

The Nose Doesn't Always Know: Extrapolation Based on Odor Ruled Unreliable

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The Court of Appeals decided [State v. Davis](#), 208 N.C. App. 26 (2010), last week, granting the defendant a new trial on second-degree murder, impaired driving and other charges arising from a fatal hit-and-run committed by the defendant after she had been drinking. While several aspects of the court's opinion are noteworthy, this post focuses on the court's determination that expert testimony as to the defendant's blood alcohol concentration at the time of the crash was improper and prejudicial, where that testimony was founded solely on the fact that an officer who talked to the defendant more than ten hours after the accident smelled alcohol on her breath.

A tragic sequence of events recounted in the court's opinion resulted in several individuals standing over the double yellow line on a narrow bridge at 9:30 p.m. in Gaston County on August 7, 2008. The defendant drove upon the scene shortly after leaving a bar where she had been drinking. She struck four of the people with her car, seriously injuring three of them and killing the fourth. The defendant fled the scene, later admitting that she knew she had hit something, but that she did not stop because her license was revoked.

Defendant learned after the accident that the police wanted to speak to her. She appeared at the Belmont police department at 8 a.m. next morning, where she met with Sergeant Spry. Spry testified that defendant's clothes were in disarray and that he could smell alcohol on her breath. Defendant told Spry she had spent the night with a friend and had drunk vodka after the accident. Spry did not administer a blood or breath test to determine the defendant's alcohol concentration that morning. Four days later, he asked the defendant to submit to a blood test, and she did so. The results were negative for drugs or alcohol.

Defendant was indicted for second degree murder, two counts of assault with a deadly weapon inflicting serious injury, driving while impaired, two counts of felony hit and run, reckless driving, and driving while license revoked.

At trial, the state called Paul Glover, head of the Forensic Tests for Alcohol branch of the State's Department of Health and Human Services, as an expert witness. Glover testified that using retrograde extrapolation he was able to determine the defendant's alcohol concentration at the time of the accident based on the fact that Spry smelled alcohol on the defendant's breath the day after the accident. Retrograde extrapolation is a methodology used to estimate a person's alcohol concentration at some earlier point in time based upon a later reported alcohol concentration. The calculation of a person's earlier alcohol concentration is based upon the time that elapsed between the specified earlier event (such as a vehicle crash) and the time of the chemical analysis and the average rate of elimination of alcohol from a person's blood. North Carolina's appellate courts have, on numerous occasions, recognized retrograde extrapolation as a reliable method of proving a person's alcohol concentration. See, e.g., *State v. Davis*, 142 N.C. App. 81 (2001); *State v. Catoe*, 78 N.C. App. 167 (1985).

Astute readers, you already doubtless have noted the disconnect between the description of retrograde extrapolation provided above and the testimony provided in *Davis*. Retrograde extrapolation is based on a later reported alcohol concentration; yet, there was no reported alcohol concentration for the defendant in *Davis*.

So what alcohol concentration did Glover use as a starting point? He began with a 0.02 at 8:14 a.m. on August 8,

2008, reasoning that Spry's detection of alcohol on defendant's breath that morning meant that alcohol was still in her system. Glover explained that "look[ing] at some papers, some texts, where the concentration of alcohol that is detectable by the human nose has been measured[,] the lowest alcohol concentration that is detectable by odor alone is 0.02. (Slip. op. at 7-8.) Glover further testified that the literature he relied upon suggested a range of possible alcohol concentration levels but that since he did not know the concentration, he used the lowest level detectable. He further assumed that the defendant had not consumed any alcohol after the accident (even though she told Spry she had), concluding that her blood alcohol concentration at the time of the crash was 0.18.

Recognizing its acceptance of Glover's expertise in retrograde extrapolation in past cases, see [State v. Corriher](#), 184 N.C. App. 168 (2007) (permissible for Glover to testify that a blood sample exposed to heat over 12 days might register a lower blood alcohol concentration than it would have at the time it was drawn), the court distinguished his analysis in *Davis* as involving a novel scientific theory. If reported opinions are the guide, the court's characterization of the theory as novel hits the mark. My research failed to reveal any case relying on such an extrapolation. Indeed, an appellate court in Wisconsin, where driving with a blood alcohol concentration of 0.02 or more is a criminal violation if the person has three prior convictions for driving while impaired, has indicated that odor, standing alone, is insufficient even to establish probable cause for such an offense. See *State v. Gantner*, 2009 WL 260963 (Wis. App. Feb. 5, 2009) (unpublished op.). Because odor-extrapolation is a new theory, the court held that it had to be accompanied by sufficient indices of reliability to be admissible—a hurdle that the State failed to clear.

The court noted that Glover did not identify the literature he relied upon. And unlike the testimony in *Corriher* regarding a study Glover performed on alcohol concentrations in refrigerated and unrefrigerated blood samples, the results of which were "published to the scientific community in newsletters presented at scientific conferences," there was no evidence in *Davis* that Glover had independently verified the odor analysis about which he testified or that his methodology was peer reviewed. Moreover, the court characterized Glover's odor analysis as lacking any of the "rigorous standards" applied to chemical analyses of breath, blood and urine under G.S. 20-139.1. The court noted that "[t]here was no testimony showing how Sergeant Spry's alcohol-detecting abilities were even remotely comparable to those of a trained operator using well-maintained and certified equipment pursuant to a DHHS-issued permit." (Slip op. at 12.)

Thus, the court concluded that Glover's retrograde extrapolation was not supported by a reliable method of proof and that the odor analysis was so unreliable that the trial court's decision to admit it was an abuse of discretion.

Because the trial court's instructions to the jury regarding impaired driving and second-degree murder required the jury to determine whether the defendant had an alcohol concentration of 0.08 or more at any relevant time after the driving, and Glover's testimony was the only testimony as to the defendant's alcohol concentration, its admission prejudiced the defendant, requiring a new trial on the second-degree murder and impaired driving charges.

It seems to me that the State could have attempted to prove the defendant's alcohol concentration another less controversial way. Two bartenders testified that between 5 p.m. and 9:20 p. m. on the evening of the accident, they served defendant four beers and two liquor drinks containing Wild Turkey 101, and that defendant did not drink at least half of one of the beers. Given the court's previous endorsement of expert testimony related to alcohol absorption and elimination rates, it seems a safe bet that a toxicologist or other medical expert could properly have testified to a range of blood alcohol concentrations likely to result from such consumption given the defendant's weight and gender. I don't know what the defendant weighed, and I'm not an expert in alcohol absorption. Perhaps the range would not have reached 0.08, though, of course, a 0.08 is not required to demonstrate impairment. (I'll note that even given my lack of expertise, it strikes me as highly unlikely that consumption of this amount over this length of time would result in an alcohol concentration of 0.18.)

But no such expert was produced, and neither bartender said defendant was impaired. So, in addition to granting the defendant a new trial on the second-degree murder and impaired driving charges, the court granted the defendant a new trial on the charges of reckless driving and assault with a deadly weapon inflicting serious injury, charges that

required the jury to determine whether the defendant was impaired. The court reasoned that the State failed to prove impairment by any method other than Glover's testimony as to the defendant's alcohol concentration. The fact of the collision combined with the defendant's drinking was insufficient to show that the defendant was driving while impaired as the people she struck were across the center line in her lane of travel and there was no other evidence of faulty driving.

The *Davis* court's analysis of the admissibility of the defendant's four prior impaired driving convictions also is noteworthy, but I'll save that discussion for another post on another day.