.htm

B. Federal Judicial Center's Reference Manual on Scientific Evidence, now in its second edition.
C. Federal Judicial Center's Manual for Complex Litigation (Fourth).
D. State Justice Institute's Judge's Deskbook on the Basic Philosophies and Methods of Science.
E. The *Daubert* Compendium (2011) - *DRI www.**dri**.org/open*