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DWI: Modern Day
Salem Witch Hunts

Judge Daryl Coffey of County Criminal Court number 8, in Tarrant County, Texas, once remarked to me that all a prosecutor has to do to win a DWI case is just make sure that the three letters “DWI” are mentioned at least 15 times in a trial.¹ It is this type of environment that has allowed history to repeat itself. All we have to do is look back to the Salem Witch Hunt trials of 1692 where 19 convicted “witches” lost their lives on “specter” evidence.² Evidence in DWI trials has not come very far since 1692 when claims of apparitions only visible to their victims were enough to support execution of the accused. The greatest challenge to DWI practitioners these days and to those accused of DWI/DUI related crimes is that courtrooms have not kept pace with the science. Bad science is rubberstamped with approval by the majority of the judiciary as long as the government sponsors it.

Horizontal Gaze Nystagmus

The horizontal gaze nystagmus test, or HGN, is alleged to be 77% accurate (80% accurate with the W&T) in determining if a person is .10 BAC³ or more.⁴ The first problem with this test is the particularity. Police officers are not ophthalmologists trained in the detection of eye movements and or eye pathologies. There are 47 types of nystagmus in individuals, separate from Horizontal Nystagmus:

(1) Acquired; (2) Anticipatory (induced); (3) Arthrokinetic (induced, somatosensory); (4) Associated (induced, Stransky's); (5) Audio kinetic (induced); (6) Bartel's (induced); (7) Brun's; (8) Centripetal; (9) Cervical (neck torsion, vestibular-basilar artery insufficiency); (10) Circular/Elliptic/Oblique (alternating windmill, circumduction, diagonal, elliptic, gyratory, oblique, radiary); (11) Congenital (fixation, hereditary); (12) Convergence; (13) Convergence-evoked; (14) Dissociated (disjunctive); (15) Downbeat; (16) Drug-induced (barbituate, bow tie, induced); (17) Epileptic (ictal); (18) Flash induced; (19) Gaze-evoked (deviational, gaze-paretic, neurasthenic, seducible, setting-in); (20) Horizontal; (21) Induced (provoked); (22) Intermittent Vertical; (23) Jerk; (24) Latent/Manifest Latent (monocular fixation, unimacular); (25) Lateral Medullary; (26) Lid; (27) Miner's (occupational); (28) Muscle-Paretic (myasthenic); (29) Optokinetic (induced, optomotor, panoramic, railway, sigma); (30) Optokinetic After-Induced (post-optokinetic, reverse post-optokinetic); (31) Pendular (talantropia); (32) Periodic/Aperiodic Alternating; (33) Physiologic (end-point, fatigue); (34) Pursuit After-induced; (35) Pursuit Defect; (36) Pseudo spontaneous; (37) Rebound; (38) Reflex (Baer's); (39) See-Saw; (40) Somatosensory; (41) Spontaneous; (42) Stepping Around; (43) Torsional; (44) Uniocular; (45) Upbeat; (46) Vertical; (47) Vestibular (ageotropic, geotro-pic, Bechterew's, caloric, compensatory, electrical/faradic/gal vanic, labyrinthine, pneumatic/compression, positional/alcohol, pseudo caloric.⁵

It is unrealistic given this extensive laundry list — which includes medical condition that a police officer can make the important distinction that he is indeed observing horizontal gaze nystagmus. Even if he could, the next issue is causation. Officers jump to an incorrect premise that if they do isolate horizontal gaze nystagmus this must be indicative of ethanol intoxication. There are actually 38 different causes of horizontal gaze nystagmus unrelated to alcohol as judicially recognized in *Schultz v. State*:

(1) problems with the inner ear labyrinth; (2) irrigating the ears with warm or cold water under peculiar weather conditions; (3) influenza; (4) streptococcus infection; (5) vertigo; (6) measles; (7) syphilis; (8) arteriosclerosis; (9) muscular dystrophy; (10) multiple sclerosis; (11) Korchaff's syndrome; (12) brain hemorrhage; (13) epilepsy; (14) hypertension; (15) motion sickness; (16) sunstroke; (17) eyestrain; (18) eye muscle fatigue; (19) glaucoma; (20) changes in atmospheric pressure; (21) consumption of excessive amounts of caffeine; (22) excessive exposure to nicotine; (23) aspirin; (24) circadian rhythms; (25) acute trauma to the head; (26) chronic trauma to the head; (27) some prescription drugs, tranquilizers, pain medications, anti-convulsants; (28) barbiturates; (29) disorders of the vestibular apparatus and brain stem; (30) cerebellum dysfunction; (31) heredity; (32) diet; (33) toxins; (34) exposure to solvents, PCBs, dry-cleaning fumes, carbon monoxide; (35) extreme chilling; (36) lesions; (37) continuous movement of the visual field past the eyes; and (38) antihistamine use.⁶

Another real problem with the horizontal gaze nystagmus test is the timing of its presence and an actual

alcohol concentration. The HGN, as administered by the National Highway Transportation Safety Administration's (NHTSA) protocol for the Standardized Field Sobriety Tests (SFST) has been cited as the only reliable index of blood alcohol when examined for its ability to distinguish BACs under and over .04% within the .00-.08% range.⁷ So it is a fallacy to use this test to determine that someone may be over .08 BAC. What is also alarming is the fact that nystagmus can remain for some time once the BAC has reached .000. In a dose/response study of 89 subjects,⁸ 62% of the dosed subjects exhibited nystagmus in one or both eyes at BAC levels of .00% when tested immediately after all alcohol was cleared from their blood and 56% of those subjects still exhibited nystagmus one hour later.⁹ In the same study, it was determined from 66 healthy, well-rested subjects¹⁰ who did not consume any alcohol and completed 5.5 to 8.0 hours of sleep after being awake for 9 to 14.5 hours (average 11.2) that they had distinct nystagmus in one or both eyes.¹¹ Afterwards these same subjects were re-examined with an average awake time of 24.5 hours and distinct end position nystagmus was observed in one or both eyes in 55% of the group.¹²

What is particularly troublesome is the stamp of imprimatur by the American Optometric Association¹³ — touted by prosecutors in laying the foundation for the test's admissibility.¹⁴ It's important to distinguish that no such resolution of acceptance for the HGN exists by the American Academy of Ophthalmology. It's unsettling how eager the American Optometrist Association has been to embrace the possibility of providing expert testimony as a puppet of the government without any legitimate scientific inquiry of its own. The seminal scientific research article on HGN states it best:

In an article designed to inform optometrists how to provide expert testimony on the HGNT (HGN), the only evidence of a correlation between BAC and nystagmus given is a reference to the NHTSA's work. Specifically the article stated "through a series of studies, the National Highway Traffic and Safety Administration (NHTSA) has been able to establish a high correlation between alcohol concentrations in the body and performance on a series of field sobriety tests." It is interesting, and perhaps revealing, that no other evidence is referenced to support this correlation.¹⁵

One only needs to look at the criticism of NHTSA's foundational research¹⁶ — which led to the development of the HGN test- to understand that this is yet another example of agenda government science which misses the mark. *It is interesting to note* that researchers have determined that percentages generally cited by the courts in support of HGN exist only in NHTSA publications.¹⁷ Jurists and prosecutors in the United States have been quick to embrace the HGN test as hardcore science but this component has not been adopted by Great Britain.

Standardized Field Sobriety Tests

Outside of the HGN, DWI cases concentrate on psychomotor skills measured by standardized field sobriety tests; but just how good are these tests? This requires some basic understanding of testing fundamentals. The first incorrect presumption with this framework is that these tests measure impairment related to driving. They do not.¹⁸ The walk and turn and one leg stand are purported to have "face validity"¹⁹ — that is the tests relate to actual driving tasks. Face validity is the lowest form of validity a researcher can achieve and is generally not accepted by academia because "face validity rests on the investigator's subjective evaluation of the appropriateness of the instrument for measuring the concept rather than whether the instrument measures what the researcher wishes to measure."²⁰

For a test to be valid, there must be high reliability and validity both measured by a correlation coefficient ranging from 0 to 1.0 (highest end of the scale).²¹ Reliability relates to the consistency of scores based on re-testing. Validity relates to the ability of a test to predict particular benchmarks. Intelligence tests such as the Wechsler Intelligence Test have a reliability of .90. According to the 1977 SCRI study, which developed the 3-part standardized field sobriety tests, the validity correlation coefficient²² was .48, the walk and turn was .55.²³ In layman's terms what this means is that using a one-leg stand to predict a .10 BAC is only 25% better than chance.²⁴ The HGN interestingly enough had only a correlation coefficient of .67 equating to an approximate 33% better prediction than chance.

²⁵ Use of the walk and turn is only 27-28% better than chance.²⁶ The overall error rate (wrong percentage of decisions to arrest) was 47%.²⁷ In 1981, laboratory field sobriety tests (this time just the HGN, walk and turn, and one leg stand) were researched again and the error rate was found to be 32%.²⁸ Validity correlation coefficients were not mentioned in this study. Reliability correlation coefficients were given for this study: HGN .66, walk and turn .72.²⁹ For a test to be reliable the coefficient must be .85 or higher.³⁰ When different officers performed the test on the same subject at the same BAC, the coefficients dropped down to .59 for the HGN and .34 for the walk and turn. A 66% error rate was indicated for the walk and turn and the one leg stand error rate equated to a 40%.³¹ Dr. Burns herself indicated that the '77 and '81 error rates were unacceptable.³² In response to a cross-examination question as to whether 32% was acceptable, she replied, "It is getting there."³³ This is the meat and potatoes of what still exists today.

Once one gets over the initial shock of how unacceptable these tests are according to government research, the next logical step is to look at the relevant scientific peer review community. Dr. Spurgeon Cole and Ronald Nowaczyk did just that in 1994 in a field sobriety study sponsored by Clemson University. According

to this study, field sobriety tests that included the walk and turn and one leg stand test were compared to normal tasks such as reciting basic information and walking in normal manner for 21 sober individuals all with a BAC of .000.

Forty-six percent of the officers determined the subjects intoxicated by SFST(s) with only fifteen percent of said subjects determined to be intoxicated by normal tests.³⁴ The promulgation of these tests, the HGN, walk and turn and one leg stand may be good enough for government work but are a far cry from reliable, scientific standards. Because of this, innocent people are being convicted every day on these premises, which are taken at face value despite their invalidity. When most states lowered legal limits to .08, the government found itself in a quandary that it has not been able to solve; hence, the continuation of the misleading 1981 percentages of accuracy: HGN 77%, walk and turn 68%, one leg stand 65%.³⁵ The Colorado,³⁶ Florida³⁷ and San Diego³⁸ studies attempted to quantify accuracy at .08 but none proved worthy of the mission. Such roadblocks as documented by Steve Rubenzer, Ph.D, included but were not limited to the following critiques:

1. The field studies validated the arrest decisions of the officers in the studies, not the SFSTs.
2. The police officers and the degree of supervision in the field studies were not typical of DWI stops.
3. The studies were insufficiently documented for scientific papers as cited in *U.S. v. Horn*, 185 F. Supp.2d 530, 558 (D. Md. 2002).
4. The authors did not report the accuracy of arrest decisions for stops that were observed versus those that were not, or for SFSTs performed under adverse climate conditions versus those that were not.³⁹

The new purported levels of accuracy in the recent validation studies regarding the same field tests at lower limits are proof of the tests' inherent low reliability correlation coefficient. How these statistically unreliable and invalid tests are somehow more purportedly valid at lower limits is yet proof positive how radical the DWI religion has become to lawmakers and jurists alike in blind disregard of the science.

Leading Jurisdictions

Despite ignorant, widespread acceptance of the validity of the HGN, walk and turn and one-leg stand tests, there are some jurisdictions that have started down a very unpopular but judiciously righteous path in respect of scientific principles and constitutional liberty. In *Homan v. State*, the court determined that in order for the results of a field sobriety test to serve as evidence of probable cause to arrest, the police must have administered the test in strict compliance with standardized testing procedures.⁴⁰ Most unfortunately, and without any respect for scientific realities, this case was later abrogated by legislation. The court at least recognized that "testing" requires standardization and not haphazard administration if scoring criteria is to be used. What is key in this case is the court's threshold requirements merely address admissibility at the probable cause level. The mistake in *Homan* is to give the standardized tests any scientific evidentiary value at all. It however, at least recognizes that adherence to protocol is necessary to admissibility as opposed to weight. In *U.S. v. Horn*, Judge Grimm wrote:

There is no factual basis before me to support the NHTSA claims of accuracy for the WAT and OLS tests or to support the conclusions about the total number of standardized clues that should be looked for or that are missing a stated number means the subject failed the test. There is very little before me that suggests that the WAT and OLS tests are anything more than standardized procedures police officers use to enable them to observe a suspect's coordination, balance, concentration, speech, ability to follow instructions, mood and general physical condition—all of which are visual cues that laypersons, using ordinary experience, associate with reaching opinions about whether someone has been drinking.⁴¹

Some of the more notable premises the *Horn* case stands for are that: 1) The results of properly conducted tests may be considered for probable cause;⁴² 2) The SFST(s) cannot be correlated with a specific BAC;⁴³ 3) The court where requested by counsel should take judicial notice of the fact that there are many causes of HGN outside of alcohol;⁴⁴ 4) value added descriptive language regarding the SFST(s) such as "failed the test," "exhibited" a certain number of "standardized clues" or any other bolstering attempts by the officer is not allowed.⁴⁵ SFST(s) or any specialized information learned from law enforcement or traffic safety instruction should not be referred to as scientific, technical or specialized.⁴⁶

Judge Paul Grimm, much like Governor William Phipps of Salem, Massachusetts, who suspended the special court of Oyer and Terminer,⁴⁷ which based convictions on specious "specter" evidence, has echoed some reason and common sense that is necessary in a court of law in the wake of mass hysteria over DWI prosecutions. Special recognition goes to courts responsible for cases like *State v. Doriguzzi*,⁴⁸ where HGN was ruled not admissible because the state had failed to show *Frye* acceptance and reliability and *Young v. City of Brookhaven*,⁴⁹ where the HGN test was ruled as a scientific test but not one generally accepted by the scientific community. These courts provide hope in proving that science is the voice of reason and we have a long way to go in spreading such reason to all parts of the country because science has no jurisdictional bounds.

Notes

1. Unlike most jurists, Judge Coffey has a scientific background: a Bachelor of Science in Agriculture from Western Kentucky University.
2. See Rosemary Ellen Guiley, *The Encyclopedia of Witches and Witchcraft*, 234-299 (1989).
3. Indicating the chemical concentration of alcohol in the blood as being greater than .10%.
4. See v. Sharp, M. Burns, and H. Moskowitz, *Development and Field Test of Psychophysical Tests for DWI Arrest*, DOT-HS-805-864, U.S. Department of Transportation, NHTSA, Washington (1981).
5. Dr. L. F. Dell'Osso, *Nystagmus, Saccadic Intrusions/Oscillations and Oscillopsia*, 3 *Current Neuro-Ophthalmology* 147 (1989).
6. *Schultz v. State*, 664 A.2d 60, 77 (Md. App. 1995).
7. See A.J. McKnight, et al., *Sobriety Tests for Low Blood Alcohol Concentrations*, *Accid. Anal. Prev.* 2002 May; 34(3): 305-11.
8. See J.L. Booker, *End-position nystagmus as an indicator of ethanol intoxication*, 41 *Science and Justice* 113, 115 (2001). (79 men and 10 women between the ages of 22 and 67 who were well rested and in good health, alcohol levels determined by blood and urine assays conducted by gas chromatography and breath concentrations determined by CMI Intoxilyzer 5000 instruments with wet-bath reference units operated at 34_C).
9. See *Id.* at 115.
10. See *Id.* at 114-15. (The study consisted of 44 men and 22 women between the ages of 20 and 57 who denied use of alcohol or drugs within the preceding 24 hours).
11. See *Id.* at 115.
12. See *Id.* at 115.
13. See Karl Citek, *HGN and the role of the Optometrist*, in *Admissibility of Horizontal Gaze Nystagmus Evidence: Targeting Hardcore Impaired Drivers*, 15 (Am. Prosecutors Research Inst. 2003). (The following resolution was adopted by the American Optometric Association House of Delegates, on June 1993:

Whereas drivers under the influence of alcohol pose a significant threat to the public health, safety, and welfare; and

Whereas optometric scientists and the National Highway and Traffic Safety Administration have shown the Horizontal Gaze Nystagmus (HGN) test to be a scientifically valid and reliable tool for trained police officers to use in field sobriety testing; now therefore be it

Resolved that the American Optometric Association acknowledges the scientific validity and reliability of the HGN test as a field sobriety test when administered by properly trained and certified police officers; and be it further

Resolved that the American Optometric Association urges doctors of optometry to become involved as professional consultants in the use of HGN field sobriety testing.)

14. See *Predicate Questions: Optometrist. . . . Appendix K* (visited June 18, 2004) http://nhtsa.com/people/injury/enforce/nystagmus/app_k.html. (Direct Examination questions for the state's expert optometrist end with: 88. Are you familiar with the 1993 resolution "Horizontal Gaze Nystagmus as a Field Sobriety Test" passed by the House of Delegates of the American Optometric Association? 89. Is this a copy of the resolution? 90. Please read it to the court).
15. Charles R. Honts, Susan L. Amato-Henderson, *Horizontal Gaze Nystagmus Test: The State of the Science in 1995*, 71 N.D. L.Rev. 671 at 6 (1995). (citing David V. Tiffany, *Optometric Expert Testimony: Foundation for the Horizontal Gaze Nystagmus Test*, 57 J. of Amer. Optometric Ass'n 705 (1986)).
16. See *Id.* at 15.
17. See Joseph R. Meaney, *Horizontal Gaze Nystagmus: A Closer Look*, 36 *Jurimetrics J.* 383, 385 (1996).
18. Jack Stuster and Marcelline Burns, *Validation of the Standardized Field Sobriety Test Battery at BACs Below 0.10 Percent*, DOT-HS-808-839 6, (1998).
19. See *Id.* at 27-28.
20. Chava Frankfort-Nachmias & David Nachmias, *Research Methods in the Social Sciences*, 150 (6th ed. Worth Pub. 2000).
21. See Trial Transcript at 14-16, later reported as *State v. Meador*, 674 So.2d 826 (Fla. Dist. Ct. App. 1996).
22. See *Id.* at 21, (The formula is actually the square root of 1.48.).
23. See *Id.* at 20.
24. See *Id.* at 21.
25. See *Id.* at 20, 22.
26. See *Id.* at 22.
27. See *Id.* at 29.
28. See *Id.* at 37.
29. See *Id.* at 42.
30. See R. Rosenthal & R.L. Rosnow, *Essentials of Behavioral Research: Methods and Data Analysis* (2nd ed. McGraw-Hill 1991).

31. See Meador, *supra* note 21, at 31.
32. See *Id.* at 141.
33. *Id.* at 141.
34. See Spurgeon C. Cole & Ronald H. Nowaczyk, *Field Sobriety Tests: Are They Designed for Failure?*, *Perceptual and Motor Skills*, 79, 99-104, (1994).
35. See Tharp, *supra* note 4.
36. See Anderson, Ellen and Marcelline Burns, PH.D., *A Colorado Validation Study of the Standardized Field Sobriety Test (SFST) Battery*, November 1995.
37. See Dioquino, Sgt. Teresa, ET AL., *A Florida Validation Study of the Standardized Field Sobriety (SFST) Battery*, (date of publication is unknown).
38. See Burns, *supra* note 18.
39. See Steven Rubenzer, *DWI- Part 1 The Psychometrics and Science of Standardized Field Sobriety Tests*, *The Champion*, May 2003, at 24-34.
40. See *Homan v. State*, 89 Ohio St.3d 421 (2000).
41. *U.S. v. Horn*, 185 F. Supp. 2d 530, 557 (D. Md. 2002).
42. See *Id.* at 532-33.
43. See *Id.* at 533.
44. See *Id.* at 533.
45. See *Id.* at 533.
46. See *Id.* at 533-34.
47. See Guiley, *supra* note 2 at 299.
48. 334 N.J. Super. 530 (App. Div. 2000)
49. 693 So.2d 1355 (Miss. 1997).

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