No. COA20-273 DISTRICT TWENTY-NINE B

NORTH CAROLINA COURT OF APPEALS

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STATE OF NORTH CAROLINA	)	
	)	From Henderson County
v.	)	
	)	
SHERRY LEE LANCE	)	

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DEFENDANT-APPELLANT'S BRIEF

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ISSUES PRESENTED

I. WHETHER THE TRIAL COURT ERRONEOUSLY DENIED MS. LANCE'S MOTION TO DISMISS THE CHARGES OF SECOND-DEGREE ARSON AND CONSPIRACY TO COMMIT SECOND-DEGREE ARSON WHERE THE DWELLING HOUSE IN QUESTION WAS ONLY INHABITED BY CO-CONSPIRATORS, NOT "ANOTHER PERSON" AS ENVISAGED BY AND REQUIRED FOR COMMON LAW ARSON?

II. WHETHER THE TRIAL COURT ABUSED ITS DISCRETION IN PERMITTING CASEY SILVERS TO TESTIFY AS AN EXPERT ABOUT THE CAUSE OF THE FIRE WHEN IT FAILED TO CONDUCT A PROPER ANALYSIS UNDER RULE 702(A)(1)-(3) AND SILVERS' TESTIMONY WAS BASED ON AN UNRELIABLE PRINCIPLE AND METHOD: NEGATIVE CORPUS?

III. WHETHER THE TRIAL COURT'S JURY INSTRUCTION FOR INSURANCE FRAUD WAS PLAINLY ERRONEOUS BECAUSE IT FAILED TO SPECIFY THE PARTICULAR FALSE STATEMENT ALLEGED IN THE INDICTMENT?

IV. WHETHER THE TRIAL COURT ERRONEOUSLY ORDERED MS. LANCE TO PAY FORTY THOUSAND DOLLARS IN RESTITUTION ABSENT A SUFFICIENT EVIDENTIARY BASIS TO SUPPORT THE ORDER?

STATEMENT OF THE CASE

This case was tried during the 5 November 2019 Criminal Session of Henderson County Superior Court, the Honorable Athena Brooks, Judge Presiding, on indictments alleging second-degree arson, conspiracy to commit second-degree arson, and insurance fraud. (R pp 8-10)[1] The jury convicted Ms. Lance on all counts. (R pp 104-106; T p 381) Ms. Lance was sentenced to a term of imprisonment for 10 to 21 months. (R pp 112-113; T p 387) The trial court ordered Ms. Lance to pay forty thousand dollars in restitution. (R pp 108, 113; T p 387) Ms. Lance gave notice of appeal in open court. (R p 114; T p 388)

STATEMENT OF THE GROUNDS FOR APPELLATE REVIEW

Ms. Lance appeals from a final judgment pursuant to N.C. Gen. Stat. §§ 7A-27(b) and 15A-1444(a).

[1] The record on appeal is cited as "R p ." The transcript of the trial is cited as "T p ." The appendix hereto is cited as "App."

STATEMENT OF THE FACTS

Ronald Lance owned and rented a single-story house on Baldwin Circle in Fletcher, North Carolina to Sherry Lance (no relation to Ronald) and her mother, Jonnie Turner. On 7 September 2016, the house burned down. (T pp 103, 105-07, 178) When the fire occurred, Sherry and her mother had been living at the house for a couple of years. (T p 104) The fire resulted in a total loss. (T p 107)

The following day, Fletcher Police Detective Sergeant Ronald Diaz, Fletcher Fire Chief Greg Garland, Fire Marshall Joe Swain, and SBI Agent Matt Davis went to the property. (T pp 229, 255) Diaz was not a trained or certified arson investigator, but Agent Davis brought with him a canine trained to identify accelerants or incendiaries. (T pp 255-56)

The canine did not alert to any accelerants or incendiaries. (T p 256)

Diaz considered the number of personal belongings in the dwelling surprisingly low. He contacted the National Insurance Crime Bureau to see if Sherry had a renter's insurance policy for her personal property. (T pp 229-30) Diaz learned that Sherry obtained a renter's insurance policy in May 2016. (T p 230)

On 15 September 2016, more than a week after the fire, Casey Silvers, a fire investigator hired by State Farm Insurance Company to determine the origin and cause of the fire, went to the property to investigate. (T pp 176, 208)

Mary Ann Myer, a claims adjustor for State Farm's special investigations unit, was there most of the day with Silvers. (T p 294)

To determine the origin and cause of a fire, Silvers used what he described as a "scientific method." (T p 185) "You want to first develop the need for the investigation or the research," Silvers testified. (T p 185) Next, you "gather the data," "analyze that data," and "come up with hypotheses as to what potentially caused the fire, where it started." (T pp 185-86) Then you seek to disprove the hypotheses, Silvers explained, so as to either exclude or confirm a reason the fire occurred and where it occurred. (T p 186)

Fire patterns, witness statements and information about the contents of the home, electrical activity, fire dynamics, physical evidence collected at the scene, and fire department reports are all factors considered in determining the origin and cause of the fire. (T pp 186-87)

In this case, Silvers went in a clockwise direction around the house and identified smoke and burn patterns, including heavier burn patterns around the kitchen window. (T p 190) The fire patterns were lower down towards the kitchen, which Silvers believed was indicative of the room where the fire originated. (T pp 190-91) Looking at the different patterns on the kitchen walls and the kitchen's metal and wood surfaces, Silvers testified he determined the fire originated in the kitchen. (T p 192)

To ascertain the location where the fire started, Silvers looked for patterns in the floor. (T p 192) Patterns on the floor and the bottom of the kitchen cabinetry were "indicative of some type of accelerant that was put there to burn underneath the cabinetry." (T p 193)

When asked whether he found any evidence of accelerants, Silvers testified he found what looked like rags, but they tested negative for ignitable liquids. (T p 195) In Silvers' opinion, the fire originated in the kitchen between the rear door and the range. (T p 197)

As for causation, Silvers testified the fire could not have come from an electrical wiring or failure. (T pp 197-98, 201) Nor did the fire patterns indicate the fire originated under the floor. (T p 198) Electrical branch circuits and discarded smoking materials were also determined not to be competent ignition sources. (T p 200) There was no evidence of unintended cooking or issues with the range, nor was there any evidence of weather causing the fire. (T pp 201-03)

Silvers acknowledged there were many components inside the home "to sustain combustion to burn," but it was his understanding based on information from State Farm that nothing was present in what he considered the area of origin. (T p 203) Evidence of low burn fire patterns underneath the cabinets indicated, in Silvers' opinion, materials were placed on the floor to start a fire at a low level. (T p 204) Though the rags sent for testing to a lab

came back negative, that did not mean, in Silvers' opinion, that an ignitable liquid was never present. (T p 204)

Silvers testified that he eliminated all known potential ignition sources at the home, but was unable to rule out an incendiary cause. (T pp 206-07) In Silvers' words, he "proposed a hypothesis that this was an intentionally set fire" and he attempted to disprove that hypothesis with alternative explanations from his investigation. (T p 206)

Based on the "science and the data" at the scene, Silvers was unable to devise an alternative explanation, and thus could not "exclude an incendiary causation." (T p 206) As stated in the "conclusions" section of Silvers' report: "All known potential ignition sources within the area of fire origin were eliminated, with the exception of an incendiary causation." (R p 37)

On cross-examination, Silvers acknowledged the negative lab result for ignitable liquids and conceded he had no physical evidence of a specific ignitable liquid. (T p 214) Silvers, however, claimed the fire patterns at the scene were "consistent with" an ignitable liquid. (T pp 214-15) Based on the information he obtained, "inductive and deductive reasoning," and his training and experience, Silvers asserted he was not able to scientifically exclude the hypothesis of incendiary causation. (T pp 214-15)

Approximately nine days after the fire, Mary Ann Myer met with Sherry and took her recorded statement. (T p 283) Myer asked Sherry about her

personal background, her finances, whether she had ever had renter's insurance before, and whether she had any other fires. (T pp 285-87)

Myer testified that Sherry told her she was renting a house on 7 September 2016 and, without giving any specifics, Myer testified Sherry told her about the fire that occurred on that date. (T p 286) Sherry told Myer that her mother was living there and that a man named Troy Williams moved out a couple of days before the fire. (T p 286)

Myer asked Sherry about her insurance coverage, whether the house had any break-ins, how long Sherry had lived at the house, whether there were any electrical problems and to describe them, and whether her landlord knew about any such electrical issues. (T pp 289-290) Myer testified that Sherry said she told her landlord about electrical problems, that the landlord would not fix them, and that she thinks the fire was electrical. (T p 290)

Sherry also described the layout of the house and drew a diagram of the kitchen. (T p 290) Myer asked Sherry about the day of the fire, where she was, and what she did. (T p 291) Sherry told Myer she had gone "dumpster diving" with her mother on the day of the fire, but never mentioned going to any storage center. (T pp 291-92)

In addition to the information Sherry provided during the interview, Sherry also submitted a written inventory of items she claimed were lost in the fire. (R p 77-81; T p 283) State Farm denied Sherry's claim because of her

failure to comply with State Farm's investigation, and was unable to make a finding of fraud. (T pp 297-98)

On 3 November 2016, Detective Sergeant Diaz learned of a storage unit Sherry's mother, Jonnie Turner, rented at Fletcher Storage Center on 6 September 2016, the day before the fire. (R p 85; T p 231) Diaz obtained a search warrant for the unit and found a large number of personal belongings and household items, as well as personal, financial, and legal documents. (T pp 233-250) In the storage unit, Diaz found items that Sherry included in the loss inventory form submitted to State Farm. (T p 252) A couple of months later, Sherry was indicted for second-degree arson, conspiracy with her mother to commit second-degree arson, and insurance fraud. (R pp 8-10)

ARGUMENT

I. THE TRIAL COURT ERRONEOUSLY DENIED MS. LANCE'S MOTION TO DISMISS THE CHARGES OF SECOND-DEGREE ARSON AND CONSPIRACY TO COMMIT SECOND-DEGREE ARSON WHERE THE DWELLING HOUSE IN QUESTION WAS ONLY INHABITED BY CO-CONSPIRATORS, NOT "ANOTHER PERSON" AS ENVISAGED BY AND REQUIRED FOR COMMON LAW ARSON.

The crime of arson in North Carolina is defined by common law as the willful and malicious burning of another's dwelling house. As such, an essential element of second-degree arson in North Carolina is that the burned dwelling house belong to "another." This requirement is satisfied where the defendant and some other person or persons whose habitation was endangered by the fire also occupied the dwelling.

In this case, which appears to present a question of first impression, the only occupants of the dwelling were Sherry and her alleged co-conspirator, her mother. Because no one else lived at the dwelling house besides the alleged wrongdoers, and thus no one else's habitation was endangered, the State failed to prove that the dwelling house in question belonged to "another." Therefore, the State failed to prove an essential element of second-degree arson and conspiracy to commit second-degree arson. The trial court's denial of the motion to dismiss the charges of second-degree arson and conspiracy to commit second-degree arson should be reversed.

A. Preservation

At the close of the State's evidence, defense counsel moved to dismiss all charges for insufficiency of the evidence. (T pp 315-16) With respect to second-degree arson and conspiracy to commit second-degree arson, defense counsel argued the State failed to prove that the dwelling house in question belonged to "another" because the defendant and her alleged co-conspirator were the only inhabitants of the dwelling. (T pp 316-320). Defense counsel renewed his motion to dismiss at the close of all evidence on the same grounds. (T pp 328-29, 339-40)

B. Standard of Review

Whether the State presented sufficient evidence of each element of an offense to survive a motion to dismiss presents a question of law that is reviewed *de novo*. *State v. Golder*, 839 S.E.2d 782, 790 (N.C. 2020) (internal citations and quotations omitted).

C. Discussion

By statute, North Carolina bifurcates arson into first and second-degree depending on whether the dwelling house was occupied at the time of burning. N.C.G.S. § 14-58. However, the "common law definition of arson is still in force in North Carolina." *State v. Scott*, 150 N.C. App. 442, 453, 564 S.E.2d 285, 293 (2002), *appeal dismissed* and *disc. review denied*, 356 N.C. 443, 573 S.E.2d 508 (2002) (internal citations and quotations omitted). "Common law arson is

the willful and malicious burning of the dwelling house of another person." *State v. Shaw*, 305 N.C. 327, 330, 289 S.E.2d 325, 336 (1982).

"The elements of second-degree arson are: (1) the willful and malicious burning (2) of the dwelling (i.e., inhabited) house of another; (3) which is unoccupied at the time of the burning." *Scott*, 150 N.C. App. at 453, 564 S.E.2d at 293.

North Carolina's common law crime of arson constitutes an offense against the security of habitation, not property. *Scott*, 150 N.C. App. at 452, 564 S.E.2d at 293. "The main purpose of common law arson is to protect against danger to those persons who might be in the dwelling house which is burned." *State v. Jones*, 296 N.C. 75, 77, 248 S.E.2d 858, 860 (1978).

Hence, the common law "'of another' requirement meant that the dwelling house had to be in the possession of someone other than the incendiary." John Poulos, *The Metamorphosis of the Law of Arson*, 51 Mo. L. Rev. 295, 311 (1986). For this reason, "of course, the burning of a dwelling house by the person in actual possession of the premises was not common law arson." *Id.* at 311-12. [2]

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[2] *See also State v. Sarvis*, 45 S.C. 668 (1896) (citations omitted) ("There can be no doubt that a person cannot be convicted, at common law, of the crime of arson in burning his own dwelling house. . . even when it is insured."); *Daniels v. Commonwealth*, 172 Va. 583, 588 (1939) (citations omitted) (Common law arson "is an offense against the security of the habitation and has reference to possession rather than property. . .He who burns his own dwelling is not guilty

Indeed, as this Court noted in a citation in *State v. Ward*, "*if [a] person cannot commit common law arson against own dwelling*, [a] defendant who burns [a] dwelling at [a] person's request cannot be prosecuted for common law arson." 93 N.C. App. 682, 687, 79 S.E.2d 251, 254 (1989), *disc. review denied*, 325 N.C. 276, 384 S.E.2d 528 (1989) (emphasis added) (citation omitted).

In *State v. Jones*, our Supreme Court ruled the burning of an apartment in a multi-unit building constitutes arson because common law arson protects persons in the dwelling against danger. 296 N.C. at 77-8, 248 S.E.2d at 860. Subsequently, in *State v. Shaw*, our Supreme Court explained that the *Jones* rationale, "to wit, *the protection of persons who might be in the dwelling*, is equally applicable to joint occupancy of a single dwelling unit as to separate apartments in the same building." 305 N.C. at 337, 289 S.E.2d at 331 (emphasis added).

Thus, the *Shaw* court held, "the common law arson requirement that the dwelling burned be that of 'another' is satisfied by a showing that some other

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of this particular offense."); *Shepherd v. People*, 19 N.Y. 547 (1859) ("It has been strenuously argued that the offence of arson in the first degree cannot be committed if the dwelling-house belonged to, and was in the actual possession of, the offender: in other words, that one cannot be guilty of arson in burning his own house. This was undoubtedly the rule of the common law, for the ancient definition of the felony denominated arson was the malicious and voluntary burning of the house of another.")

person or persons, together with the defendant, were joint occupants of the same dwelling unit." 305 N.C. at 338, 289 S.E.2d at 331.

As explained by the *Shaw* court, this holding, rooted in the need to protect the habitat of co-dwellers, applies to fact patterns where the joint occupants of the same dwelling as the defendant are innocent third parties—not wrongdoers or co-conspirators to commit arson—who lack knowledge or forewarning of the fire. For instance, as Justice Meyer wrote about the co-occupants in *Shaw*:

> The need for protection of Mr. Boswell, Glenda Shaw, and the three grandchildren was just as compelling, and perhaps more so, in this joint occupancy situation as it would have been had they been occupants of an adjoining apartment. The wisdom of applying that rationale to joint occupancy situations is highlighted by the facts of this case. At the time defendant is alleged to have set the fire and the entire rear of the house became engulfed in flames, it was occupied by Glenda Shaw and Boswell's three grandchildren. They were able to escape by running out the front door. Fortunately, police officer Mark Adams saw several females screaming and running towards him, called for help, and used his fire extinguisher in an attempt to extinguish the blaze until fire department personnel arrived.

Shaw, 305 N.C. at 337–38, 289 S.E.2d at 331.

Thus, *Shaw* shows the crime of arson is intended to protect joint occupants of a single dwelling—like unwitting neighbors in separate

apartments in *Jones*—from the dangers of a fire of which they had no knowledge or involvement. 305 N.C. at 337-38, 289 S.E.2d at 331.

Here, the dwelling house in question at the time of the alleged burning was jointly occupied, but not by the defendant and another innocent party, but by Ms. Lance and her alleged co-conspirator, her mother. Since the only occupants were the alleged co-conspirators to commit arson, the "main purpose" behind common law arson—"to protect against danger to those persons who might be in the dwelling house which is burned"—does not logically apply because neither co-conspirator would have been endangered by the hazards of a burning they allegedly planned together. *Shaw*, 305 N.C. at 337, 289 S.E.2d at 331.

Aside from Ms. Lance and Jonnie Turner, there was no danger posed to anyone else's habitation. Thus, the dwelling did not belong to "another" as envisaged by and required for common law arson, as interpreted by our Supreme Court, and as enumerated as an essential element of second-degree arson. The trial court erroneously denied Ms. Lance's motion to dismiss the charge of second-degree arson.

Because the evidence did not sufficiently establish all essential elements of second-degree arson, the State likewise failed to sufficiently prove the charge of conspiracy to commit second-degree arson.

The conspiracy indictment accused Ms. Lance of conspiring with her mother to commit the crime of second-degree arson of the home they both—but no one else at the time of the burning—resided in. "According to North Carolina law, a criminal conspiracy is an agreement by two or more persons to perform either an unlawful act or a lawful act in an unlawful manner." *State v. Wilson*, 106 N.C. App. 342, 345, 416 S.E.2d 603, 605 (1992).

As explained above, Ms. Lance's alleged act of burning a dwelling solely occupied by her and her alleged co-conspirator does not satisfy our state's common law criteria for arson. Therefore, the facts here also do not support a conviction for conspiracy to commit second-degree arson as, by definition, there was no "unlawful act or a lawful act in an unlawful manner" to be performed. *Id.*

While these facts may have supported conspiracy to commit a fraudulent burning in violation of N.C.G.S. § 14-65, Ms. Lance was not accused of this crime and a defendant can only be convicted of the particular offense alleged in an indictment. *State v. Barnett*, 368 N.C. 710, 713, 782 S.E.2d 885, 888 (2016).[3] Indeed, "our courts maintain a clear distinction between the 'ancient

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[3] As explained by our Supreme Court, "[t]he gravamen of the offense of common law arson is the danger that results to persons who are or might be in the dwelling, whereas the main import of G.S. s 14-65 is protection of the property itself." *State v. White*, 288 N.C. 44, 50, 215 S.E.2d 557, 561 (1975). Indeed, the *White* court asserted the offense of fraudulent burning "describes

crime' of arson and other statutory crimes." *Ward*, 93 N.C. App. at 687, 79 S.E.2d at 254.

The trial court's denial of Ms. Lance's motion to dismiss the charges of second-degree arson and conspiracy to commit second-degree arson was erroneous. This Court should vacate Ms. Lance's convictions for those two offenses.

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a mental state having to do with the desire for illegal pecuniary gain usually at the expense of the property's insurer." *Id.*

II. THE TRIAL COURT ABUSED ITS DISCRETION IN PERMITTING CASEY SILVERS TO TESTIFY AS AN EXPERT ABOUT THE CAUSE OF THE FIRE WHEN IT FAILED TO CONDUCT A PROPER ANALYSIS UNDER RULE 702(A)(1)-(3) AND SILVERS' TESTIMONY WAS BASED ON AN UNRELIABLE PRINCIPLE AND METHOD: NEGATIVE CORPUS.

North Carolina Rule of Evidence 702 imposes on trial courts the duty to ensure expert testimony is relevant and reliable. While trial courts have flexibility to determine the reliability of expert testimony, they do not have discretion to abandon this gatekeeping function. Here, the trial court abused its discretion when it failed to employ the proper analysis under Rule 702(a)(1)-(3) to determine whether Casey Silvers' proffered "negative corpus" expert testimony was reliable.

Because it failed to conduct a proper analysis under Rule 702, the trial court's ruling on the admissibility of Silvers' proffered expert testimony was not the result of a reasoned decision.

The trial court's failure to conduct a proper Rule 702 analysis prejudiced Ms. Lance as it permitted Silvers to testify about the cause of the fire when such testimony was based on an unreliable method that has been repudiated by the fire science community: negative corpus. The fire science community has rejected the theory of negative corpus as inconsistent with the scientific method because it uses the process of elimination to support a theory of causation for which there is no evidence. Silvers' testimony shows his

conclusion was the product of the repudiated negative corpus theory. Because Silvers' testimony was crucial to the State's effort to prove Ms. Lance caused the fire and provided the prosecution's case with a scientific veneer that, in reality, was scientifically unreliable, it is reasonably possible the jury would have reached a different verdict absent Silvers' erroneous testimony. This Court should grant Ms. Lance a new trial.

A. Preservation

Defense counsel filed a pre-trial motion seeking to voir dire and disqualify Casey Silvers. (R pp 17-20) A voir dire hearing was conducted on the motion. (T pp 110-158) At its conclusion, the defense moved to exclude Silvers' testimony because the method he used to determine the origin and cause of the fire—negative corpus—failed to satisfy *Daubert*'s reliability requirements. (T pp 149-154)

The trial court ruled Silvers was permitted to testify as an expert and noted the defense's objection. (T pp 161-64). Subsequently, defense counsel timely objected to Silvers' opinion testimony about the cause of the fire and was overruled. (T p 206) Therefore, this issue is properly preserved for review pursuant to N.C. R. App. P. 10(a)(1) and presents this Court with an

uncommon opportunity to consider the scientific reliability of expert testimony based upon negative corpus theory in a criminal case.[4]

B. Standard of Review

A trial court's ruling on whether an expert's testimony satisfies Rule 702(a) is reviewed for an abuse of discretion. *State v. McGrady*, 368 N.C. 880, 893, 787 S.E.2d 1, 11 (2016). A trial court abuses its discretion when "its ruling was manifestly unsupported by reason and could not have been the result of a reasoned decision." *Id.* (internal citations omitted).

C. Discussion

In 2016, North Carolina was declared "a *Daubert* state." *McGrady*, 368 N.C. at 888, 787 S.E.2d at 8. Thus, North Carolina's Rule 702(a) not only "adopted the meaning of the federal rule," but incorporated "the standard from the *Daubert* line of cases." *Id.* And as *McGrady* asserted, the *Daubert* line of cases "established 'exacting standards of reliability' for the admission of expert testimony." *Id.* at 885, 787 S.E.2d at 6.

Indeed, under *Daubert*, the U.S. Supreme Court held that "Rule 702 imposes a special obligation upon a trial judge to 'ensure that any and all scientific testimony. . .is not only relevant, but reliable.'" *State v. Hunt*, 250

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[4] *See* Valena E. Beety et. al, *Evidence on Fire*, 97 N.C. L. Rev. 483, 516 (March 2019) (stating *Daubert* challenges to fire investigation testimony are "routine in civil cases involving complex scientific testimony," but "remain rare in criminal cases.")

N.C. App. 238, 245, 792 S.E.2d 552, 559 (2016), citing *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 147 (1999). As the gatekeeper of scientific evidence, trial courts have discretion to choose "the manner of testing expert reliability," but not "discretion to abandon the gatekeeping function." *Id.* (internal quotation and citation omitted). To be admissible, trial courts must find that expert testimony satisfies each of Rule 702(a)'s three main parts. *McGrady*, 368 N.C. at 889, 787 S.E.2d at 8.

First, the testimony must be relevant. *Id.* Second, the witness must qualify as an expert. *Id.* at 889, 787 S.E.2d at 9. Third, and most pertinent here, the testimony must satisfy Rule 702(a)'s three-pronged reliability test, which requires the testimony to be (1) based upon sufficient facts or data, (2) the product of reliable principles and methods, and (3) that the witness reliably applied the principles and methods to the facts of the case. *Id.* at 890, 787 S.E.2d at 9 (citing N.C. R. Evid. 702(a)(1)-(3)). (App. 1)

"The primary focus" of this inquiry "is on the reliability of the witness's principles and methodology" and "not on the conclusions that they generate." *Id.* (internal quotations and citations omitted). Thus, when the "analytical gap between the data and the opinion proffered" is too great, trial courts are "not required to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert." *Id.* (internal quotation and citation omitted).

In this case, the State tendered Silvers as an expert in fire origin and cause. During voir dire, Silvers testified about his methods of analysis and the conclusions he reached in this case.

Silvers testified all "competent ignition source[s]" were "systematically excluded based on scientific data that prevented them from being the specific cause of this fire." (T p 142) However, Silvers testified, he "could not exclude an incendiary causation" and he believed "an ignitable liquid was used." (T p 142) In his report, Silvers' conclusion likewise states: "All known potential ignition sources within the area of fire origin were eliminated, with the exception of an incendiary causation." (R p 37)

Silvers testified that he did "not have physical evidence of an ignitable liquid," but he did "have physical evidence to say there was something else present other than what was observed to bring the ignition temperatures, other materials that were there, to a point where they would self-sustain combustion." (T p 143) However, Silvers acknowledged he had no idea what that "something else" would be. (T p 143)

While he did not "classify this fire as an incendiary fire," Silvers was unable to disprove that hypothesis by application of the scientific method. (T pp 143-44) Silvers insisted he had "other evidence that is consistent with incendiary. And while I lack the physical evidence of the ignitable liquid, there are other things that are consistent with an incendiary fire that I can't exclude

it." (T pp 144-45) Silvers denied classifying the fire as incendiary under NFPA 921, but said "this is a hypothesis that I considered and that I cannot exclude." (T p 145)

At the conclusion of voir dire, defense counsel argued Silvers' testimony should be excluded under Rule 702 and *Daubert* as unreliable. (T pp 149-154). The trial court ruled, however, that Silvers' testimony was admissible because (1) it satisfied Rule 702's "relevancy test" and (2) Silvers qualified as an expert. (T p 161)

Yet, with respect to 702(a)(1)-(3)'s reliability analysis, the trial court merely asserted "the Court would find that that testimony was based upon data, evidence, observations, testing principles that the expert relied upon to determine that conclusion, not the least of which was his own investigation at the scene sifting through all the layers of the fire." (T p 162)

Despite purporting to apply the three-part reliability test, the trial court's ruling shows it only considered the first prong, but not the second or third. As Rule 702(a) itself makes plain: scientific expert testimony is only permitted "if all" prongs of 702(a)(1)-(3) are satisfied. N.C. R. Evid. 702(a)(1)-(3).

The trial court made no findings as to whether Silvers' testimony was "the product of reliable principles and methods" (702(a)(2)) or whether the witness reliably applied those principles and methods to the instant case

(702(a)(3)). By not applying the complete test required to determine the reliability of expert testimony under Rule 702(a), the trial court failed to properly perform—and abdicated—its gatekeeping function, manifesting an abuse of discretion. *Hunt*, 250 N.C. App. at 245, 792 S.E.2d at 559. The trial court's decision allowing Silvers' expert testimony based on an incomplete and improper Rule 702 analysis cannot, *ipso facto*, be the result of a reasoned decision.

D. Prejudice

Ms. Lance was prejudiced by the trial court's failure to conduct a proper reliability analysis under Rule 702(a)(1)-(3) because Silvers' opinion testimony regarding the cause of the fire was based on an unreliable method that has been rejected by the fire science community: negative corpus. Further, such testimony—with its imprimatur of ostensible scientific legitimacy—constituted the State's strongest evidence in support of its theory that Ms. Lance started the fire in question.

For over a decade, experts have expressed concern about the methods underpinning fire origin and cause investigations. *See* Committee on Identifying the Needs of the Forensic Sciences Community, National Research Council, *Strengthening Forensic Science in the United States: A Path Forward* 173 (2009) ("Despite the paucity of research, some arson investigators continue to make determinations about whether or not a particular fire was set. .

.Experiments should be designed to put arson investigations on a more solid scientific footing.")

In 2016, the President's Council of Advisors on Science and Technology issued a report that specified "arson science" as an area of forensic evidence with "issues related to [its] scientific validity" that "require[d] urgent attention." President's Council of Advisors on Science and Technology, *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* 23 (2016).

One theory of forensic fire science in particular has come under repeated scrutiny and has been rejected by the standard-bearer organization for fire investigators: negative corpus.

The National Fire Protection Association (NFPA), which issues the NFPA 921 (*Guide for Fire and Explosion Investigations*), explained how the process of elimination can be properly used in fire investigations, but rejected the method of negative corpus:

> The process of elimination is an integral part of the scientific method. Alternative hypotheses should be considered and challenged against the facts. Elimination of a testable hypothesis by disproving the hypothesis with reliable evidence is a fundamental part of the scientific method. However, the process of elimination can be used inappropriately. The process of determining the ignition source for a fire, by eliminating all ignition sources found, known, or believed to have been present in the area of origin, and then claiming such methodology is proof of an ignition

> source for which there is no supporting evidence of its existence, is referred to by some investigators as negative corpus.
>
> Negative corpus has typically been used in classifying fires as incendiary. . .This process is not consistent with the scientific method, is inappropriate, and should not be used because it generates untestable hypotheses, and may result in incorrect determinations of the ignition source and first fuel ignited.

NFPA 921, ¶ 19.6.5 (2014 ed.)[5]

The NFPA 921 has been broadly accepted "as the de facto standard of care in fire investigation in state and federal courts." Parisa Dehghani-Tafti et al., *Folklore and Forensics: The Challenges of Arson Investigation and Innocence Claims*, 119 W. Va. L. Rev. 549, 556 (Winter 2016). It has been described as "the 'gold standard' for fire investigations." *McCoy v. Whirlpool Corp.,* 214 F.R.D. 646, 653 (D. Kan. 2003).

The NFPA 921 rejects the theory of negative corpus for determining the cause of a fire. The process of eliminating hypotheses concerning the cause of a fire is an "integral part of the scientific method, and is conducted at nearly every fire scene." Dehghani-Tafti et al., *Folklore and Forensics: The Challenges*

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[5] The 2017 edition of the NFPA 921 takes the same position on negative corpus. NFPA 921, ¶ 19.6.5 (2017 ed.) Due to copyright restrictions and dissemination controls, counsel is unable to append the pertinent portions of the NFPA 921 manuals to this brief. However, with the creation of a free account, the manuals can be searched for and viewed at no charge at www.nfpa.org.

of Arson Investigation and Innocence Claims, 119 W. Va. L. Rev. at 570. (internal quotation and citation omitted). However, negative corpus erroneously takes the process of elimination one step too far by not only eliminating "other competing hypotheses, but also to prove a single remaining hypothesis in the absence of any evidence directly supporting the final conclusion." *Id.* at 570-71.

The Kansas Court of Appeals described negative corpus as "a methodology of elimination and not a method based on the scientific method. It produces a hypothesis that cannot be proved. There is no physical evidence supporting its conclusion." *Robinson v. State*, 56 Kan. App.2d 211, 230, 428 P.3d 225, 237 (2018).

The 2011 edition of the NFPA 921 marked a paradigm shift with respect to the organization's position on the theory of negative corpus. The NFPA's Technical Committee for Fire Investigations recognized "the inherent conflict and irreconcilable differences between the Scientific Method and the [negative corpus methodology]. The result was a reversal of the committee's previous position with a direct and straightforward rejection and repudiation of the" negative corpus theory. Dennis W. Smith, International Symposium on Fire Investigation Science and Technology, *The Death of Negative Corpus* 605 (2012). (App. 14) Fire experts have concluded negative corpus "could not be supported by Scientific Method," "is not reliable," and "cannot be relied upon

to yield reliable expert opinion and thus fails the Daubert criteria for reliable expert opinion." *Id.* at 606. (App. 15)

Indeed, three states—Arizona, Nebraska, and Oklahoma—have acknowledged the unreliability of arson convictions based on theories violating NFPA 921 and have passed resolutions allowing post-conviction review of their cases. Beety et. al, *Evidence on Fire*, 97 N.C. L. Rev at 513-14.

Therefore, courts "should reject expert testimony based on negative corpus reasoning, as well as fire-expert methodologies that have been thoroughly debunked and discredited by the relevant scientific community." *Id.* at 528.

In a case similar to this matter, the Michigan Court of Appeals asserted "there is a fundamental problem with 'negative corpus'" and "the application of negative corpus as the sole basis for a finding of arson violates [Michigan Rule of Evidence] 702." *People v. Pruitt*, 2014 WL 1320253, * 5 (Mich. App. April 1, 2014) (unpublished) (App. 21)

In *Pruitt*, the expert testified he relied on scientific analyses, personal observations, witness investigation, a re-created timeline of events, and his training and experience to determine the origin of a fire. *Id.* Then, after determining the origin, the expert testified he eliminated other possible causes of fire, and concluded there had to be an open flame involved. *Id.*

The Michigan Court of Appeals asserted that while such conclusions were within the expert's area of expertise, his "ultimate conclusion as to the source of the fire's origin, and his veiled implication that defendant was responsible for the fire, was inadmissible as it rested on a combination of negative corpus and a reliance upon circumstantial evidence" that were outside the scope of his expertise in violation of Rule 702. *Id.* Reviewing the issue for plain error, the *Pruitt* court held that the overwhelming evidence of defendant's guilt precluded the defendant from establishing prejudice under plain error review. *Id.* at * 6.

Here, the trial court's failure to conduct a proper analysis under Rule 702(a)(1)-(3) prejudiced Ms. Lance because it permitted Silvers to offer scientifically unreliable testimony that, paradoxically, gave the State's theory that Ms. Lance started the fire the ostensible appearance of scientific rigor.

Specifically, in response to the prosecutor's question about whether he formed "an opinion as to the cause of the fire," Silvers testified to the jury:

> So the conclusions that I came to were specifically that the potential ignition sources that I observed I was able to exclude with the exception of an incendiary causation. And what that means is that I proposed a hypothesis that this was an intentionally set fire, so I tried to disprove that hypothesis by coming up with alternate explanations as to why I was seeing what I was seeing. And based on the science and the data that I observed at the scene and during the course of my investigation, I was not able to alternately explain

> why those things were present and, therefore, I cannot exclude an incendiary causation.

(T p 206)

This is the type of erroneous reasoning that lies at the heart of negative corpus, and which has accordingly been rejected as scientifically unreliable: using the process of elimination to support a theory of causation for which no evidence exists.

Additionally, Silvers' testimony that low burn fire patterns indicated accelerants were used and/or materials were placed on the floor to start a fire at a low level was also scientifically unreliable. (T pp 193, 204) Fire experts have asserted "evidence left behind by fully involved accidental fires is often indistinguishable from evidence left by fully involved incendiary fires," and thus downward burning and irregular fire patterns, *inter alia*, while "once thought to indicate incendiarism, "[are] now known to be of little value in classifying the cause of fires." American Association for the Advancement of Science, *Forensic Science Assessments: A Quality and Gap Analysis, Fire Investigation* 19 (2017).

On the other hand, experts have noted it "is certainly possible to find evidence of incendiary activity, e.g., ignitable liquids foreign to the scene or incendiary devices, if it exists." *Id.* at 22. In this case, however, the only independent measures taken to detect accelerants or ignitable liquids—a

trained canine sniff and lab tests of rags found at the scene—were negative. (T pp 204, 256)

Other than Silvers' testimony, the State's evidence that Ms. Lance started the fire was circumstantial, second-hand testimony about an alleged "Freudian slip" by Ms. Lance talking about the fire and an alleged admission by Ms. Lance from a witness who admitted his "mind ain't there too much." (T p 309) This was not a case of overwhelming evidence showing Ms. Lance was responsible for starting the fire. As such, there is a reasonable possibility the jury would have reached a different verdict had the trial court conducted a proper Rule 702(a) analysis and excluded Silvers' testimony. The trial court's error prejudiced Ms. Lance and this Court should grant her a new trial.

III. THE TRIAL COURT'S JURY INSTRUCTION FOR INSURANCE FRAUD WAS PLAINLY ERRONEOUS BECAUSE IT FAILED TO SPECIFY THE PARTICULAR FALSE STATEMENT ALLEGED IN THE INDICTMENT.

A defendant can only be convicted, if convicted at all, of the specific offense alleged in an indictment. Where a defendant is charged with making a particular false statement or misrepresentation, such as insurance fraud, and the State presents evidence of multiple misrepresentations, the trial court must specify in its jury instructions the particular false statement alleged in the indictment. This precludes the jury from impermissibly convicting the defendant for making a false statement other than that alleged in the

indictment. A trial court's failure to do so, as here, constitutes plain error. This Court should accordingly grant Ms. Lance a new trial.

A. Plain Error Standard

Because trial counsel did not object to the trial court's jury instruction on the elements of insurance fraud, this Court reviews the issue for plain error pursuant to N.C. R. App. P. 10(a)(4). *See State v. Locklear*, 259 N.C. App. 374, 377, 816 S.E.2d 197, 201 (2018). To demonstrate plain error, Ms. Lance must show that the trial court's error had a probable impact on the jury's verdict. *Id.*, citing *State v. Lawrence*, 365 N.C. 506, 518, 723 S.E.2d 326, 334 (2012).

B. Discussion

It is well established that "a defendant must be convicted, if convicted at all, of the particular offense charged in the bill of indictment." *Locklear*, 259 N.C. App. at 384, 816 S.E.2d at 204 (internal quotations and citation omitted). Hence, in cases involving false statements or misrepresentations, it is the State's burden to prove the defendant made the particular misrepresentation alleged in the indictment. *Id.* at 383, 816 S.E.2d at 204. (internal quotations and citation omitted). Therefore, this Court asserted in *Locklear*, a case in which this Court found plain error with respect to the trial court's instructions on obtaining property by false pretenses and insurance fraud, "it only makes sense that the trial court must instruct the jury on the misrepresentation as alleged in the indictment." *Id.*

Whether a trial court's failure to instruct the jury on the particular misrepresentation alleged in the indictment constitutes error depends on whether "the court finds 'no fatal variance between the indictment, the proof presented at trial, and the instructions to the jury.'" *Id.*, citing *State v. Ledwell*, 171 N.C. App. 314, 320, 614 S.E.2d 562, 566 (2005) (quoting *State v. Clemmons*, 111 N.C. App. 569, 578, 433 S.E.2d 748, 753 (1993)).

In both *Ledwell* and *Clemmons*, the *Locklear* court observed, the trial court did not err in failing to instruct the jury on the particular misrepresentation alleged in the indictment because the State's evidence corresponded to the allegation in the indictment and there was only evidence of a *single* misrepresentation that the jury could have found. *Locklear*, 259 N.C. App. at 383, 816 S.E.2d at 204

On the other hand, in *Locklear*, there was evidence of *multiple* misrepresentations besides the single misrepresentation alleged in the indictments for obtaining property by false pretenses and insurance fraud. *Id.* at 383, 816 S.E.2d at 205. There was evidence, for example, that the defendant signed her former husband's name on a deed, overstated the personal items purportedly destroyed in the fire, and sought funds for rent that was not used for rent. *Id.* at 384, 816 S.E.2d at 205.

However, the indictment for insurance fraud in *Locklear*, which is substantially similar to the indictment in this case, only alleged a single

misrepresentation: "the defendant claimed that she had had nothing to do with the cause of the fire when in fact, she set the fire and caused the dwelling to be burned." *Id.* at 385–86, 816 S.E.2d at 206.

This Court held that because there was evidence of multiple misrepresentations, the trial court's failure to instruct the jury on the specific misrepresentation alleged in the indictment was plainly erroneous as it permitted the jury to convict the defendant of insurance fraud on a theory not alleged in the indictment. *Id.* at 387, 816 S.E.2d at 206.

Here, as in *Locklear*, Ms. Lance's indictment for insurance fraud alleged a single misrepresentation: "defendant claimed that her personal property was destroyed by an accidental fire." (R p 10; App. 26) Moreover, like *Locklear*, the State presented evidence of more than one statement by Ms. Lance the jury could interpret as false or misleading.

For instance, Mary Ann Myer of State Farm testified Ms. Lance told her that the house had electrical problems. (T p 289) Specifically, Myer testified that Ms. Lance said the refrigerator and the lamp in the kitchen would bite you sometimes," which meant a "small electrical shock or something like that." (T p 289) Myer testified that Ms. Lance also said the microwave would turn off by itself, that the front right eye on the stove did not work, and that "the pull string in the bathroom would sizzle." (T pp 289-90) According to Myer, Ms.

Lance also stated her landlord knew about the issues and would not do anything about it, and she believed the fire was electrical. (T p 290)

Based on the testimony of Ronald Lance and Casey Silvers, the jury could have found that such statements by Ms. Lance to Myer contained false or misleading information. For instance, Ronald Lance testified that Ms. Lance never told him about any electrical problems at the house or ever mentioned any concerns about fuses or possible fire hazards. (T pp 106, 107-08) Silvers testified the fire could not have been caused by electrical wiring or failure, and that electrical branch circuits were also found not to be competent ignition sources. (T pp 197-98, 200-01) Silvers further testified there was no evidence of the range malfunctioning or the range being on at all. (T p 201) The electrical circuits in the range and the conductors supplying the water heater and the ceiling light in that area, Silvers explained, had no evidence of electrical failures. (T p 201)

Here, as in *Locklear*, the trial court's instructions to the jury on the elements of insurance fraud did not specify the false or misleading statement alleged in the indictment. Instead, the trial court instructed that the State must prove "that the defendant presented an oral statement as part of or in support of a claim for payment or benefit pursuant to the insurance policy." (R p 94; T p 375; App. 27)

Based on this non-specific instruction and the evidence presented, the jury could have convicted Ms. Lance on a variety of alleged false statements, not just the specific statement alleged in the indictment. Because Ms. Lance could only be convicted of the offense alleged in the indictment, the trial court's insurance fraud instruction was plainly erroneous. "This Court has found plain error '[w]here there is evidence of various misrepresentations, which the jury could have considered in reaching a verdict' and the trial court fails to instruct on the specific misrepresentation." *State v. Koke*, 824 S.E.2d 887, 894 (2019) (citing *Locklear*) (finding no plain error in trial court's instructions on insurance fraud when the evidence did not show multiple statements containing false or misleading information).

Unlike *Koke*, but similar to *Locklear*, the State presented evidence of various misrepresentations made by Ms. Lance that the jury could have considered in reaching a verdict. Yet the law only allows Ms. Lance to be convicted of the offense alleged in the indictment. Therefore, it was incumbent upon the trial court to specify in its jury instruction for insurance fraud the particular false statement alleged in the indictment.

Even if the trial court had properly instructed the jury that they must find Ms. Lance orally made the particular false statement alleged in the indictment ("defendant claimed that her personal property was destroyed by an accidental fire"), the State's evidence showed Ms. Lance made a written—

not oral—statement to this effect (*i.e.* submission of loss inventory form). Thus, the evidence would have been insufficient to support a conviction on the elements of insurance fraud as instructed by the trial court.

The trial court's failure to specify the false statement alleged in the indictment in its jury instructions for insurance fraud constituted plain error. This Court should grant Ms. Lance a new trial.

IV. THE TRIAL COURT ERRONEOUSLY ORDERED MS. LANCE TO PAY FORTY THOUSAND DOLLARS IN RESTITUTION ABSENT A SUFFICIENT EVIDENTIARY BASIS TO SUPPORT THE ORDER.

The amount of restitution ordered by a trial court must be supported by competent evidence presented either during trial or at sentencing. A restitution worksheet, absent supporting testimony or documentary evidence, is insufficient to support an order of restitution. Because the restitution order in this case was not supported by anything other than the restitution worksheet presented by the State, and whereas Ms. Lance did not stipulate to the amount of restitution ordered, this Court should vacate the restitution order and remand for rehearing on this issue.

A. Preservation

This Court has repeatedly held that appellate review of restitution orders is preserved pursuant to N.C.G.S. § 15A-1446(d)(18), notwithstanding

a defendant's failure to object to the entry of the restitution order. *See State v. Blount*, 209 N.C. App. 340, 347, 703 S.E.2d 921, 926 (2011).

B. Standard of Review

This Court reviews *de novo* the issue of whether a trial court's restitution order was supported by evidence at trial or sentencing. *State v. Hardy*, 242 N.C. App. 146, 159, 774 S.E.2d 410, 419 (2015). Employing *de novo* review, this Court considers the matter anew and freely substitutes its own judgment for that of the lower court. *State v. Williams*, 362 N.C. 628, 632-33, 669 S.E.2d 290, 294 (2008).

C. Discussion

When a trial court orders a defendant to pay restitution, the amount of restitution ordered must be supported by competent evidence presented at trial or sentencing. *Blount*, 209 N.C. App. at 347, 703 S.E.2d at 926-27. "A restitution worksheet, unsupported by testimony, documentation, or stipulation, is insufficient to support an order of restitution." *Id.* at 348, 703 S.E.2d at 927 (internal quotations and citation omitted). Moreover, an "unsworn statement of the prosecutor is insufficient to support the amount of restitution ordered." *State v. Shelton*, 167 N.C. App. 225, 233, 605 S.E.2d 228, 233 (2004).

When a defendant does not stipulate to the amount of restitution ordered and there is insufficient evidence supporting the restitution order, this Court

vacates the restitution order and remands for a hearing on the matter. *Blount*, 209 N.C. App. at 348, 703 S.E.2d at 927.

Here, the trial court ordered Ms. Lance to pay forty thousand dollars in restitution to Ronald Lance. (R pp 107-08; T pp 387-88) No evidence, however, was introduced with respect to the estimated monetary value of the home. Nor was any other evidence presented to show how the figure of forty thousand dollars was calculated.

During sentencing, the prosecutor informed the trial court that the victim did "not wish to be here for sentencing" but requested forty thousand dollars in restitution. (T p 383) The prosecutor presented the trial court with the restitution worksheet requesting that amount, which the trial court ordered. (R pp 107-08; T pp 384, 387-88)

Because no competent evidence was presented at trial or sentencing in support of the amount of restitution ordered in this case, and the prosecutor's unsworn statements and the restitution worksheet alone were insufficient to establish the amount of restitution, and whereas Ms. Lance did not stipulate to this amount of restitution, this Court should vacate the restitution order and remand this issue to the trial court for rehearing.

CONCLUSION

For the foregoing reasons and authorities, Ms. Lance respectfully requests this Court reverse the trial court's denial of her motion to dismiss the charges of, and vacate her convictions for, second-degree arson and conspiracy to commit second-degree arson, and grant her a new trial on the charge of insurance fraud. Additionally, Ms. Lance respectfully requests this Court vacate the restitution order against her.

Respectfully submitted, this the 31st day of May, 2020.

By Electronic Submission:
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CERTIFICATE OF COMPLIANCE WITH N.C. R. App. P. 28

I hereby certify that Defendant-Appellant's Brief is in compliance with Rule 28(j)(2) of the North Carolina Rules of Appellate Procedure as it is printed in thirteen-point Century Schoolbook font and the body of the Brief, including footnotes and citations, contains no more than 8750 words as indicated by the word-processing program used to prepare this Brief.

This the 31st day of May, 2020.

By Electronic Submission:
Warren D. Hynson
North Carolina Bar Number 50791
ATTORNEY FOR DEFENDANT-APPELLANT

CERTIFICATE OF FILING AND SERVICE

I hereby certify that the original of Defendant-Appellant's Brief has been filed, pursuant to Rule 26 of the North Carolina Rules of Appellate Procedure, by electronic means with the Clerk of the North Carolina Court of Appeals.

I further certify that a copy of Defendant-Appellant's Brief has been served on Thomas Felling, Assistant Attorney General, N.C. Department of Justice, by electronic means by emailing to tfelling@ncdoj.gov, which counsel is informed and believes is Mr. Felling's correct and current email address.

This the 31st day of May, 2020.

By Electronic Submission:
Warren D. Hynson
North Carolina Bar Number 50791
ATTORNEY FOR DEFENDANT-APPELLANT

No. COA20-273 DISTRICT TWENTY-NINE B

NORTH CAROLINA COURT OF APPEALS

****

STATE OF NORTH CAROLINA	)	
	)	From Henderson County
v.	)	
	)	
SHERRY LEE LANCE	)	

****

APPENDIX

****

Rule 702. Testimony by experts.

(a) If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion, or otherwise, if all of the following apply:

(1) The testimony is based upon sufficient facts or data.

(2) The testimony is the product of reliable principles and methods.

(3) The witness has applied the principles and methods reliably to the facts of the case.

(a1) Notwithstanding any other provision of law, a witness may give expert testimony solely on the issue of impairment and not on the issue of specific alcohol concentration level relating to the following:

(1) The results of a Horizontal Gaze Nystagmus (HGN) Test when the test is administered in accordance with the person's training by a person who has successfully completed training in HGN.

(2) Whether a person was under the influence of one or more impairing substances, and the category of such impairing substance or substances, if the witness holds a current certification as a Drug Recognition Expert, issued by the State Department of Health and Human Services.

(b) In a medical malpractice action as defined in G.S. 90-21.11, a person shall not give expert testimony on the appropriate standard of health care as defined in G.S. 90-21.12 unless the person is a licensed health care provider in this State or another state and meets the following criteria:

(1) If the party against whom or on whose behalf the testimony is offered is a specialist, the expert witness must:

a. Specialize in the same specialty as the party against whom or on whose behalf the testimony is offered; or

b. Specialize in a similar specialty which includes within its specialty the performance of the procedure that is the subject of the complaint and have prior experience treating similar patients.

(2) During the year immediately preceding the date of the occurrence that is the basis for the action, the expert witness must have devoted a majority of his or her professional time to either or both of the following:

a. The active clinical practice of the same health profession in which the party against whom or on whose behalf the testimony is offered, and if that party is a specialist, the active clinical practice of the same specialty or a similar specialty which includes within its specialty the performance of the procedure that is the subject of the complaint and have prior experience treating similar patients; or

b. The instruction of students in an accredited health professional school or accredited residency or clinical research program in the same health profession in which the party against whom or on whose behalf the testimony is offered, and if that party is a specialist, an accredited health professional school or accredited residency or clinical research program in the same specialty.

(c) Notwithstanding subsection (b) of this section, if the party against whom or on whose behalf the testimony is offered is a general practitioner, the expert witness, during the year immediately preceding the date of the occurrence that is the basis for the action, must have devoted a majority of his or her professional time to either or both of the following:

(1) Active clinical practice as a general practitioner; or

(2) Instruction of students in an accredited health professional school or accredited residency or clinical research program in the general practice of medicine.

(d) Notwithstanding subsection (b) of this section, a physician who qualifies as an expert under subsection (a) of this Rule and who by reason of active clinical practice or instruction of students has knowledge of the applicable standard of care for nurses, nurse practitioners, certified registered nurse anesthetists, certified registered nurse midwives, physician assistants, or other medical support staff may give expert testimony in a medical malpractice action with respect to the standard of care of which he is knowledgeable of nurses, nurse practitioners, certified registered nurse anesthetists, certified registered nurse midwives, physician assistants licensed under Chapter 90 of the General Statutes, or other medical support staff.

(e) Upon motion by either party, a resident judge of the superior court in the county or judicial district in which the action is pending may allow expert testimony on the appropriate standard of health care by a witness who does not meet the requirements of subsection (b) or (c) of this Rule, but who is otherwise qualified as an expert witness, upon a showing by the movant of extraordinary circumstances and a determination by the court that the motion should be allowed to serve the ends of justice.

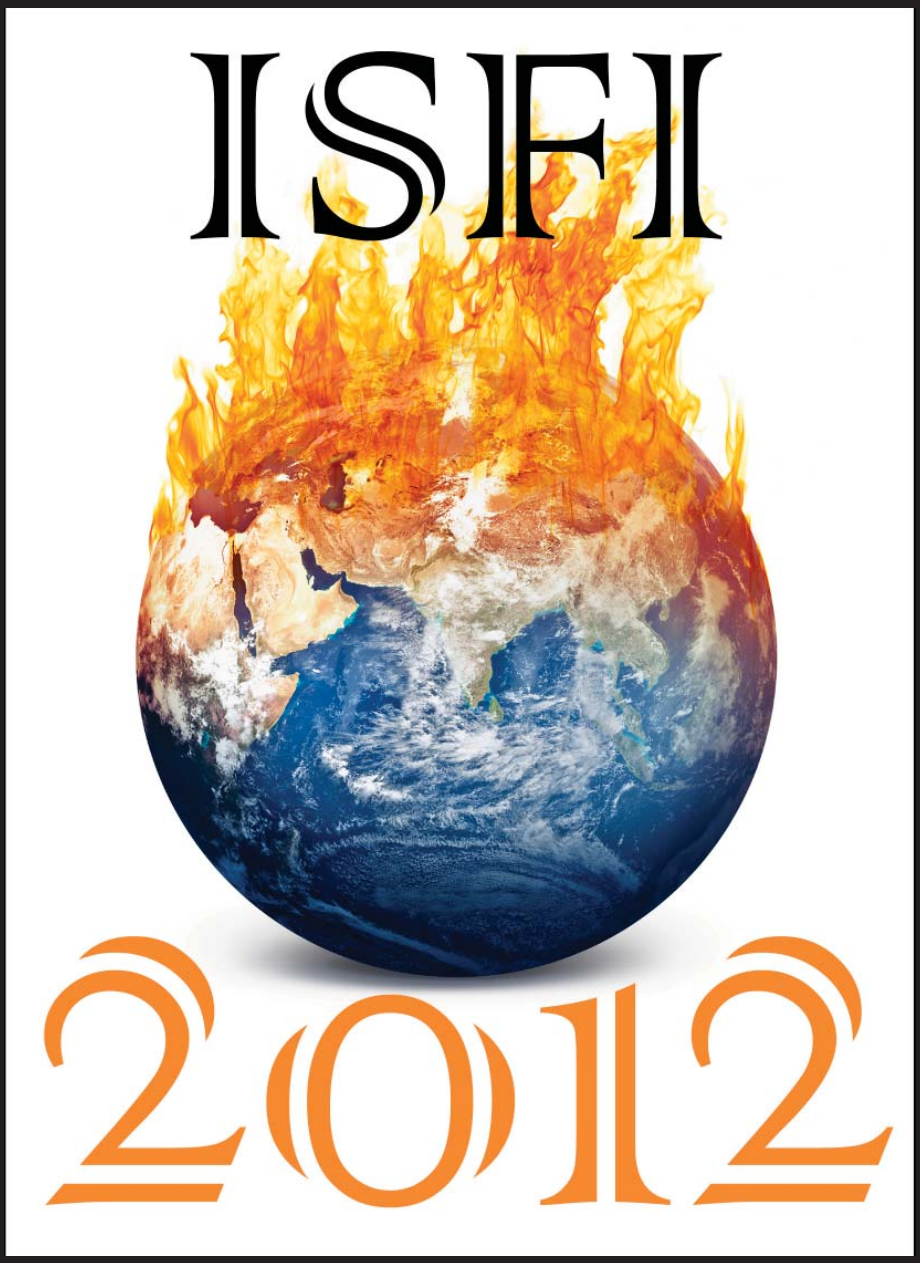
(f) In an action alleging medical malpractice, an expert witness shall not testify on a contingency fee basis.

(g) This section does not limit the power of the trial court to disqualify an expert witness on grounds other than the qualifications set forth in this section.

(h) Notwithstanding subsection (b) of this section, in a medical malpractice action as defined in G.S. 90-21.11(2)b. against a hospital, or other health care or medical facility, a person shall not give expert testimony on the appropriate standard of care as to administrative or other nonclinical issues unless the person has substantial knowledge, by virtue of his or her training and experience, about the standard of care among hospitals, or health care or medical facilities, of the same type as the hospital, or health care or medical facility, whose actions or inactions are the subject of the testimony situated in the same or similar communities at the time of the alleged act giving rise to the cause of action.

(i) A witness qualified as an expert in accident reconstruction who has performed a reconstruction of a crash, or has reviewed the report of investigation, with proper foundation may give an opinion as to the speed of a vehicle even if the witness did not observe the vehicle moving. (1983, c. 701, s. 1; 1995, c. 309, s. 1; 2006-253, s. 6; 2007-493, s. 5; 2011-283, s. 1.3; 2011-400, s. 4; 2017-57, s. 17.8(b); 2017-212, s. 5.3.)

PROCEEDINGS



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THE DEATH OF NEGATIVE CORPUS

(Abridged Version)

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ABSTRACT

The Negative Corpus Methodology [NCM], the belief that the elimination of known potential fire causes (ignition sources), proves some unknown fire cause for which no evidence exists, has long standing in the fire investigation community. The 2011 edition of NFPA 921, *Guide for Fire and Explosion Investigations* finally repudiated and firmly rejected the NCM, although in some segments of the fire investigation community there is still deep-rooted use and reliance on this improper and unethical process.

This program is a follow-up to the 2006 presentation at ISFI (International Symposium on Fire Investigation Science & Technology) "The Pitfalls, Perils and Reasoning Fallacies of Determining the Fire Cause in the Absence of Proof: The Negative Corpus Methodology." That article made the case that the NCM relied on unsupported and faulty reasoning such as the *appeal to ignorance* and a disjunctive form of reasoning, often in the form of the *disjunctive syllogism*. Relying on these fallacies ultimately resulted in opinions that were neither valid nor reliable.

In addition to revisiting some of the fundamental logical reasoning fallacies relied upon using the NCM, this program will provide real-world examples of the application of the NCM; and, explore new studies that further demonstrate the procedural failings and shortcomings of the NCM to further expose it as an invalid and unreliable method for purposes of determining the cause of a fire. Lastly, the article will demonstrate how the NCM fails to meet the Daubert criteria concerning the reliability of expert opinion.

WHAT IS THE NEGATIVE CORPUS METHODOLOGY?

The Negative Corpus Methodology that allows for the "determination" of the ignition source, or as it is routinely applied, "the fire cause," without physical evidence or proof. The 2011 edition of NFPA 921, *Guide for Fire and Explosion Investigations* has adequately described the NCM. This description can be found in §18.7.5 "Inappropriate Use of the Process of Elimination" which states in part:

> "*The process of determining the ignition source for the fire by eliminating known or found in the area of origin claiming such methodology is proof of an ignition source for which there was no physical evidence exists is referred to as "negative corpus."*

Practical Examples

The following examples illustrate the application of the NCM and the faulty reasoning used in supporting the opinions drawn therefrom.

Example 1.

Consider the opinions of an investigator as described in this written report:

> *The origin was examined. The charred remains of a sofa and an ash tray upside down on end of sofa were observed. The removal and inspection of debris found no remains of a cigarette. No accidental or natural ignition sources were observed in the debris. Therefore, it is my opinion that an open flame ignited ordinary combustible materials with human involvement was most likely ignition source.*

Example 2.

Next, consider the testimony of an investigator who conducted the investigation into the fire that occurred in the dwelling depicted in Figure 1.

Q: Your conclusion is that the fire started at floor level, at the hole in the floor, in the living room, on the west wall beneath the picture window?
A: Yes.
Q: You're concluding that the area of origin is the area where you believe the heaviest burn is, correct?
A: Correct.
Q: Did you consider that the fire originated at the ceiling?
A: Yes.
Q: How did you eliminate it?
A: I found no ignition source.
Q: Did you consider that the fire could have started outside the west wall on the deck?

Figure 1.

A: Yes.
Q: What did you do to eliminate that as the point of origin?
A: In that area, there was no ignition source.
Q: Which was also true for the inside, correct? You never found an ignition source…
A: Correct.
Q: In your opinion, you never located an ignition source inside, correct?
A: Correct.
Q: And now you're saying you didn't locate an ignition source on the outside, correct?
A: Correct.
Q: You ultimately concluded that this was an incendiary fire, correct?
A: Yes.
Q: Your conclusion was the ignition source was open flame?
A: Human involvement, yes.
Q: You have no physical evidence of the open flame, correct?
A: Correct.
Q: You have no physical evidence that you can reasonably determine of the material first ignited, correct?
A: Correct.
Q: Your conclusion that this was a humanly and intentionally set fire was arrived at through the process of elimination?
A: Correct.
Q: And your conclusion is based not on physical evidence of the cause of the fire, correct?
A: Could you say that one more time?
Q: Your determination of the fire cause is based on the absence of evidence, correct?
A: The absence of evidence?
Q: Yeah, the absence of the ignition source, the absence of….
A: Yes.
Q: … of the material first ignited?
A: Yes.

Example 3.
Lastly, consider the demand letter an attorney representing an insurance company (Figure 2):

> *"I trust you have had the opportunity to consult with Mr. (Investigator) regarding his inspection of the scene on (date). Our investigation indicates that the fire originated in the northwest corner of Mr. (Insured's) bedroom where the candle was located. Mr. (Investigator) should be able to confirm for you the area of the fire's origin, and that no electrical systems were found in the area. Further, there was no evidence of smoking materials or other devices being the source for the fire. Mr. (Insured) confirms that the candle was an (unnamed) product, purchased at (unnamed) store in (unnamed city). Given Mr. (Insured's) account and the physical evidence, there can be but one conclusion, that the (unnamed) candle was the source for the fire.*
>
> *(Insurance company) has paid sums for the repair and restoration on the premises as is, of course, looking to your client for reimbursement. I look forward to hearing from you."*

Each of these examples represents the outcome regarding the origin and cause of a fire utilizing on the NCM. The all also illustrate the subjective nature and inherent logical reasoning fallacies which occur in applying the NCM to the proffered fire causes.

In Example 1, the investigator eliminated a cigarette as a potential ignition source because he found no evidence of one. Yet, the investigator then opines the ignition source is an "open flame" despite finding no evidence of an open-flame producing device.

In Example 2, the investigator applied the NCM to eliminate alternate potential origins as well as other potential ignition sources. First, he eliminated alternate potential origins because he found no ignition source at those locations. (What's interesting was that this is exactly the correct hypothesis testing recommended in NFPA 921-11, §17.6.1.1.) But then, he selected his origin based on fire patterns and damage, and not on finding the presence of a competent ignition source. Next, he determined the ignition source had been an open flame, not on evidence, but on the absence of evidence and the elimination of any other heat sources at his proffered origin.

Example 3 illustrates the classic Negative Corpus argument as presented in the demand letter. What makes this example different from the first two is that the proffered cause was attributed to a candle rather than an intentional cause. What the letter forgot to mention, however, was that no evidence of the jar candle had been found in the fire debris. The only facts relied upon to indicate that a candle had been in the room at the time of the fire was the witness statement of the apartment's occupant. From that perspective, this example is like the first two in that, one, alternative ignition sources were eliminated because there had been no physical evidence of them; and two, there had been no evidence of the proffered ignition source.

These examples all illustrate the subjective, speculative and arbitrary nature of conclusions derived from the NCM. All exemplify the twisted logic relied upon where the exact same evidence, or absence thereof, exists for the proffered ignition source and those potential ignition source(s) considered and eliminated. The application of a logical and rational reasoning methodology would provide that either both hypotheses must be true, or both must be false. The application of a methodology which supports contradictory conclusions would not be possible unless the methodology were fallacious. By following the appropriate methodology dictated by the Scientific Method,[1] the result of hypothesis testing with two opposing hypotheses supported by the same data could only result in conclusions considered "undetermined."

Determining an "Open Flame" as an Ignition Source

As provided in Examples 1 and 2, a common description for the fire cause by the investigator who utilizes the NCM is an "open flame" to "ordinary combustible materials" (unless of course the cause *du jour* is an appliance). There are several other issues concerning the "determination" that the ignition source was an "open flame. "

- An "open flame" is not an ignition source, but is itself combustion.[2, 3]
- Open flame combustion is the result of an ignition source raising the temperature of a combustible material above its ignition temperature.
- An ordinary combustible material is simply any material that will burn.

The determination of an "open flame" as an ignition source improper and unacceptable, and is only supported by the subjective and arbitrary belief of the investigator.

WHY NEGATIVE CORPUS?

Because, the NCM has been regarded as a process necessary to determine fire causes specifically in circumstances in which the ignition source has not been identified. The NCM is process that has been permissible when ignition source had allegedly been removed from the scene at the time the fire had been initiated. Unfortunately, the use of the NCM has been expanded by some to include fires where the ignition source is simply unrecognizable, cannot be found (often due to the degree and extent of damage, both by the fire and fire suppression activities such as overhaul), or when too much damage is present (e.g. with appliances where there is "too much damage" to identify the cause (sic)). While the NCM is a process mostly utilized to determine intentional fires, the NCM is utilized for fires classified "accidental," such as equipment, appliances, candles and cigarettes as well.

APPLICATION OF THE NEGATIVE CORPUS METHODOLOGY

There are two aspects to the application of the NCM, the procedural methodology and the reasoning methodology.

I. PROCEDURAL METHODOLOGY

The application of the NCM first depends on the investigators ability to accurately and positively identify the origin. Previous editions of NFPA 921 (1998, 2001, 2004 2008), reiterated the importance of identifying the origin and advised that the NCM could only be used when the origin was "clearly defined." This had been discussed in §18.2.1 of the 2008 ed., which started in part: "The positive identification of the origin is the most significant factor in determining whether the process of elimination is appropriate. If the origin cannot be positively identified to the exclusion of all other potential origins, no inferences regarding the ignition source should be made." "Whenever the origin is not clearly defined, this process is inappropriate and cannot be used."

A parallel discussion, Kirks' Fire Investigation, 6th ed. provided similar guidance for the application of the Negative Corpus Methodology, where it emphasized that the NCM would be applicable when the point of origin was known.[4] "Even in the absence of an incendiary device, the crime of arson can be proven in the absence of <u>all</u> logically possible accidental and natural causes at the point of origin."[5,6] (Emphasis original)

Critical Question One

"The origin of a fire is one of the most important hypotheses that an investigator develops <u>and tests</u> during the investigation. (Emphasis added) Generally, if the origin cannot be determined, the cause cannot be determined, and generally, if the correct origin is not identified, the subsequent cause determination will also be incorrect."[7]

The first question to be answered based on the definitions of the fire origin, is, "How can an investigator determine the (point of) origin without physical evidence of the ignition source, when the identification of the ignition source defines the origin?" The simple answer is, "You can't." The question is itself a conundrum, a puzzle, a riddle with no satisfactory answer. In logic, this is referred to as a "Causality Dilemma."[8] The classic "chicken or the egg" riddle is an example. The origin cannot be identified without the ignition source; and, the ignition source cannot be identified without identifying the origin.

Critical Question Two

The second critical question to be answered is essential to testing the origin hypothesis and is found in §NFPA 921-11, §17.6.1.1, (Testing the Origin Hypothesis) which asks: "Is there a competent ignition source at the hypothetical origin?"

Obviously, the NCM answer to the question is, "no." The very reason for using the NCM is to reach opinions regarding the cause of a fire when evidence of the ignition source is not found. As a result, the most basic method of hypothesis testing for the origin cannot occur resulting in the determination for the origin being untested and simply opinion.

What also should not be missed here is that the testing of the origin hypothesis requires a second, but interrelated test to determine the "competency" of the heat source found at the origin. NFPA 921-11, §18.4.2 "Ignition Source Analysis," like §17.6.1.1 testing the origin hypothesis, requires testing for the ignition source hypothesis as well. Because the ignition source is being inferred and not identified by physical evidence utilizing the NCM the investigator simply *assumes* the ignition source is competent.

"How Reliable is the Methodology Utilized to Determine the Origin?"

This is a particularly valid question considering the determination of the origin utilizing the NCM is the absence of an ignition source. As discussed previously, it is the presence of the ignition source that defines the origin. However, in cases using the NCM the origin determination obviously does not rely on finding an ignition source. Instead, utilizing the NCM the origin for the fire is determined always determined in the absence of a physical ignition source.

If the investigators are unable to test the origin hypothesis, to prove or conform they were at *the* origin, as recommended in NFPA 921-11, §17.6.1.1 (Testing the Origin Hypothesis), the investigators obviously are utilizing some other methodology for supporting opinions regarding the origin.

NCM is Inherent Unreliability

Whenever a methodology warns that it can only be used only in certain circumstances and conditions, but where those conditions and circumstances do not exist, "this process is inappropriate and cannot be used.[9] This is a warning of the methods' potential misuse and its unreliability, resulting in erroneous conclusions. Where the "guidance" warns that the methodology can be regarded as both "appropriate" (i.e. reliable) and "inappropriate" (i.e. unreliable) depending on the circumstances, this is a warning of potential misuse and its unreliability. Where the guidance provides that, "... it should be relied upon only in the most special circumstances,"[10] that should alert everyone that the proffered methodology can lead to erroneous conclusions and speaks directly to its unreliability.

Lentini recognized the misuse of the "clearly defined origin" concept limiting the applicability of the POE, *vis-a-vie* NCM, provided in NFPA 921, so much so he was compelled to provide a detailed description of and a photograph in his textbook as an example of his interpretation of a "clearly defined origin."[11]

Lentini also recognized the problems encountered with the liberal interpretations employed by some investigators in their individual interpretations of "clearly defined" noting, "the ambiguity has been

exploited by some investigators to allow them to state that "clearly defined" means whatever they want it to mean (*ipse dixit*)."[12]

Experimental Testing of the Origin Hypothesis Methodology

The article by Special Agent Steve Carmen, ATF (Ret.), "Improving the Understanding of Post-Flashover Fire Behavior,"[13] describes the results of experiments conduct during a 2005 training seminar for fire investigators, with a focus on teaching fire dynamics and the effect of ventilation on the different origins in post-flashover compartments.[14]

Two test room-cells were built and both had been furnished as a bedroom. The fire in the test cells burned for 7 minutes, until after flashover had occurred. Fifty-three participant-investigators, with varying degrees of experience were asked to briefly examine the cells and decide in what quadrant of each cell they thought the fire had originated.[15]

Of the fifty three participants only three correctly identified the quadrant of origin for the first test cell. Only three participants correctly identified the correct quadrant in the second test cell. The three participants getting the quadrant correct were different for each cell. No participant got the quadrant of origin correct for the two cells. The number getting the quadrant of origin correct corresponded to an accuracy rate of only 5.7%. However, more importantly the ratio getting the quadrant incorrect was an abysmal 94.3%. Those participants who had incorrectly identified the origin reported that they had been misled in their analyses (and origin determination) by the extensive, post-flashover generated burn patterns.[16] The conditions present in Carmen's experiments are not any different than those found in the actual fire scenes. Investigators routinely rely on the NCM in post-flashover conditions, as the examples earlier in this article illustrate.

Carmen reported anecdotal evidence from instructors from the Federal Law Enforcement Training Center, in Brunswick, Georgia, who indicated that since early 1990's only 8 – 10% of the participant-investigators there correctly identified the origin during the pre-test. This is only slightly better than the ratio reported in Carmen's research, but is still dismal. Carmen acknowledged as much where he stated, "A success rate of less than 10% of investigators to accurately determining the origin of one or two-room fires even after short periods of post-flashover exposure is of concern."[17]

The process of determining the origin found in the Carmen report is the same methodology utilized by proponents of the NCM. After determining the origin, the next step is to determine the cause. Based on the conclusions reported by Carmen regarding investigators origin determination, the NCM would have resulted in an incorrect cause with an error rate of 94.3%, the same as the error rate for incorrectly identifying the origin. Knowing a potential error rate in the expert's methodology is one element of the Daubert criteria.

How Reliable is the Origin Determination Methodology?

What does Carmen's research say about investigators reliability of investigators to correctly identify the origin of a fire? While Carmen noted, a "success rate of less than 10% of investigators accurately determining the origin... is of concern" it is far more than just concerning.

The utilization of the NCM depends on the accurate, positive and conclusive identification of the origin. Simply, the origin must be known to a certainty, to the exclusion of all other potential origins or the methodology is unreliable for purposes of identifying the fire cause. The origin and cause determination of a fire is a classic example of "chain reasoning", where successive conclusions are also reasons for the next conclusion.[18] A consequence of the origin being incorrect is compounded with the utilization of the NCM, because the cause determination is based the conclusions origin. The inability to correctly and conclusively identify the origin lead directly to the ability to correctly identify a fire cause utilizing the

NCM. If the correct origin is not identified, the subsequent cause determination will generally be incorrect.[19]

Considering that investigators utilizing the NCM base their determination of fire cause on their ability to correctly identify the origin, and the methodology used to determine the origin according to Carmen's research has a success rate of merely 5.7%. The resulting opinions regarding the cause would be not only unacceptable, they would also be unreliable. For the reasons herein noted, the NCM must be rejected as a methodology that is unreliable. Knowing and demonstrating the Reliability of a particular methodology, theory or technique is one of the *Daubert* factors.

II. REASONING METHODOLOGY

The second phase in the application of the NCM involves the reasoning methodology employed, to reach and support the conclusions. The "arson by default" [20] methodology employed by the NCM is fraught with assumptions, speculation and logical reasoning fallacies. These errors in reasoning had been discussed in detail in the author's 2006 article, "The Perils, Pitfalls and Reasoning Fallacies of Determining the Fire Cause in the Absence of Proof: The Negative Corpus Methodology."

All the resonating fallacies will not be discussed here; however, there are several fallacies which dominate the NCM reasoning that should be noted. The primary fallacies which form the basis of the NCM are:

- Disjunctive Reasoning
- Appeal to Ignorance
- Shifting Burden of Proof

Reliance on the Disjunctive Reasoning[21]

The NCM utilizes a variety of disjunctive forms of reasoning in an attempt to validate any conclusions drawn therefrom, including the *false dilemma*, the *either-or fallacy*, the *false alternatives fallacy*, or the *black & white fallacy*. The similarity between these fallacies is the faulty premise, in which they all assert there are only two alternatives to considering the cause of a fire. But this argument works only if there really are two alternatives.[22] The author has also encountered a form of disjunctive reasoning referred to as the "theory of competing hypotheses. One of the key problems with this "theory" is the assumption that one of the hypotheses was correct.

The most frequent application of disjunctive reasoning for the NCM proponent is that a fire cause is either "accidental" or "incendiary." The premise that a fire cause is either "accidental" or "incendiary" itself a faulty premise. "Accidental" and "incendiary" refer to the classifications of a "fire cause" and not the elements of a fire cause.

This disjunctive form of reasoning is expressed as:

If not A, Then B
Not A,
Therefore B

Disjunctive reasoning is most easily recognized as expressed in the form of the Disjunctive Syllogism. A number of different sources are available that explain both the fallacy and the outcomes of improperly relying on the disjunctive form of reasoning upon which the NCM relies.[23,24]

Example Disjunctive Reasoning: Evidence Examination

Consider for a moment that you are a proponent of the NCM. An evidence exam is taking place in which potential ignition sources preserved from a fire scene are to be examined. The purpose of the examination is to find and determine the ignition source for the fire.

Throughout the examination, potential ignition sources are examined and "eliminated" as the ignition source until all but two potential ignition sources remain. As a proponent of the NCM, the decision is clear, one of the two remaining pieces of evidence must be the ignition source ("if not A, then B"). The first of the last two items is examined and "eliminated." The question now is, "Do you have to examine the last piece of evidence before determining it to be the ignition source?" For the NCM proponent, the answer would be, "No." Why? Because, relying on the NCM, this last must be the ignition source. Why? Because all the other potential ignition sources have been eliminated. Many investigators have had the experience of going to an evidence examination and not finding evidence of an ignition source. This is the classic NCM form of reasoning demonstrating the reliance on the disjunctive form of reasoning.

While the evidence examination is only a hypothetical example, the author has attended evidence exams and observed experts who have applied the NCM reasoning, whereas "the cause must be one of the two items remaining." It is not uncommon for evidence examination protocols or an expert(s) to recommend starting with the item least likely to be the fire ignition source and work to towards the more probable. This methodology alone leads to the "if not A, then B" reasoning. The result is that the very order in which the evidence was examined can play a role in the final determination of the cause. A good method to avoid this dilemma and remain objective throughout the examination is to examine the more probable ignition source first, knowing that there are additional items to examine.

The *Appeal to Ignorance* Fallacy

Besides disjunctive reasoning, the other primary fallacy relied upon by proponents of the NCM is the belief that the elimination of one thing proves something else. This is fallacy is referred to as the *appeal to ignorance*. The fallacy, *appeal to ignorance*, is cited by a number of different sources.[25] Among the best and most straight forward are these:

- "The problem here is that a lack of evidence is supposed to prove something but it can't. A lack of evidence alone can neither prove nor disprove a proposition. A lack of evidence simply reveals our ignorance about something."[26]
- "If the absence of proof against a claim could be regarded as proof for it, then even the most bizarre of claims could allegedly be proved."[27]
- "You could also show how one could be led to logically contradictory conclusions if the pattern of thinking in question were not fallacious."[28]

The last point here is well worth noting because, that is exactly what will happen. When an investigator eliminates a heat source, e.g. a cigarette, because he fails to find evidence of one, but then uses the same methodology to allege the ignition source had been an "open flame" when no evidence of the device producing the open flame is found, that illustrates fallacious reasoning.

Shifting Burden of Proof

"Appeals to ignorance involve the notion of burden of proof. Burden of proof is the weight of evidence or argument required by one side in a debate or disagreement (in the critical thinking sense). Problems arise when the burden of proof is placed on the wrong side."[29]

> *When one commits this fallacy, one is attempting to shift the obligation of proof to another person, usually to someone unconvinced by or skeptical of the claim. This is typically done by insisting that the critic has the responsibility to disprove the claim or provide support for the contradictory claim.*[30]

The allegation for which there is no evidence creates an untestable hypothesis, both for the person making the allegation and for someone challenging the claim. An untestable hypothesis is an invalid hypothesis. "Claims that cannot be tested, assertions immune from proof are verdically worthless."[31] "The burden of proof lies with the person making the allegation or claim, and then requires that evidence and proof be

presented. Lastly, no claim for responsibility can be made without evidence or proof. No claim can be supported by the absence of evidence."[32]

NFPA 921, 2011 EDITION – REPUDIATING THE NEGATIVE CORPUS METHODOLGY

The first attempt by NFPA 921 to address the NCM had first been introduced in the 1998 edition, in a discussion euphemistically referred to as the "Process of Elimination" [POE]. The POE discussion had attempted to place a restriction on the use of the NCM, by defining the conditions and circumstances where the cause could be "determined" is the absence of physical evidence. Essentially, the POE discussion permitted the use of the NCM when there existed a "clearly defined origin."

The POE discussion itself provided guidance for the investigator to follow the scientific method right up to the point where it then permitted the investigator to determine the ignition source by "inference." In this regard, inference is tantamount to speculation or guessing as to the determination of cause. The recommended process was clearly inconsistent with the Scientific Method.

With the adoption of the 2011 ed. of NFPA 921 the majority of the committee had come to recognize the inherent conflict and irreconcilable differences between the Scientific Method and the NCM. The result was a reversal of the committees' previous position with a direct and straightforward rejection and repudiation of the NCM, a decision long overdue. The new discussion is found in §18.6.5 Inappropriate Use of the Process of Elimination.

NEGATIVE CORPUS METHODOLGY AND THE *DAUBERT* CRITERIA

The Supreme Court in *Daubert v. Merrell Dow* (509 U.S. 579, 113 S.Ct. 2786) set forth factors a court may use in evaluating whether or not an expert's opinion is sufficiently reliable to be admissible.[33] Subsequent Supreme Court decisions make it clear that the test of reliability is flexible and that this list of specific factors neither necessarily nor exclusively applies to all experts or in every case.

These factors established by the Supreme Court to evaluate the reliability of expert opinion are as follows:

(1) Whether a theory or technique can be (and has been) tested.

(2) Whether a theory or technique has been subjected to peer review and publication (although publication, or the lack thereof, is not a dispositive consideration)

(3) The known or potential rate of error of a particular scientific technique and the existence and maintenance of standards controlling the technique's operation

(4) That a "reliability assessment" does not require, although it does permit, explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance of a theory or technique within that community

Analyzing the NCM by Daubert

The issues discussed in this article can be used to provide the framework by which the expert opinions utilizing the NCM principles can be analyzed by the Daubert reliability criteria. Each will be analyzed here, in order:

(1) Whether a theory or technique can be (and has been) tested.

The first and most important aspect whether the NCM can be applied is whether the point of origin is known,[34] and the origin is known to a certainty, with no other potential origins.[35] Carmen's research tested the procedural methodology of investigators to determine the origin of a fire and found that reliability was only 6%. This is unacceptable. On this basis alone the Negative Corpus Methodology cannot be relied upon to yield accurate results.

(2) Whether a theory or technique has been subjected to peer review and publication.

The NCM has been subjected to peer review by its publication in NFPA 921, which is considered a peer reviewed document. NFPA 921-11, §18.6.5 "Inappropriate Use of the Process of Elimination" rejected the NCM where it states:

- The NCM is inconsistent with the Scientific Method
- The NCM is inappropriate and should not be used
- The NCM yields untestable hypotheses

In a related rejection, NFPA 921-11, §4.3.6.1 states: Hypotheses that cannot be tested are invalid.

(3) The known or potential rate of error of a particular scientific technique and the existence and maintenance of standards controlling the technique's operation.

Carmen's research provided an error rate for accurately determining the origin of a fire, which is the first and primary process for using the NCM. The results or Carmen's research and the anecdotal data demonstrate an error rate in accurately identifying the origin at 94%. This is unacceptable. The logical conclusion from this research if the determination of cause had followed the incorrect determination of the origin, the cause would have equally been incorrect, with an error rate of 94%.

As for the second part of the test, the "standards" which reference the technique (e.g. Kirk's, Scientific Protocols for Fire Investigation, Forensic Fire Scene Reconstruction, and even NFPA 921-08 ed.) acknowledged that inappropriate use of the (NCM) method would lead to erroneous results. The guidance provided in these documents had difficulty conveying the limiting conditions and circumstances for the appropriate use for the NCM. Ultimately, the "appropriate" application of the method was left to the investigator to be applied as the investigator saw fit.

(4) That a "reliability assessment" does not require, although it does permit, explicit identification of a relevant scientific community and an express determination of a particular degree of acceptance of a theory or technique within that community.

As stated previously in Daubert criteria (3) for peer review, with the adoption of the 2011 ed. the relevant community, via NFPA 921-11 ed., in §18.6.5 "Inappropriate Use of the Process of Elimination" has resoundingly rejected the NCM as not acceptable.

CONCLUSIONS REGARDING THE NEGATIVE CORPUS METHODOLOGY

The NCM is inherently flawed and unreliable. Through a detailed critical analysis, the undeniable truths concerning the NCM are quite evident:

1. The origin must be known to a certainty, to the exclusion of all other potential origins otherwise the methodology is unreliable.
2. The methods utilizes by investigators to determine the origin is itself unreliable.
3. It was not possible for authors to convey by description or example their idea of when the NCM would be appropriate (e.g. reliable) or inappropriate (e.g. unreliable).
4. That the NCM when used inappropriately it could lead to erroneous conclusions.
5. That the NCM proposed untestable hypothesis.
6. That the NCM could not be supported by the Scientific Method.
7. The NCM is not reliable.
8. That the NCM cannot be relied upon to yield reliable expert opinion and thus fails the Daubert criteria for reliable expert opinion.

Epilogue

The first edition of NFPA 921 in 1992 was reviled by many in the fire investigation community for its addressing "misconceptions" in fire investigation as being erroneous and not scientifically reliable. These misconceptions had been labeled as such because of their wide spread acceptance and use. Misconceptions about char, (alligator char; the shape, size and color of the char blister), low burn, annealed furniture springs, crazing of window glass, spalling were all found to be unreliable and not supported by scientific research. The proponents of these misconceptions complained that 921 was "taking away" of tools used by an investigators to determine a fire cause. Today, these misconceptions are virtually nonexistent. They are little more than historical footnotes in the evolution of fire investigation science and technology. In later years NFPA 921 addressed the misconceptions and unreliability of the visual interpretations of burn patterns attributed to ignited liquids. Most recently, it has been the repudiation of the NCM.

The fallout from the change in the 2011 ed. 921 is much like that in the past. The proponents of the NCM now blame NFPA 921 (and the Technical Committee for Fire Investigations) for taking away another of their methods for determining a fire cause. What they have yet to realize is that 921 did not take anything away. Their anger is misplaced. The NCM is not wrong and unacceptable because it's now written in NFPA 921. Simply, the NCM has always been wrong. The NCM has never provided conclusions that were valid or reliable. Instead, it was a false methodology and a "tool" that the investigator never really had. In 2011, NFPA 921 finally acknowledged and addressed the ever present but not widely recognized failings, inconsistencies and fallacious reasoning the NCM had relied upon to support conclusions. As reported in 2006, "Basically, the Negative Corpus Methodology exists only because the procedure is acceptable to the fire investigation and legal communities."[36] It's good to report that in 2012 that's no longer the case. The Negative Corpus Methodology is dead.

For some proponents of the NCM their ideology is simply misdirected. Some see the repudiation, and "death of negative corpus," as a means that will allow arsonists "get away with setting a fire." Instead of realizing the undeniable truth that the NCM and any finding based on the absence of proof is unreliable; that following the NCM will guarantee incorrect conclusions regarding the origin, cause and responsibility of a fire; and, that innocent victims of fire will be incorrectly identified as the being responsible for the fire in the absence of evidence. Fundamentally, they fail to recognize that we don't accuse the innocent to get the guilty. "It's more important to protect the innocent that convict the guilty" is a fundamental tenant for conducting ethical investigations.[37]

The "death of negative corpus" will mean individuals and product manufacturer's will not be falsely accused as being responsible for a fire in the absence of evidence. It will mean that the victims of fire will not have their financial lives threatened by the withholding of their insurance proceeds based on the absence of evidence. It will mean that those incorrectly accused will not be denied their liberty in the absence of evidence. It will also mean that those incorrectly accused cannot be put to death in the absence of evidence.

ABOUT THE AUTHOR

Dennis W. Smith is the President and Principal Fire Expert with Premier Fire Consulting Services, LLC (www.premierfireconsulting.com) of Ft. Wayne, Indiana. Denny's specialties include origin & cause investigation, large loss investigation and scene management, critical review of prior investigations and assessing investigative methodology, building and fire code analysis, and fire investigation training. He retired after 25 years from the Atlantic City (N.J.) Fire Department as a Fire Captain (1973-1999). He has B.Sc. degree in Fire Science, a B.A. in Criminal Justice, and an A.Sc. degree in Fire Control Technology. He is a member of the NFPA Technical Committee for Fire Investigator Professional Qualifications (NFPA 1033) since 1991 and had been a member of the Technical Committee for Fire Investigations (NFPA 921) for 23 years (1988 – 2011).

END NOTES

[1] NFPA 1033, Standard for Professional Qualifications for Fire Investigator, National Fire Protection Association, Quincy, MA, 2009 ed., §4.1.2
[2] NFPA 921-11, §3.3.69 Definitions, Flame
[3] NFPA 921-11, §3.3.31 Definitions, Combustion
[4] DeHaan, John D., Icove, David J., Kirks' Fire Investigation, 7th Ed., Brady/Pearson, Upper Saddle River, NJ, 2012, 2007, p.322
[5] DeHaan, p.748 Definitions: Point of Origin
[6] NFPA 921-11, 3.3.127 Definitions: Point of Origin
[7] NFPA 921, Guide for Fire and Explosion Investigations, National Fire Protection Association, Quincy, MA, (1992 rev.) 2011 ed., §17.1 Origin Determination: Introduction
[8] http://en.wikipedia.org/wiki/Chicken_or_the_egg
[9] NFPA 921, Guide for Fire and Explosion Investigations, National Fire Protection Association, Quincy, MA, 2008 ed., §18.2.1
[10] DeHaan, p.322
[11] Lentini, John, J., Scientific Protocols for Fire Investigation, CRC Press/Taylor & Francis Group, Boca Raton, FL, 2006, p.124-125
[12] Lentini, p.124
[13] Carmen, Steven W., "Improving the Understanding of Post-Flashover Fire Behavior," ISFI 2008 Proceedings, International Symposium on Fire Investigation Science and Technology, National Association of Fire Investigators, Sarasota, FL, p.221 - 232
[14] Carmen, p.221
[15] Carmen, p.221-222
[16] Carmen, p.221
[17] Carmen, p.223
[18] Fisher, Alec, Critical Thinking, Cambridge University Press, Cambridge, UK, 2001, p.31
[19] NFPA 921-11, §17.1 Origin Determination: Introduction
[20] Icove, David, J., DeHaan, John D., Forensic Fire Scene Reconstruction, 2nd ed., Brady Pearson/Prentice Hall, Upper Saddle River, NJ, 2009, p.34
[21] Vaughn, Lewis, The Power of Critical Thinking Effective Reasoning About Ordinary and Extraordinary Claims, 2nd ed., Oxford University Press, New York, 2008, p.189
[22] Vaughn, p.189
[23] Vaughn, p.189
[24] Damer, p.115
[25] Cavender, Nancy M., Kahane, Howard, Logic and Contemporary Rhetoric: the Use of Reason in Everyday Life, 11th ed., Wadsworth/Cengage Learning, Belmont, CA, 2010, 2006, p.83
[26] Vaughn, p.181
[27] Damer, p.135-138
[28] Damer, p.138
[29] Vaughn, p.183
[30] Damer, Edward T., Attacking Faulty Reasoning: A Practical Guide to Fallacy-Free Arguments, 4th ed., Wadsworth/Thompson Learning, Belmont, CA, 2001, p.136
[31] Sagan, Carl, The Demon-Haunted World, Science As A Candle In The Dark, Ballantine Books, New York, 1996, p.171
[32] Damer, p.136
[33] NFPA 921-11, §11.5.2.3.6
[34] DeHaan, p.322
[35] NFPA 921-08, §18.2.1 Fire Cause Determination, Process of Elimination
[36] Smith, Dennis W., "The Pitfalls, Perils and Reasoning Fallacies of Determining the Fire Cause in the Absence of Proof: The Negative Corpus Methodology", ISFI Proceedings 2006, National Association of Fire Investigators, Sarasota, FL, p.323
[37] International Association of Arson Investigators (IAAI) Code of Ethics

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UNPUBLISHED OPINION. CHECK COURT RULES BEFORE CITING.

UNPUBLISHED
Court of Appeals of Michigan.

PEOPLE of the State of Michigan, Plaintiff–Appellee,
v.
Audrey Devonne PRUITT, Defendant–Appellant.

Docket No. 313065.
|
April 1, 2014.

Saginaw Circuit Court; LC No. 11–035597–FH.

Before: SAWYER, P.J., and BECKERING and SHAPIRO, JJ.

Opinion

PER CURIAM.

***1** Defendant appeals from her jury convictions of arson of a dwelling house, MCL 750.72, [1] burning of insured property, MCL 750.75, [2] and insurance fraud, MCL 500.4511(1). The trial court sentenced defendant to 30 months to 20 years in prison for arson of a dwelling house, five months to 10 years for burning insured property, and 17 months to four years for insurance fraud. Because defendant has not established error requiring reversal, we affirm.

I. FACTS

In December 2008, Mary Liddell sold defendant a home located in Buena Vista Township, Michigan. Defendant purchased the home on a $9,000 land contract, putting $700 down and making payments of $350 per month. The land contract required defendant to obtain renter's insurance and Liddell to maintain her homeowner's insurance on the property. The contract also indicated that if anything happened to the home, defendant would not receive any proceeds from Liddell's insurance. While the land contract did not require defendant to obtain homeowner's insurance, she nonetheless entered into a homeowner's insurance policy with State Auto Insurance (State Auto) on September 4, 2009, insuring the home for $87,000 and personal property for $60,900.

Two months later, on November 10, 2009, the home caught fire. Diana Diaz, who lived across the street from defendant, was looking through her living room window when she saw defendant's truck go by and then saw smoke billowing from defendant's roof. Diaz called 911. Patrick Brown, who resided next to Diaz, was outside smoking a cigarette on the morning of the fire and saw defendant drive to a stop sign at the end of the street. Brown went inside, got something to eat, and when he came back out, saw smoke coming from defendant's home.

Another neighbor, David Thomas, was also outside that morning when he looked up and saw black smoke coming from defendant's home. As Thomas started toward defendant's home, he saw defendant driving down the street. Thomas ran toward defendant's car and tried to get her attention by yelling her name and waving, but defendant kept driving. Thomas then walked over to Diaz, who was in her front yard and confirmed that she had already called 911. According to Thomas, fire trucks arrived 10 to 15 minutes later.

Firefighters received a call from dispatch at 9:37 a.m. and arrived at defendant's home at 9:53 a.m. Upon arrival, grayish-brown smoke was escaping from eaves and soffits of defendant's home, suggesting that a "heavy working structure fire" was inside. According to one of the firemen, the fire had spread to the living room along the ceiling but was most intense along the back wall of the kitchen between the refrigerator and the stove; a burnt "v" pattern on the wall at that location indicated the fire's point of origin. The firefighters extinguished the fire and the fire captain conducted an investigation of the property that same day.

Fire Captain Craig Gotham, qualified as an expert in fire cause and origin, testified that he investigated the cause of the fire after it was extinguished. He testified that he ruled out accidental causes because the refrigerator's electrical wiring and the stove's gas fitting were "clean." He found a can of aerosol starting fluid (ether) by a loveseat that was burnt at its spray-nozzle. Gotham also testified that he talked to defendant on the day of the fire. She told him that she left her home around 9:30 that morning to go shopping with her mother and that she had cooked breakfast sandwiches approximately an hour earlier. She also indicated that she did not smoke or use incense or candles.

***2** Keith LaMont, a Michigan State Police forensic analyst, testified that he tested some charred remains taken from the home, but found no ignitable liquid within the samples. LaMont explained that ignitable liquid, such as the starter fluid found in defendant's home, could have been used but been completely consumed by the fire. This was because the ether contained in the starter fluid found at the scene was "very volatile" and could either evaporate or be quickly consumed by the fire, thereby decreasing the likelihood of its detection.

David Row testified that he had been involved in nearly 2,000 fire investigations since 1991 and had acquired 2,500 hours of training in fire investigation, some of which included "fire testing," where a fire is created and extinguished in a controlled setting for educational purposes. Based on this training and experience, Row was qualified as an expert in the field of fire investigation. Row testified that there are "four processes" used in conjunction to establish the origin of the fire, including witness information, burn pattern analysis, arc mapping, and fire dynamics evaluation. [3] Row indicated that he began his investigation by questioning defendant regarding her activities on the day of the fire. [4] Row said that defendant told him that she left the home around 9:30 on the morning of the fire. Row also took into consideration the observations of Diaz.

Row then recounted to the jury his visual observations of the exterior and interior of the home, displaying photographs he had taken during his investigation. He testified that both the gas and electric meters were intact and that neither could have caused the fire. Row said that, once inside the home, he systematically went through the rooms and observed evidence of fire damage. According to Row, he was able to rule out certain rooms as the origin of the fire based on the level of damage to personal belongings in the rooms. Based on his observations of low-level burn damage in the kitchen, Row testified that the origin of the fire was an empty "Rubbermaid or Hefty style 33 gallon" garbage can between the stove and refrigerator at or near floor level. The fire damage in this area extended all the way to the floor, where the trashcan had "melted down into a big blob of plastic." Row testified that analysis of the refrigerator cord indicated that it was not the cause of the fire. [5]

Having determined the origin of the fire, Row explained that his next task was to determine its cause. Row testified that two considerations are relevant in this regard, including what material was ignited and what ignition source is hot enough to start the fire, as well as witness statements. Row then stated:

> So in this particular case, what I believe was ignited was the trashcan and whatever contents there may have been in the trashcan. This is a pretty thick plasticized material. I've done quite a bit of testing on these garbage cans to see, you know, how easily they burn versus, you know, how difficult it is to keep them burning, and part of it depends on what was put inside the trashcan in order to help the trashcan catch fire.
>
> ***3** But the biggest issue in this particular circumstance is that I have been able to, by my process of elimination here, and by my scientific methodology that I've followed, I have been able to establish that there is no electrical, mechanical or chemical causation for this fire, so the only other plausible explanation is there had to be some kind of an introduction of an open flame to this trashcan and the contents of this trashcan in order for it to be able to ignite.

Row then repeated that defendant told him she left her home at 9:30 a.m. and that Diaz saw smoke emanating from the home's soffit area as defendant drove away. Row then explained:

> Now, this is a 1,090 square foot house.... So I'm going to give them the benefit of the doubt and say this is approximately 9,000 cubic feet of air that now has to be displaced with smoke to the point where the smoke is now under pressure and it's forcing itself out through the eaves....
>
> So, what then could generate 9,000 cubic feet of smoke in that short of a period of time? And based upon my observations of where the origin of the fire is and what the causation of the fire is, i.e. an open flame application to the trashcan, that trashcan could not have generated 9,000 cubic feet of smoke in the time it would have taken her to basically get into her car and drive down the street.... It just isn't physically possible.
>
> ... [T]he fire would have had to have been in progress generating that kind of smoke at the time when [defendant] left the house....

On February 9, 2010, defendant submitted a claim to State Auto, estimating the amount of loss from the fire at $118,035 and claiming $500. [6] State Auto deemed this statement of loss inadequate and requested another, which defendant submitted on March 19, 2010. This time, defendant estimated the

amount of loss to be $116,025 and claimed $116,025. State Auto and defendant completed an inventory of defendant's personal items, which was composed of multiple pages of personal property less than one-year old and listed several expensive items such as a sewing machine, commercial meat slicer, and a DJ mixing table. The inventory did not, however, list any sewing-related materials, like needles, thread, or cloth, and did not include the amplifier necessary for the DJ table to function. Upon further investigation, State Auto found that defendant's reported income in 2009 was only $5,800, while the inventory indicated that defendant had purchased personal property totaling approximately $23,000 within the past year. State Auto's investigation also determined that the fire was intentionally set and that witnesses had seen defendant driving away from her burning home. [7] Because an intentional act was not covered under the policy, State Auto denied defendant's claim. Subsequently, defendant was charged with and convicted of arson of a dwelling house, arson of insured property, and insurance fraud.

II. EXPERT TESTIMONY

***4** Defendant first argues that Row's expert testimony was admitted in violation of MRE 702. We review this unpreserved claim of error for plain error affecting substantial rights. *People v. Carines,* 460 Mich. 750, 763; 597 NW2d 130 (1999). Defendant also argues that her trial counsel's failure to object to Row's testimony on these grounds constituted ineffective assistance of counsel. "Whether a person has been denied effective assistance of counsel is a mixed question of fact and constitutional law." *People v. LeBlanc,* 465 Mich. 575, 579; 640 NW2d 246 (2002). "Findings on questions of fact are reviewed for clear error, while rulings on questions of constitutional law are reviewed de novo." *People v. Jordan,* 275 Mich.App 659, 667; 739 NW2d 706 (2007).

A. MRE 702

MRE 702 controls the admission of expert testimony and provides:

> If the court determines that scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise if (1) the testimony is based on sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

A trial court considering whether to admit expert testimony under MRE 702 acts as a gatekeeper and its principal duty is to ensure that all expert testimony is reliable. *Gilbert v. DaimlerChrysler Corp.,* 470 Mich. 749, 782, 789; 685 NW2d 391 (2004). Specifically, MRE 702 requires "a court evaluating proposed expert testimony [to] ensure that the testimony (1) will assist the trier of fact to understand a fact in issue, (2) is provided by an expert qualified in the relevant field of knowledge, and (3) is based on reliable data, principles, and methodologies that are applied reliably to the facts of the case." *People v. Kowalski,* 492 Mich. 106, 120; 821 NW2d 14 (2012). This inquiry, however, is a flexible one and must be tied to the facts of the particular case; thus, the factors for determining reliability may be different depending upon the type of expert testimony offered, as well as the facts of the case. *Daubert v. Merrell Dow Pharm., Inc.,* 509 U.S. 579, 591, 594; 113 S Ct 2786; 125 L.Ed.2d 469 (1993); *Khumo Tire Co. v. Carmichael,* 526 U.S. 137, 150; 119 S Ct 1167; 143 L.Ed.2d 238 (1999). [8] In this regard, the Michigan Supreme Court has explained:

> "MRE 702 mandates a searching inquiry, not just of the data underlying expert testimony, but also of the manner in which the expert interprets and extrapolates from those data. Thus, it is insufficient for the proponent of expert opinion merely to show that the opinion rests on data viewed as legitimate in the context of a particular area of expertise (such as medicine). The proponent must also show that any opinion based on those data expresses conclusions reached through reliable principles and methodology." [*People v. Dobek,* 274 Mich.App 58, 94; 732 NW2d 546 (2007), quoting *Gilbert,* 470 Mich. at 782.]

> ***5** Stated differently, MRE 702 calls for fact and data based conclusions and the question is whether the expert's opinion can reliably follow from the facts known to the expert and the methods used. It follows that if an opinion is drawn from unsupported speculation or beliefs, then the opinion is necessarily unreliable.

Defendant does not dispute that special knowledge would assist the trier of fact or that Row was qualified in the field of fire investigation. Rather, defendant's argument is that Row's method of determining the cause of the fire, allegedly "negative corpus," is not reliable because it is untestable, and, thus, inconsistent with the scientific method, and has been rejected by the fire investigation community.

We agree that there is a fundamental problem with "negative corpus," an analytical approach frequently employed in arson-related expert testimony. Broadly, the approach provides that after the elimination of any accidental causes of a fire, it is reasonable to infer that the fire was arson. The doctrine has been rejected by the National Fire Protection Association as "not consistent with the Scientific Method" and because "it generates un-testable hypotheses[.]" NFPA 921 § 18.6.5 (2011).[9] Thus, the application of negative corpus as the sole basis for a finding of arson violates MRE 702.

As applied to defendant's case, the MRE 702 violation is extremely limited in scope. Defendant fails to acknowledge that Row's opinion as to the location of the fire's origin was not formed solely through application of negative corpus, but through a combination of scientific analyses, personal observations, witness investigation, and a recreation of a timeline of events, all based on the facts of this case, which when considered in the context of Row's training and experience, formed the basis for his ultimate opinion that the fire was caused by an application of open flame to the trashcan. Specifically, to determine the origin of the fire Row relied on four separate processes, including primarily burn pattern analysis and arc mapping. This led to the conclusion that the fire had originated between the stove and refrigerator in a trashcan. The fire's origin was then relevant to determining cause, the analysis of which considered the material that was ignited and what source would be hot enough to ignite that material. Gas and electrical sources had been eliminated as possible causes based on analysis of those elements, suggesting that there had to be some other application of an open flame given that the material ignited was a heavily plasticized 33–gallon trashcan.

While these conclusions do not rely on negative corpus and are within Row's expertise, his ultimate conclusion as to the source of the fire's origin, and his veiled implication that defendant was responsible for the fire, was inadmissible as it rested on a combination of negative corpus and a reliance upon circumstantial evidence not within the purview of his qualification as an arson expert. See MRE 702.

***6** However, there was no objection to this portion of Row's testimony and its admission did not constitute plain error affecting defendant's substantial rights. "Under the plain error rule, defendants must show that (1) error occurred, (2) the error was plain, i.e., clear or obvious, and (3) the plain error affected a substantial right of the defendant. Generally, the third factor requires a showing of prejudice—that the error affected the outcome of the trial proceedings." *People v. Pipes,* 475 Mich. 267, 279; 715 NW2d 290 (2006). Assuming that the admission of Row's conclusion constituted error, defendant cannot establish that the error affected the outcome of the proceedings.

There was ample admissible evidence, independent of Row's inadmissible testimony, to support the jury's guilty verdicts. Row offered admissible testimony that an open flame in the trashcan started the fire. Row also testified that the smoke analysis and witness testimony regarding when defendant left the home allowed for the conclusion that defendant was in the home when the fire started. Multiple witnesses testified that they saw defendant driving away from her home as smoke billowed from the home's eaves—the inference being that defendant was in the home for a somewhat extended period after the fire started. Consistent with these witness statements, defendant told Captain Gotham on the day of the fire that she left home at 9:30 a.m. Later, defendant attempted to dispel the inference that she had been in the home when the fire started by telling State Auto that she left the home at 8:50 a.m. Such arguably false exculpatory statements may be considered as evidence of guilt. See *People v. Seals,* 285 Mich.App 1, 5–6; 776 NW2d 314 (2009).

In addition, just two months before the fire, defendant obtained an insurance policy ensuring the home for $87,000, an amount far in excess of the $9,000 defendant agreed to pay for the home under the land contract, suggesting a motive for arson. Moreover, several expensive non-functioning items, including a commercial meat slicer and sewing machine, were found in defendant's home, likewise suggesting that defendant put them there so that she could collect insurance proceeds from their loss. Indeed, defendant's insurance policy

with State Auto insured $60,900 worth of personal property and defendant's personal property inventory indicated that defendant had purchased $23,000 of personal property in the past year, even though defendant had only made about $5,000 in 2009. Finally, Captain Gotham testified that neither the stove nor the refrigerator caused the fire. Thus, the admission of Row's ultimate conclusions regarding the fire did not affect the trial's outcome or otherwise affect defendant's substantial rights. *Carines,* 460 Mich. at 763.

B. INEFFECTIVE ASSISTANCE OF COUNSEL

The right to the effective assistance of counsel is guaranteed by the United States and Michigan constitutions. US Const Am VI; Const 1963, art 1, § 20; *United States v. Cronic,* 466 U.S. 648, 654; 104 S Ct 2039, 80 L.Ed.2d 657 (1984); *People v. Swain,* 288 Mich.App 609, 643; 794 NW2d 92 (2010). "Effective assistance of counsel is presumed, and a defendant bears a heavy burden to prove otherwise." *Swain,* 288 Mich.App at 643. "To prove a claim of ineffective assistance of counsel, a defendant must establish that counsel's performance fell below objective standards of reasonableness and that, but for counsel's error, there is a reasonable probability that the result of the proceedings would have been different." *Id.* As there was no *Ginther* [10] hearing held below, our review is limited to errors apparent on the record. *People v. Jordan,* 275 Mich.App 659, 667; 739 NW2d 706 (2007).

***7** As discussed above, Row's ultimate conclusions regarding the fire were inadmissible under MRE 702. The trial court would therefore not have abused its discretion by sustaining an objection by trial counsel. Accordingly, defendant's trial counsel's failure to object fell below an objective standard of reasonableness. *Swain,* 288 Mich.App at 643. However, to obtain reversal, defendant must show that, but for counsel's error, there is a reasonable likelihood that the outcome of her trial would have been different. For the same reasons discussed above, i.e., the ample evidence of defendant's guilt independent of Row's conclusions, we find that defendant has failed to make the required showing. Accordingly, defendant cannot establish that, but for her trial counsel's failure to object to Row's inadmissible testimony, the outcome of her trial would have been different. Thus, defendant is not entitled to reversal on her claim of ineffective assistance of counsel. *Id.*

III. SENTENCING

Defendant argues that the trial court erred in its scoring of offense variables (OVs) 12 and 19. "Under the sentencing guidelines, the circuit court's factual determinations are reviewed for clear error and must be supported by a preponderance of the evidence." *People v. Hardy,* 494 Mich. 430, 438; 835 NW2d 340 (2013). "Whether the facts, as found, are adequate to satisfy the scoring conditions prescribed by statute, i.e., the application of the facts to the law, is a question of statutory interpretation, which an appellate court reviews de novo." *Id.*

A. OV 12

Defendant first argues that OV 12 was misscored at 10 points and should have been scored at zero. OV 12 scores points for "contemporaneous felonious acts." An act qualifies as a contemporaneous felonious act if "the act occurred within 24 hours of the sentencing offense" and "the act has not and will not result in a separate conviction." MCL 777.42(2). OV 12 is to be scored

> by determining which of the following apply and by assigning the number of points attributable to the one that has the highest number of points:
>
> (a) Three or more contemporaneous felonious criminal acts involving crimes against a person were committed ..... 25 points
>
> (b) Two contemporaneous felonious criminal acts involving crimes against a person were committed ..... 10 points
>
> (c) Three or more contemporaneous felonious criminal acts involving other crimes were committed ..... 10 points
>
> (d) One contemporaneous felonious criminal act involving a crime against a person was committed ..... 5 points
>
> (e) Two contemporaneous felonious criminal acts involving other crimes were committed ..... 5 points
>
> (f) One contemporaneous felonious criminal act involving any other crime was committed ..... 1 point
>
> (g) No contemporaneous felonious criminal acts were committed ..... 0 points. [MCL 777.42(1).]

Defendant was convicted of arson of a dwelling, burning of insured property, and insurance fraud. Defendant argues that no other contemporaneous felonious acts occurred within 24 hours of the sentencing offense (arson of a dwelling) for which defendant was not convicted. The trial court did not explain its basis for scoring OV 12 at 10 points and defendant's presentence investigation report (PSIR) likewise does not contain any explanation. While it is possible to envision other felonious crimes for which defendant may have been charged and convicted, e.g., arson of personal property, MCL 750.74, 1998 PA 312,[11] arson of insured personal property, MCL 750.76(3)(c), or preparing to burn personal property, MCL 750.77(1)(c), 1998 PA 312,[12] it is clear that these convictions would be based on the same act as the sentencing act. Indeed, the act of setting fire to the home is the same act that would form the basis for these other forms of arson. In other words, there is no evidence that defendant undertook a separate felonious act as her sentencing offense includes all acts committed in the commission of that crime, i.e., the preparing to burn and the burning of both the home and the personal property. "[T]he language of OV 12 clearly indicates that the Legislature intended for contemporaneous felonious criminal acts to be acts other than the sentencing offense and not just other methods of classifying the sentencing offense." *People v. Light,* 290 Mich.App 717, 726; 803 NW2d 720 (2010). Accordingly, the trial court erred by scoring OV 12 at 10 points.

***8** However, removing 10 points from defendant's total OV score does not change her minimum guidelines range. Accordingly, sentencing relief is not required. *People v. Francisco,* 474 Mich. 82, 89 n 8; 711 NW2d 44 (2006).

B. OV 19

Defendant next argues that OV 19 should have been scored at zero points. Specifically, defendant argues that the trial court erred by scoring this variable at 10 points based on defendant's allegedly false statements to the "investigators" because OV 19 is not implicated where neither the Captain Gotham nor State Auto were involved in the administration of justice.

"Offense variable 19 is threat to the security of a penal institution or court or interference with the administration of justice or the rendering of emergency services." MCL 777.49. Ten points are properly assessed under this variable if "[t]he offender otherwise interfered with or attempted to interfere with the administration of justice" MCL 777.49(c). The Supreme Court has explained that the phrase "administration of justice" encompasses not just interference with judicial processes, but the investigation of crimes. *People v. Barbee,* 470 Mich. 283, 287–288; 681 NW2d 348 (2004). This is because, as the Court explained, "[l]aw enforcement officers are an integral component in the administration of justice." *Id.* at 288. Further, such interference or attempt to interfere need not rise to the level of obstruction of justice. *Id.* at 286–287. In this regard, it is sufficient to score 10 points under this variable if a defendant lies to law enforcement officers or private persons who are authorized to investigate a crime, such as by providing police a false name or providing a false statement in a police report. *Id.* at 287 n 3, 288. In addition, self-serving deceptive actions designed to lead the police astray or to divert suspicions to others also constitutes interference with the administration of justice. *People v. Ericksen,* 288 Mich.App 192, 204; 793 NW2d 120 (2010). As defendant correctly notes, the trial court did not specify which investigations supported the 10–point score. Rather, it generally stated that defendant interfered with "investigators."

The fire captain was involved in the administration of justice, i .e., the government investigation of a possible arson. Captain Gotham testified that he had extensive investigative training, including training in vehicle theft and arson, and that his role as fire captain is to make determinations regarding the cause and origin of fires, which would include arson. The fire prevention code, MCL 29.1 *et seq.,* defines "firefighter" as "a member of an organized fire department" whose responsibilities include "the enforcement of the general fire laws of this state." MCL 29.1(n). The code also specifically creates a bureau of fire services, with duties including "[c]oordinat[ing] with the fire investigation unit of the department of state police activities relating to fire investigations, fire investigator training, and the provision of related assistance to local law enforcement and fire service agencies." MCL 29.1c(1)(b). In addition, the act grants the state fire marshal the discretion to undertake criminal investigation of fires. In particular, MCL 29.7 provides in part:

> ***9** (1) If the state fire marshal has reason to believe that a crime or other offense has been committed in connection with a fire, the state fire marshal may conduct an inquiry with relation to the fire.....

(2) The state fire marshal may issue subpoenas to compel the attendance of witnesses to testify at the inquiry and for the production of books, records, papers, documents, or other writings or things considered material to the inquiry, may administer oaths or affirmations to witnesses, and may cause testimony to be taken stenographically and transcribed and preserved. Willful false swearing by a witness is perjury.

(3) If a subpoena is disobeyed, the state fire marshal may invoke the aid of the circuit court in requiring the attendance and testimony of witnesses....

Thus, in the context of a possible arson, the fire captain is essentially acting as law enforcement officer by investigating the crime. And, given the presence of certain burn patterns, the lack of evidence that the fire was caused by the fire or stove, the can of starter fluid found at the scene, and the presence of non-functioning expensive personal property in the home, the captain had cause to believe that the fire may have been a criminal act. Because the "administration of justice" encompasses law enforcement officers' investigation of crimes, *Barbee,* 470 Mich. 287–288, the captain was clearly involved in the administration of justice in the case at hand.

Defendant alternatively argues that, even if the fire captain was involved in the administration of justice, the evidence does not support a finding that defendant engaged in deceitful acts. Although defendant made no deceitful statements during her first interview with the captain, her PSIR indicates that, during her second interview, she told the captain that she regularly used a non-functioning sewing machine found in the home.[13] When the captain pointed out that the sewing machine was non-functional, defendant ended the interview. There was also testimony from multiple witnesses that the machine was missing its cord, that no personal property associated with sewing machine was found in the home, and that other items of personal property seemed out of place. The trial court apparently found defendant's statements lacking in credibility and lying to law enforcement during an investigation amounts to an interference with the administration of justice.

By contrast, defendant's false statements to her insurer did not interfere with the administration of justice in the context of OV 19. Insurance investigators are not law enforcement officers and their investigation is not integral to the functioning of the justice system. As defendant notes, an insurance company's main objective in investigating a possible arson is to determine whether it is required to pay a claim under a policy, not to enforce criminal laws. Nonetheless, because defendant lied to Captain Gotham, a law enforcement officer involved in the investigation of a crime, the trial court did not err by scoring OV 19 at 10 points.

IV. CRIME VICTIM RIGHTS ASSESSMENT

***10** Finally, defendant argues that the trial court's imposition of a $130 crime victim rights assessment violated the ex post facto clauses of the United States and Michigan constitutions, which prohibit inflicting a greater punishment for a crime than that which was in effect at the time of the crime's commission. US Const, art I, § 10, cl 1, art I, § 9, cl 3; Const 1963, art 1, § 10. Defendant's crimes occurred in November 2009, February 2010, and April 2010. On those dates, the Crime Victims Rights Act (CVRA), MCL 780.751 *et seq.,* permitted a $60 assessment. The Legislature raised the assessment to $130 on December 16, 2010. Defendant argues that the imposition of a $130 assessment, instead of the $60 assessment permitted at the time of the crimes, violates the ex post facto clauses.

We addressed this exact issue in *People v. Earl,* 297 Mich.App 104; 822 NW2d 271 (2012), lv gtd 493 Mich. 945–946; 828 NW2d 359 (2013). We held that the imposition of a $130 assessment, even though the underlying crimes were committed when the CVRA only provided for a $60 assessment, was not restitution, punitive, nor affected a matter of substance and, accordingly, did not violate the ex post facto clauses. *Id.* at 113–114. Bound by *Earl,* MCR 7.215(J)(1), we therefore conclude that the trial court's imposition of a $130 assessment did not violate the ex post facto constitutional clauses.

Affirmed.

All Citations

Not Reported in N.W.2d, 2014 WL 1320253

Footnotes

1 This offense is now called first-degree arson. See 2012 PA 531.

2 The Legislature recodified this offense to MCL 750.76. See 2012 PA 532.

3 Row explained that "burn pattern" analysis includes an evaluation of burn patterns and how and where burning affected the materials present. Row further explained that "arc mapping" is a process used to detect the origin of the fire; in spots where fire "attacks" wires, those wires come together to form an "arc." By flagging the arcs, fire investigators can "triangulate" the origin of the fire based on the arcs. Finally, Row said that "fire dynamics evaluation" looks at what types of substances burn more readily. Once witness statements are collected, burn pattern and fire dynamics are conducted; arc mapping is then used to confirm the origin of the fire.

4 Row said he asked defendant a multitude of questions, including: whether she had turned everything off when she left the home, had poured grease into the trashcan, or had had any circuit breaker trips recently; whether there had been any problems with the stove; whether she had to use a match to light the pilot, and; whether there were candles or incense in the home.

5 Jason McPherson, qualified as an expert in the field of electrical engineering, testified that he assisted Row with the origin and cause study by evaluating the power cord to the refrigerator. According to McPherson, the cord showed no signs that it was the origin of the fire; rather, the condition of the cord merely indicated that it had been burnt by the fire.

6 After the fire, Liddell received $13,000 from her insurer.

7 State Auto deposed defendant as part of its investigation; she told State Auto that she left her house on the morning of the fire at 8:50 a.m., contrary to the testimony of her neighbors.

8 Indicia of reliability relevant to scientific fields include testability, publication and peer review, known or potential rate of error, and general acceptance in the field. *Daubert,* 509 U.S. at 593–594. However, the United States Supreme Court has explained that reliability concerns may differ depending on the type of expertise offered, and whether that expertise is based on personal knowledge, experience, or skill. *Khumo Tire Co.,* 526 U.S. at 150.

9 NFPA 921 § 18.6.5 (2011), provides:

> The process of determining the ignition source for a fire, by eliminating all ignition sources found, known, or believed to have been present in the area of origin, and then claiming such methodology is proof of an ignition source for which there is no evidence of its existence, is referred to by some investigators as "negative corpus." Negative corpus has typically been used in classifying fires as incendiary, although the process has also been used to characterize fires classified as accidental. This process is not consistent with the Scientific Method, is inappropriate, and should not be used because it generates un-testable hypotheses, and may result in incorrect determinations of the ignition source and first fuel ignited. Any hypotheses formulated for the causal factors (e.g., first fuel, ignition source, and ignition sequence), must be based on facts. Those facts are derived from evidence, observations, calculations, experiments, and the laws of science. Speculative information cannot be included in the analysis.

10 *People v. Ginther,* 390 Mich. 436, 442–443; 212 NW2d 922 (1973).

11 2012 PA 532 rewrote this section and designated it "third-degree arson."

12 2012 PA 534 deleted this section and replaced it with "fifth-degree arson."

13 Defendant implicitly suggests that the trial court improperly relied on the PSIR because the jury never heard this evidence. Defendant cites no authority that a trial court cannot rely on the PSIR when scoring the offense variables and Michigan courts have regularly upheld scores based on evidence contained in a defendant's PSIR. See, e.g., *People v. Lee,* 391 Mich. 618, 635; 218 NW2d 655 (1974) ("The presentence report has been widely regarded as an effective method of supplying information essential to an informed sentencing decision.").

STATE OF NORTH CAROLINA

HENDERSON County

File No. 16CR5863

In The General Court Of Justice
Superior Court Division

STATE VERSUS

Name And Address Of Defendant
SHERRY LEE LANCE
2 BALDWIN CIRCLE

FLETCHER NC 28732

Race	Sex	Date Of Birth
W	F	04/29/1967

INDICTMENT

☐ This is a superseding indictment.

Offense(s)	Date Of Offense OR Date Range Of Offense	G.S. No.	CL.
I. INSURANCE FRAUD	09/22/2016	58-2-161	H
II.			

I. The jurors for the State upon their oath present that on or about the date(s) of offense shown and in the county named above the defendant named above unlawfully, willfully and feloniously did

with the intent to defraud an insurer, State Farm Fire/Casualty Insurance, present a written and oral statement as part of and in support of a claim for payment pursuant to an insurance policy, Renter's Insurance (Policy No. 33CTX7722), owned by the defendant, knowing that the statement contained false and misleading information, defendant claimed that her personal property was destroyed by an accidental fire. The statement concerned a fact and matter material to the claim.

II. And the jurors for the State upon their oath present that on or about the date(s) of offense shown and in the county named above the defendant named above unlawfully, willfully and feloniously did

Signature Of Prosecutor

WITNESSES

☐ R DIAZ FPD	☐
☒ D Barale FPD	☐
☐	☐
☐	☐

The Witnesses marked "X" were sworn by the undersigned Foreperson of the Grand Jury and, after hearing testimony, this Bill was found to be:

☑ A TRUE BILL by twelve or more grand jurors, and I the undersigned Foreperson of the Grand Jury, attest the concurrence of twelve or more grand jurors in this Bill of Indictment.

☐ NOT A TRUE BILL.

Date 01-03-17

Signature Of Grand Jury Foreperson Jessie Silva

14:59 If you find from the evidence beyond a reasonable
14:59 doubt that on or about the alleged date the defendant burned
14:59 a structure and that this structure was a dwelling house and
15:00 that it was the dwelling house of some person other than the
15:00 defendant and that the defendant burned the structure
15:00 maliciously, it would be your duty to return a verdict of
15:00 guilty.
15:00 If you do not so find or have a reasonable doubt
15:00 as to one or more of these things, it would be your duty to
15:00 return a verdict of not guilty.
15:00 The defendant has been charged with presenting a
15:00 false statement under an insurance policy with the intent to
15:00 defraud the insurance company. Now, I charge for you to
15:00 find the defendant guilty of this offense the State must
15:00 prove five things beyond a reasonable doubt.
15:00 First, that an insurance policy existed between
15:01 Sherry Lance and State Farm.
15:01 Second, that the defendant presented an oral
15:01 statement as part of or in support of a claim for payment or
15:01 a benefit pursuant to the insurance policy.
15:01 Third, that the statement contained false or
15:01 misleading information concerning a fact or a matter
15:01 material to the claim.
15:01 Fourth, that the defendant knew the statement
15:01 contained false or misleading information concerning a fact

15:01 or matter material to the claim.

And, fifth, that the defendant acted with the intent to defraud State Farm.

So I charge that if you find from the evidence beyond a reasonable doubt that on or about the alleged date an insurance policy existed between Sherry Lance and State Farm and that the defendant knowingly and with the intent to defraud State Farm presented a statement that contained false or misleading information concerning a fact or matter material to the claim for payment of the claim pursuant to policy or to obtain some benefit under the policy, it would be your duty to return a verdict of guilty.

However, if you do not so find or have a reasonable doubt as to one or more of these things, it would be your duty to return a verdict of not guilty.

Members of the jury, you have heard the evidence, the arguments of counsel. If your recollection of the evidence differs from that of the attorneys, you are to rely solely upon your recollection. Your duty is to remember the evidence whether called to your attention or not.

You should consider all the evidence, the arguments, contentions and positions urged by the attorneys and any other contention that arises from the evidence.

The law requires the presiding judge to be impartial. You should not infer from anything I have done