

IN THE CIRCUIT COURT OF THE SIXTH JUDICIAL CIRCUIT
IN AND FOR PASCO COUNTY, STATE OF FLORIDA
CRIMINAL DIVISION

STATE OF FLORIDA,
Plaintiff,

Case No.: CRC-1400216FAES

v.

Division: 1

CURTIS J. REEVES,
Defendant.

**MOTION TO EXCLUDE PROOF AND TESTIMONY PERTAINING TO THE STATE'S
FORENSIC VIDEO EXPERT ANTHONY IMEL**

COMES NOW, the Defendant, CURTIS J. REEVES, by and through his undersigned counsels, moves this Honorable Court to enter an order directing the exclusion of proof and testimony pertaining to the State's forensic video expert Anthony Imel regarding:

- (1) Any and all testimony and proof concerning or predicated on brightness measurements of pixels contained within video(s) and/or pictures originating from the data obtained from the Cobb Grove Theater's camera recording system; AND
- (2) Any and all modified videos and/or pictures subjected to the bicubic interpolation smoothing algorithm.

As grounds therefore, the following is contended:

The State has listed Anthony Imel as an expert in video analysis. Mr. Imel has created unmodified and modified videos/images using the January 13, 2014 data obtained from the Cobb Grove Theater infrared motion-detecting camera recording system. Mr. Imel has also provided three written reports dated April 27, 2016, August 17, 2016, and December 14, 2016. The Defense deposed Mr. Imel on January 26, 2017. The deposition transcript is attached to this Motion.

**ANTHONY IMEL'S BRIGHTNESS MEASUREMENTS ARE IRRELEVANT AND
PRESENT THE POTENTIAL FOR UNDUE PREJUDICE, CONFUSION OF THE
ISSUES, AND THE MISLEADING OF THE FACT-FINDER**

The Defense seeks to exclude any and all testimony and proof concerning or predicated on brightness measurements of pixels contained within video(s) and/or pictures originating from the data obtained from the Cobb Grove Theater's camera recording system. Mr. Imel's brightness measurement calculations of the lighted objects are irrelevant to any material fact before the Court. If admitted into evidence, they present the unacceptable potential for the creation of undue prejudice, confusion of the issues, and the misleading of the fact-finder. Even by Mr. Imel's own admission, the brightness measurements serve no useful purpose: they support no reliable inference and they do not tend to prove any material fact.

In both his December 14, 2016 report and at his deposition, Mr. Imel stated/testified that he had conducted "spectral highlight" brightness measurements of lighted objects depicted in footage of Camera 11¹. At the deposition Mr. Imel initially defined spectral highlights as "a light object within that scene." *Imel Depo. Tr.*, at 243. He later admitted that he incorrectly used the phrase "spectral highlight" to describe the lighted objects. *Id.* at 315-18.

The correct phrase to describe the lighted objects is, in fact, "specular highlight." At the deposition, Mr. Imel was also unable to state or provide a definition of specular highlight. He initially stated that:

A: [s]pecular highlight I guess is just the origination of what it is. So specular highlight is a visual, and I guess the other one – I'd have to get the definitions. But someone smarter than me told me what the difference was.

¹ If looking at the movie screen, there were infrared motion-detecting cameras positioned at an elevated height on both the left and right walls of the theater. Camera 11 is the camera on the right wall. Footage from Camera 11 was admitted into evidence at the February 2014 bond hearing.

Imel Depo Tr., at 316.

He acknowledged that knowing the definition of “specular highlight” is important for a forensic analyst with the FBI. *Id.* at 318². Mr. Imel had previously never opined nor testified on any issue pertaining to specular highlights. *Id.* at 401.

Mr. Imel used a computer software tool called “Curves” and measured the brightness level of these aforementioned specular highlights. *Imel Depo. Tr.* at 320. The software tool’s brightness measurement scale runs from zero to 255. *Id.* The 256 different possible values represent the number of distinct shades between pure black and pure white. *Id.* at 321.

In his December 14, 2016 report, Mr. Imel stated that during portions of the Camera 11 video footage (timestamped of 13:19:46.446 to 13:26:14.679), he found multiple instances of specular highlight images that “appear to be linked to the shoes of REEVES.” *Imel Report*, Dec. 14, 2016, at 2 (emphasis in original). At his deposition, Mr. Imel stated his use of the word “appears” indicates that he is rendering an opinion. *Id.*, at 222.

Imel further stated he measured the brightness of the purported specular highlights from this time period of 13:19:46.446 to 13:26:14.679. His brightness measurements of these specular highlights ranged from 150 to 205. *Id.*

In his December 14, 2016 report, Mr. Imel also stated that during portions of the Camera 11 video footage (timestamped as 13:26:25.342 to 13:26:946), he also observed lighted objects that “appear to be linked to the reflection from the shoes of REEVES.” *Imel Report*, Dec. 14, 2016,

² Specular highlights are defined as “a bright reflection from a light source containing little or no detail.” *Forensic Imaging And Multi-media Glossary Covering Computer Evidence Recovery (CER), Forensic Audio (FA), Forensic Photography (FP), And Forensic Video (FV)*, at page 228 [https://www.theiai.org/guidelines/iai-leva/forensic_imaging_multi-media_glossary_v7.pdf (last accessed February 14, 2017)].

at 2-3 (emphasis in original). His brightness measurements of these specular highlights ranged from 132 to 192. *Id.*

Mr. Imel ultimately rendered various opinions relating to the significance of the lighted objects that appear in the videos/images. In order to fully detail the grounds for exclusion, all three of Mr. Imel's opinions on the issue are reviewed below.

Regarding the first opinion: Mr. Imel rendered a lay opinion that, based on his ability to visually observe the videos/images, he believed the lighted objects between 13:26:25.342 and 13:26:25:946 are near Mr. Reeves' legs, and that Reeves' legs were moving. *Id.* at 381-87. At the deposition, the following exchange occurred:

A: So I've been reviewing video as an electronic specialist for security for the Air Force, as a federal agent for what, 14, 15 years, watching criminals, and installing CCTV systems. I can visually look at what's going on in a video and discern what's going on for my own needs. And in this case for this scenario, I can state that this specular highlight was tied to the movements of his legs and his feet.

Q: But that's not a scientific opinion, that's a lay opinion based on your ability to look at video, right?

A: Yeah. And if anybody else were to look at this, I'm sure that they would come up with the same opinion. *Imel Depo Tr.*, at 411-12.

He therefore rendered the layperson opinion that specular highlights that appear in the footage from 13:26:25.342 to 13:26:25:946 "was tied to the movements of his legs and his feet." *Id.*

Regarding his second opinion: at numerous points in the deposition, Mr. Imel contradicted himself and maintained that he was unable to opine on what is depicted in the videos and images.

For example, Mr. Imel stated the following:

A: Again, I have no discernable reason or opinion as to what is going on in the content. I enhanced it, per se, and you can view it as well as I can. As far as what is there beyond what I did on my third examination, I have no idea. I have no opinion.

It is what it is.

Q: And do those two lights appear to be similar visually?

A: I have no opinion as far as what's going on as to the content of this imagery or the video, other than what I have done in the examinations. Your ability to view this imagery, view the video and discern what is going on is exactly the same thing I can do.

Q: Okay.

A: So I'm not going to lead you, the jury or anybody else down a pathway that I'm not prepared to attempt – or prepared to testify to. *Id.* at 234 (emphasis added).

Later, the following exchange occurred:

Q: Likewise, in this enhancement you're telling me, [I] look, Rick, I have no idea what's going on there. I can't tell you what the objects were. I can't tell you anything about this particular image. Correct?

A: I have no opinion. I have no opinion about what action or what devices or what – anything that's going on in this video. You're viewing this the same way as I'm viewing this. You can have an opinion. I can have an opinion. Anybody that can view this can have an opinion. I have no opinion as to what is going on in this imagery right now. *Imel Depo. Tr.* at 263-64.

This second opinion, where he admits he has no opinion on what is depicted in the videos and images, clearly contradicts his first lay opinion conclusion that the lighted objects between 13:26:25.342 and 13:26:25.946 are near Mr. Reeves' legs and that the specular highlights “[were] tied to the movements of his legs and his feet.”

Regarding his third opinion: he discussed the potency of the lighted objects in 13:19:46.446 to 13:26:14.679 (between 150 to 205 brightness units) and 13:26:25.342 and 13:26:25.946 (between 132 to 192 brightness units). Mr. Imel acknowledged that he measured them based on the request of the prosecution:

A: Other than the visual enhancement of collecting all of those into a single video in which a layperson could view, **I was asked could I identify what the object was that was emanating and doing this white spot. I couldn't.** I said but the only thing I really could do is go through and do a measurement of that light source and give an array of measurements – a scientific measurement of that light source visually throughout that time period, several time periods that I've seen it, make measures and apply that. *Imel Depo. Tr.* at 315 (emphasis added).

Mr. Imel therefore acknowledged, both as an expert and as a lay person, that he has no opinion as to the identity of the object emitting or reflecting light depicted in the video/images. The brightness measures in his opinion were, therefore, neither probative as to any material fact nor reliable data for the purpose of any conclusion.

Accordingly, admission of any proof or testimony on the brightness measurements is prohibited, as it would have no probative value. §§ 90.401, 90.402, Fla. Stat. (2012). Further, given their absence of any probative value, admission of any proof or testimony on the brightness measurements raises the unduly high risk of unfair prejudice, confusion of issues, and the misleading of the fact-finder. §90.403.

MR. IMEL'S MODIFICATIONS OF POOR-RESOLUTION INFRARED CAMERA FOOTAGE FROM A LOW-LIGHT ENVIRONMENT WITH AN UNKNOWN ALGORITHM ARE NOT FAIR, ACCURATE, AND RELIABLE DEPICTIONS

Both the States' and Defenses' forensic video experts have created enlarged and modified videos and images in this case. The Defense's experts created, for ultimate presentation to the fact-finder, modified videos and images by adding pixels through a process called "nearest neighbor." This modification method involves the software user selecting the pixels (s)he wishes to enlarge. After selecting the targeted pixels, the nearest neighbor algorithm then adds identical pixels to the top, left, right, and/or bottom of the selected ones, with each selected (original) pixel forming a new square box of perfectly identical pixels. This process ensures that the added pixels

are exact replicas of the pixels that are being enlarged, therefore retaining the identical details of the original image. Both the quantity of pixels added as well as the color/grayscale of the new pixels can be determined with perfect accuracy and precision. Ultimately, the enlargements through nearest neighbor are exact replicas of the original selected image.

Mr. Imel's modified videos and images were subjected to the "bicubic interpolation smoother" method. *Imel Depo. Tr.* at 119. This process involves the software user selecting specific pixels to enhance. The bicubic interpolation smoother then changes the colors/grayscale of the surrounding pixels using an algorithm unknown to Mr. Imel. Likewise, with this process the placement of the newly created pixels cannot be definitively ascertained. Ultimately, the bicubic interpolation smoother creates new pixels that are dissimilar to the ones in the original image.

Given the nature and quality of the footage from the Cobb Grove Theater camera recording system, Mr. Imel's use of the bicubic smoother renders the enhanced videos he created inadmissible. Unlike with the nearest neighbor method, the bicubic interpolation software user adds pixels to the image or video that never existed in the original image.

As an example: an enlargement of one of the original video images from 320 by 240 pixels (a total of 76,800 pixels) to 3000 by 2000 pixels (a total of 7,680,000 pixels) would produce an enlargement with only 1.28% of the original pixels present ($76,800 \div 6,000,000$). Given this, over 98% of the pixels in the enlargement did not exist in the original image. In other words, 98% of the pixels in the enlargement video/image were created by the software. Significantly, these newly created pixels are of different coloring/grayscale.

This is highly problematic, as the recording system utilized an infrared motion-detecting camera. This camera, in limited-light environments, records objects based on the light they either

emit or reflect. In such environments, the final footage from the recording system makes it difficult, if not impossible, to distinguish (by visual observation) objects that are emitting light versus those that are reflecting it.

Given that the Defense contends that a lighted object depicted within the footage may be the cellular phone Chad Oulson threw into Mr. Reeves' face, the addition of a high percentage of pixels that were never in the original videos and images with an unknown interpolation methodology resulted in impermissibly distorted final products. This is because Mr. Imel's modified videos and images contain pixels that did not exist in the originals. Ultimately, Mr. Imel's modified videos constitute new evidence. Mr. Imel's enhanced videos and images therefore cannot fairly and accurately depict the scene.

The Defense's position on this issue is strengthened by the fact that this camera recorded footage in low resolution, i.e. in a small number of pixels. The creation and insertion of pixels of unknown coloring/grayscale to pre-existing pixels depicting small objects within low resolution infrared camera footage of a low-light environment cannot yield fair, accurate, and reliable modified videos/images. Further, the scope and extent of the modifications must be ascertainable to avoid undue prejudice or the misleading of the fact-finder. As noted, however, the scope and extent of the bicubic interpolation smoother modifications cannot be reliably ascertained.

Any testimony or proof underlying Mr. Imel's use of the bicubic interpolation smoother does not satisfy the reliability requirements for admission of expert testimony and proof. "In 2013, the [Florida] legislature amended section 90.702 with the intention of adopting 'the standards for expert testimony in the courts of this state as provided in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* [citation omitted], *General Electric Co. v. Joiner* [citation omitted], and

Kumho Tire Co. v. Carmichael [citation omitted].” *R.C. v. State*, 192 So.3d 606, 609 (Fla. 2d 2016), quoting Ch. 2013-107, § 1, at 1462, Laws of Fla. (Preamble to § 90.702). The amended section 90.702 is patterned after Rule 702 of the Federal Rules of Evidence. *Id.*

As amended, section 90.702 (titled “Testimony by experts”) reads as follows:

If scientific, technical, or other specialized knowledge will assist the trier of fact in understanding the evidence or in determining a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify about it in the form of an opinion or otherwise, if:

- (1) The testimony is based upon 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.

Federal Rule of Evidence 702, in turn, was “amended in 2000 to reflect the holdings in [*Daubert*], [*Joiner*], and [*Kumho Tire*].” Ch. 2013-107, § 1, at 1462, Laws of Fla. (Preamble to § 90.702). This is significant for the purposes of determining whether expert testimony is admissible in a Florida state court, because “[w]here, as here, a Florida evidentiary rule is patterned after its federal counterpart, federal cases interpreting comparable provisions are persuasive and routinely looked to for interpretative guidance.” *L.L. v. State*, 189 So. 3d at 255 (citations and internal quotations omitted) (emphasis added). Consistent with (i) this interpretative principle, (ii) the plain language of section 90.702, and (iii) the legislative intent behind section 90.702, *Daubert*, *Joiner*, and *Kumho Tire* (what the Second District refers to as the “the Daubert trilogy”), articulate the evidentiary standard for admission of expert testimony in Florida state courts. *Id.* at 256.

Under *Daubert*, as adopted by section 90.702, the Supreme Court imposed on trial courts a duty to conduct a three-part inquiry when considering whether to admit expert testimony. *City of*

Tuscaloosa v. Harcros Chem., Inc., 158 F. 3d 548, 562 (11th Cir. 1999). The three parts, or three questions, for the trial court to consider, are:

- (1) Is the expert qualified to testify competently regarding the matters (s)he intends to address?;
- (2) Is the methodology by which the expert reaches his/her conclusions sufficiently reliable as determined by the sort of inquiry mandated in *Daubert*?; and
- (3) Will the testimony assist the trier of fact (through the application of scientific, technical, or other non-scientific specialized expertise) to understand the evidence or determine a fact in issue? *Id.*

The use of the bicubic interpolation smoother is both (i) unreliable under *Daubert* and (ii) will not assist the fact-finder to reliably understand the evidence or determine a fact in issue.

First, under *Daubert* Mr. Imel does not have sufficient familiarity with the algorithm underlying the bicubic interpolation smoother. When a methodology for analyzing data is unknown, the proponent of the expert proof or testimony relying upon said process will be unable to establish that it is indeed reliable.

Second, given that Mr. Imel does not know in any sufficient detail how the bicubic interpolation smoother operates, he also cannot opine on its error rate.

Third, the reliability of the bicubic interpolation smoother is not known to have been critiqued in any peer-reviewed journals. Accordingly, any videos or images subjected to the bicubic interpolation smoother methodology are insufficiently reliable to be admitted.

Additionally, videos and images subjected to the bicubic interpolation smoother will not aid the fact-finder. On the contrary, it will mislead and confuse the fact-finder in a prejudicial

manner.

The bicubic interpolation smoother's creation and insertion of substantial quantities of pixels of uncertain coloring/grayscale ultimately renders it into new evidence. *Bryant v. State*, 810 So. 2d 532, 537 (Fla. 1st DCA 2002), quoting *United States v. Beeler*, 62 F.Supp.2d 136, 148 (D.Me 1999) (“rerecordings that are enhanced so that the images are clearer to depict [sic] are also ‘duplicates’ so long as the tapes accurately reproduce the original images on the tape.”) (emphasis added). Newly created video surveillance footage or images of an event cannot be useful for the fact-finder, because they depict a distorted and misleading version of the actual events. In other words, the fact that the modified videos and images are not fair, accurate, and reliable depictions of the theater means they serve no useful purpose for the fact-finder.

Therefore, in using the bicubic interpolation smoother, Mr. Imel failed to produce admissible modified videos and images. Accordingly, Mr. Imel's modified videos and images should not be admitted into evidence.

CONCLUSION

This Motion should be granted, and the following items should be excluded from admission into evidence:

- (1) Any and all testimony and proof concerning or predicated on brightness measurements of pixels contained within video(s) and/or pictures originating from the data obtained from the Cobb Grove Theater's camera recording system; AND
- (2) Any and all modified videos and/or pictures subjected to the bicubic interpolation smoothing algorithm.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and accurate copy of this Motion to Exclude Proof and Testimony of the State's Forensic Video Expert Anthony Imel has been furnished by U.S. Mail to the Office of the State Attorney for the Sixth Judicial Circuit, c/o Glenn Martin, Esq., P.O. Box 5028, Clearwater, Florida 33758; and by hand-delivery to the Honorable Susan Barthle, 38043 Live Oak Avenue, Room 106A, Dade City, Florida 33523; this 17th day of February 2017.

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