

State of Maryland v. Kirk Matthews, No. 15, September Term, 2021. Opinion by Biran, J.

EXPERT WITNESSES – ADMISSIBILITY OF EXPERT TESTIMONY – MARYLAND RULES 5-702 AND 5-403 – REVIEW FOR ABUSE OF DISCRETION

The Court of Appeals held that the trial court did not abuse its discretion by admitting testimony of the State’s photogrammetry expert witness. At the hearing on the defendant’s motion to exclude the expert testimony, the expert opined that a person shown carrying a shotgun in an image captured by a video camera was approximately 5’8” plus or minus two-thirds of an inch. The expert acknowledged that she was unable to calculate the effect of certain variables on the degree of uncertainty of the height measurement. The Court held that the unknown degree of uncertainty with respect to the expert’s conclusions went to the weight of her testimony, not its admissibility. The expert’s methodology was reliable and there was no analytical gap in her testimony. The trial court acted within its broad discretion in concluding that, despite the unknown degree of uncertainty in the height measurement, the expert’s testimony would assist the jury in understanding the evidence or in deciding a fact in issue in the case. Therefore, the expert testimony was admissible under Maryland Rule 5-702.

The Court also affirmed the trial court’s ruling with respect to Maryland Rule 5-403, concluding that the probative value of the expert testimony was not outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury.

Circuit Court for Anne Arundel County
Case No. C-02-CR-17-002275
Argued: November 1, 2021

IN THE COURT OF APPEALS
OF MARYLAND

No. 15

September Term, 2021

STATE OF MARYLAND

v.

KIRK MATTHEWS

*Getty, C.J.
*McDonald
Watts
Hotten
Booth
Biran
Wilner, Alan M.
(Senior Judge, Specially Assigned),

JJ.

Opinion by Biran, J.
Watts, J., dissents.

Filed: June 22, 2022

*Getty, C.J., and McDonald, J., now Senior Judges, participated in the hearing and conference of this case while active members of this Court; after being recalled pursuant to Maryland Constitution, Article IV, Section 3A, they also participated in the decision and adoption of this opinion.

Pursuant to the Maryland Uniform Electronic Legal Materials Act (§§ 10-1601 et seq. of the State Government Article) this document is authentic.



Gregory Hilton, Clerk

In *Rochkind v. Stevenson*, 471 Md. 1 (2020), this Court adopted the analysis set forth in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), concerning the admissibility of expert testimony. Our decision in *Rochkind* generated substantial comment from the Maryland bar.¹ It was unclear to some commentators how trial courts would interpret *Rochkind* and how, if at all, *Rochkind* would change the dynamics of litigation in Maryland.² The case presently before us provides the first opportunity for us to address, post-*Rochkind*, whether a trial court erred in deciding the admissibility of expert testimony.

Kirk Matthews, the Respondent here, was convicted in the Circuit Court for Anne Arundel County of murder and related charges in connection with the shooting deaths of Linda McKenzie and Leslie Smith in the early morning on June 1, 2017. Evidence collected at the crime scene indicated that the shooter used a 12-gauge shotgun to kill McKenzie and Smith. Video footage obtained from a nearby home security camera showed a person carrying a shotgun a few minutes after the shootings. The suspect's face was indiscernible in the video.

Prior to Matthews being charged in the killings, the investigating police officers attempted to determine the height of the person shown in the video footage. To that end,

¹ See, e.g., Derek Stikeleather, *It's Official: Maryland Accepts Daubert as Controlling Law for Admitting Expert Testimony*, Maryland Appellate Blog (Aug. 31, 2020), available at <https://perma.cc/A342-NSSL>; William Sinclair, *Weird Science: Maryland's New Test for the Admissibility of Expert Testimony*, Maryland Business Litigation Lawyer Blog (Oct. 1, 2020), available at <https://perma.cc/49A5-N9Z4>.

² See, e.g., Ronald V. Miller, Jr., *Maryland Dumps Frye-Reed for Daubert: Rochkind v. Stevenson*, Maryland Injury Lawyer Blog (Sept. 16, 2020), available at <https://perma.cc/MA76-L6LB> (posing the question whether the adoption of *Daubert* in Maryland is a “big deal”).

they enlisted the assistance of the Federal Bureau of Investigation (“FBI”). Using a technique known as “reverse projection photogrammetry,” FBI scientists determined that the person shown carrying the shotgun was approximately 5’8” tall, plus or minus two-thirds of an inch. However, the FBI scientists noted in the report detailing their analysis and findings that, due to several variables, “the degree of uncertainty in this measurement could be significantly greater.”

Police measured Matthews’s height as approximately 5’9”. Prior to Matthews’s trial, his attorneys moved to preclude the State from introducing expert testimony from the FBI scientists who had conducted the reverse projection photogrammetry analysis. The defense argued that, given the unknown degree of uncertainty that applied to the FBI’s height measurement, the jury should not be permitted to hear expert testimony concerning the FBI’s analysis. After holding a hearing on the defense’s motion, the trial court denied the motion, ruling that the State would be permitted to introduce the challenged expert testimony.

One of the FBI scientists testified at Matthews’s trial, consistent with her report, that the subject shown in the video was approximately 5’8” plus or minus two-thirds of an inch. The expert stated that she could not scientifically quantify several variables that might lead to a higher degree of uncertainty than plus or minus two-thirds of an inch. However, she explained why she nevertheless believed that her height measurement was reasonably accurate. Defense counsel cross-examined the expert at length about the variables that could lead to the higher degree of uncertainty. The jury found Matthews guilty of two counts of second-degree murder and several related charges. Matthews appealed.

The Court of Special Appeals reversed Matthews's conviction, holding that the trial court erred in admitting the expert testimony. The intermediate appellate court reasoned that the inability of the expert witness to provide a margin of error that accounted for several potential variables rendered the height measurement unreliable and therefore inadmissible under Maryland Rule 5-702 and *Rochkind*. The State petitioned this Court for further review.

As we explain more fully below, after *Rochkind* (as it was before *Rochkind*) it is the rare case in which a Maryland trial court's exercise of discretion to admit or deny expert testimony will be overturned. This is not one of those cases. Accordingly, we will reverse the judgment of the Court of Special Appeals and direct that Matthews's convictions be reinstated.

I

Background

A. The Double Homicide

Early on June 1, 2017, police responded to the area of Scott Town Road in Shady Side, Maryland, based on a 911 call involving the sighting of a man armed with a shotgun and gunshots having been fired. The officers eventually discovered the bodies of Linda McKenzie and Leslie Smith in a dirt clearing off Scott Town Road. The cause of death for each victim was multiple shotgun wounds to the upper extremities, at close range. Trails of blood leading from the road to the location of McKenzie's and Smith's bodies indicated that they had been shot on Scott Town Road and then dragged into the clearing. Ballistics

evidence indicated that the shooter used a 12-gauge shotgun, but the murder weapon was never recovered.

McKenzie and Smith were romantic partners, but McKenzie was angry at Smith on the evening of May 31, 2017. McKenzie and Smith separately drove to Scott Town Road that night. After Smith arrived at the dead-end area at the west end of Scott Town Road, McKenzie chased Smith back up Scott Town Road in a pickup truck, with Smith driving a white Saturn sedan in reverse. Shortly after the two vehicles passed the intersection of Scott Town Road and Nick Road, the car Smith was driving backed into a ditch and came to a stop on Scott Town Road near the intersection of Shady Side Road. That occurred at 11:08 p.m. At approximately 11:57 p.m., police arrived on the scene. The car was removed from the ditch, and at 12:08 a.m. on June 1, Smith pushed the car down Scott Town Road along with a man named Joseph Tongue; they placed the car in the driveway of the home that belonged to Tongue's grandmother on Scott Town Road just west of the intersection of Nick Road. The police then left the scene.³

After the car was removed, Smith and McKenzie remained in the vicinity of Scott Town Road. Smith and McKenzie were shot in quick succession on a stretch of Scott Town

³ Neither Smith, McKenzie, nor Tongue was in possession of a valid driver's license when police arrived on the scene. For that reason, the officers did not allow any of them to operate the Saturn after it was removed from the ditch. Thus, Smith and Tongue pushed the car down Scott Town Road to Tongue's grandmother's house, with someone (possibly McKenzie) at the wheel, steering.

Road that lies to the west of Nick Road shortly before 12:39 a.m. At trial, no witness testified to having seen the shootings.⁴

B. The Video Footage of the Suspect

Having received a 911 call that included a report of shots being fired, police officers returned to Scott Town Road at approximately 12:43 a.m.; they subsequently discovered the bodies of McKenzie and Smith in a clearing off Scott Town Road to the west of Nick Road. Later in the morning on June 1, officers obtained video footage from two security cameras affixed to the home located at 1291 Scott Town Road, a short distance from where the shootings occurred. While those cameras did not record the shootings, they did capture relevant events before and after the shootings. Before the shootings, the video footage showed McKenzie chasing Smith in their respective vehicles. Shortly after the shootings, the cameras captured several people quickly walking west on Scott Town Road, away from the scene of the crime, as well as a car backing down Scott Town Road, also away from the crime scene. A few minutes later, one of the cameras recorded an individual cutting across the front yard of 1291 Scott Town Road. The individual shown in that footage carried what appeared to be a shotgun. The suspect's facial features and race were completely indiscernible, due to the video being captured at night and the significant distance between the camera and the suspect. However, it was clear that the suspect was wearing a cap or some other kind of head covering.

⁴ However, as discussed below, multiple witnesses who were near the scene of the crime provided evidence, some of it conflicting, about what they saw and heard before and after the murders. Several of these witnesses had taken drugs or consumed a substantial amount of alcohol in the hours leading up to the killings.

C. The FBI's Analysis of the Video Footage

The Anne Arundel County Police Department ("AAPD") sought to determine the height of the person pictured in the video carrying a shotgun. On June 23, 2017, a request to determine the height of the individual was submitted to the Forensic Audio, Video and Image Analysis Unit of the FBI's Digital Evidence Laboratory.

According to a December 5, 2017 report written by Kimberly A. Meline, a forensic scientist in that unit, the FBI received a DVD containing four videos and 13 still images. Meline wrote that "[t]he video files were processed for images best depicting the subject," and "[o]ne image depicting the questioned individual was selected for photogrammetric analysis." Meline reported that, after conducting a reverse projection photogrammetry analysis on site at 1291 Scott Town Road on November 28, 2017, "[t]he vertical distance from the ground to the top of the headwear of the questioned individual was determined to be approximately 5'8", +/- .67". The report then provided a qualification: "However, due to the subject to camera distance, the resolution of the imagery, the unevenness of the landscape, and the body position of the subject, the degree of uncertainty in this measurement could be significantly greater."

D. The Pretrial Motion to Exclude Expert Testimony

In the meantime, on September 29, 2017, a grand jury returned an indictment in the Circuit Court for Anne Arundel County charging Matthews with murder and related offenses.

On August 3, 2018, Matthews filed a pretrial motion to exclude expert testimony regarding the FBI's photogrammetric analysis. Matthews contended that exclusion of such

expert testimony was warranted, among other grounds, under Maryland Rules 5-702⁵ and 5-403⁶ and under the *Frye-Reed*⁷ standard for admissibility of expert testimony. The State filed a response asserting that photogrammetry is a generally accepted methodology and that “concerns about the validity of the experts [sic] conclusions ... should be presented to the jury through cross examination regarding the margin of error, environmental factors

⁵ Maryland Rule 5-702 provides:

Expert testimony may be admitted, in the form of an opinion or otherwise, if the court determines that the testimony will assist the trier of fact to understand the evidence or to determine a fact in issue. In making that determination, the court shall determine

- (1) whether the witness is qualified as an expert by knowledge, skill, experience, training, or education,
- (2) the appropriateness of the expert testimony on the particular subject, and
- (3) whether a sufficient factual basis exists to support the expert testimony.

⁶ Maryland Rule 5-403 provides: “Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.”

⁷ The *Frye-Reed* standard for admissibility of expert testimony applied in Maryland courts at the time of Matthews’s trial. “*Frye*” came from *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), in which the D.C. Circuit announced a then-new evidentiary standard by which the admissibility of expert testimony involving a scientific principle or discovery turned on the “general acceptance” of such evidence “in the particular field in which it belongs.” “*Reed*” came from *Reed v. State*, 283 Md. 374 (1978), in which this Court adopted the *Frye* standard for use in Maryland courts. After *Reed*, the rule in Maryland for the next 42 years was that, “before a scientific opinion will be received as evidence at trial, the basis of that opinion must be shown to be generally accepted as reliable within the expert’s particular scientific field.” *Id.* at 381. We decided *Rochkind v. Stevenson*, 471 Md. 1 (2020), abrogating the *Frye-Reed* standard, while Matthews’s appeal was pending in the Court of Special Appeals.

and degree of uncertainty in the measurement, as well as presentation of contrary expert testimony.”

On September 21, 2018, the trial court held an evidentiary hearing on Matthews’s motion to preclude the expert testimony. While Matthews did not dispute that photogrammetry was a generally accepted methodology, he challenged its application in his case. The State called Meline as a witness at the hearing. She was accepted as an expert in “photogrammetry and reverse projection photogrammetry.” Meline explained that “[p]hotogrammetry is just a very long word that means we’re trying to make measurements in photos.” She further testified that there are two basic forms of photogrammetry: (1) reverse projection photogrammetry, which requires going to the place where the questioned image was created and “duplicating the imaging conditions that captured the original scene in order to make a measurement”; and (2) analytical photogrammetry, which relies on software to make measurements based on the image itself, and does not require going to the scene. According to Meline, software-based photogrammetry is less accurate than reverse projection photogrammetry.

Meline testified that she analyzed the home surveillance video taken on the night of the homicides, which depicted a walking individual, to determine “which specific frame of the video would be most conducive for photogrammetric analysis” for height. Meline was able to identify “one image that would be within a reasonable margin of error in order to complete photogrammetric analysis.” That image became what Meline referred to as the “questioned image.” Meline then described how she and a colleague went to 1291 Scott

Town Road on November 28, 2017, and conducted the reverse projection photogrammetry analysis.

First, Meline located and identified the camera that had captured the questioned image. Using that same camera to conduct the reverse projection photogrammetry analysis allowed Meline to “mimic any lens distortion that’s inherent to the image.” She then examined live footage “to ensure alignment of stationary items within both the foreground and the background of the image to make sure that that camera was still in the same position.” After confirming this alignment, she walked to the location where the suspect was pictured standing in the questioned image, placed a height chart at that spot, and then “completed overlays of [her]self in position as well as the subject in the image ... to make sure that [they] were standing in the same location.”

Meline explained that she then created an “overlay” of the questioned image and the height chart to measure the height of the individual in the image. To indicate the height, she superimposed a yellow arrow “at the top of the headwear of the questioned individual and where it aligns on the height chart that was placed in the position the subject was standing.” The height thus indicated was 5’8.”

Meline also took measurements to estimate “the uncertainty or the error” associated with her height estimate based on the resolution of the questioned image and the positional accuracy of the height chart. She explained that the image resolution affects how much the estimated height changes for every pixel by which her placement of the yellow arrow was mistaken, and here, one pixel represented 0.53 inches. She further explained that quantifying “positional accuracy” involves using planar geometry to calculate how much

the height would change, assuming a standard three-inch error in the placement of the height chart, and here, based on the distance from the camera to the ground (110") and the distance of the subject from the camera (62'), a three-inch error in the placement of the height chart would alter the height by 0.133 inches. Based on those two calculations, Meline determined that the margin of error of her height measurement was plus or minus two-thirds of an inch. Thus, Meline opined that the suspect's height, as measured from the ground to the top of their headwear, was 5'8" plus or minus two-thirds of an inch.

Meline also captured images of herself beside the height chart at the scene to provide an additional known height value. She explained that

[t]he purpose of doing that is essentially as a double check of my measurement. And so when I'm standing in the location of the individual you can see that I'm attempting to mimic the position of both the feet as well as essentially how the person is standing so that I can double check the measurement that I calculate against my own known height and determine whether it appears to be reasonable based on those factors.

When asked what Meline was "able to determine in terms of ... the subject's height in comparison to [Meline's] height," Meline stated that "[t]he subject's height appeared to be slightly shorter than my own height based on overlay of myself in that same scene against the questioned image." Meline testified that, "depending on which footwear [she is] wearing," her height is "between five-nine and a half and five-ten."

Meline opined that her estimate of the height of the subject was within a reasonable degree of scientific certainty. Meline further testified that she was never told Matthews's height.

On cross-examination, defense counsel asked Meline about the qualifying statement in her report that “the degree of uncertainty in this measurement could be significantly greater” based on several variables, including “the subject to camera distance, the resolution of the imagery, the unevenness of the landscape, and the body position of the subject.” Meline testified: “I don’t have a scientific way of quantifying how those dimensions had an effect on my measurement and consequently I wanted in an abundance of caution to mention them.”⁸

Defense counsel asked Meline, “you’re familiar with the 2009 report on forensics from the National Research Council” which “discussed a need for any scientific report to include clear characterizations on the limits of the analysis that was done; is that accurate?” Meline replied: “Certainly,” which is “why I included the calculable uncertainty as well as the incalculable uncertainty.” The following exchange then occurred:

[Defense Counsel]: Okay, which means ultimately we don’t know how uncertain this result is?

[Meline]: I would say that I have some indication based on the overlay of my own, myself in that similar position with the image of the questioned individual and knowing that the questioned individual appeared to be slightly shorter than I, myself, am that I have some indication as to the

⁸ Defense counsel also asked Meline about an email that Meline’s assistant, Jenna Walker, sent to an FBI special agent in September 2017, when authorities were considering whether to go forward with a reverse photogrammetric analysis to ascertain the suspect’s height. In the email, Walker stated that, based on the “subject to camera distance, resolution and adequate lighting to view the subject head-to-toe in an upright position,” as well as other factors, “[w]e have estimated that ... you are looking at [an error rate] range of +/- close to 3”. Meline noted in her testimony at the motions hearing that Walker provided this plus-or-minus three-inch figure before the reverse photogrammetric analysis was conducted and, therefore, it was “not based on any specific measurements done at the scene” and was “no more than an estimate.”

uncertainty with the method. However, there are factors in here that I cannot calculate.

....

[Defense Counsel]: [A]s here where the conditions are far from pristine, [the] margin of error is going to become greater it stands to reason, right?

[Meline]: It does.

Upon further questioning concerning the scientifically unquantifiable variables, Meline explained why – despite those variables – she considered her height measurement to be accurate within a reasonable degree of scientific certainty. She stated that “the body position of the individual is the factor that [she was] most concerned about,” which is why she is “so careful when it comes to image selection and trying to ... use an image that depicts the individual from head to toe in as upright of a position as possible.” In response to defense counsel’s question, “would you agree that how someone wears a head covering even if you knew what it was could impact the reported height of an individual?”, Meline stated, “I would, which is why when I report a measurement I report that measurement as a measured distance from the ground to the top of the headwear of the individual.” Defense counsel also asked, “Can you tell us exactly how you located where the bottom of the foot would be for that individual?” Meline replied, “[W]e indicated where the back of the heel was and then essentially worked from there on the left foot.”

Matthews called two witnesses in support of his motion, including Robert Sanderson, who was accepted as an expert in photogrammetry. Sanderson disagreed with Meline’s opinion that the suspect’s height could be reliably estimated as 5’8” +/- .67”. With

respect to the body position of the subject, Sanderson did not seriously quarrel with Meline's contention that the questioned image captured the subject in a position that was conducive to photogrammetric analysis, referring to the questioned image as "a correctly selected frame." However, according to Sanderson, other factors made the questioned image unsuitable for analysis. These included "whether or not you could see things in it, most notably the feet and the top of the headwear. The unevenness of the landscape which is a strong issue here, because when you don't have the footwear and you can't see where whatever footwear the person had on contacted the ground because of vegetation or unevenness, you have a variable there that is not really quantifiable."⁹

The State recalled Meline as a rebuttal witness. With respect to foot placement, Meline testified:

So what I did was I actually start by placing myself right on the height chart. And we saw that in the video that we showed earlier this morning. So essentially what I do is I align my leg and my foot with what I can see in the video in order to show that the foot where all the weight of the individual was balanced is in the proper location.

And then I actually do the same to the best of my ability with the right leg where you can see that the right leg was slightly forward as Mr. Sanderson testified, so that you could see the knee of the right leg. I make sure that both of those legs match up, and then based on the stature that I have ... I place the height chart to within the center of gravity of the individual, again to make sure that it's going to the best of my ability through the top of their head so that I can make an accurate measurement.

⁹ Matthews's other witness at the hearing was a private investigator who described the area of Scott Town Road as "swampy" and the terrain of 1291 Scott Town Road as "uneven."

The prosecutor then asked: “[I]n talking about foot placement and terrain, what’s the best way for you to see how the ground would affect that measurement?” Meline replied: “To go to the scene.”

On cross-examination, Meline stated that, “with the exception of the possibility of changes in the terrain between June and November, I would say that my ability to stand where the individual was standing tells me what the terrain was like.” Defense counsel followed up: “So you wouldn’t be aware of what kind of minor changes in terrain there might have been within that time?” Meline responded, “No, ma’am.”

Defense counsel asked Meline if “at the end of the day this is not an opinion that is offered with a reasonable degree of scientific certainty with respect to the 0.67-inch degree of uncertainty?” Meline replied: “The 0.67 as well as the five-foot-eight were both offered with a reasonable degree of scientific certainty. However, I mentioned that the 0.67 does not incorporate all areas of potential uncertainty.” Meline acknowledged that she could not quantify the overall margin of error based on the variables that were not calculable.

On redirect examination, the prosecutor and Meline had the following exchange:

[Prosecutor]: You cannot scientifically say a quantification, but you testified earlier that that means you cannot plug it into a mathematic formula, correct?

[Meline]: That’s correct.

[Prosecutor]: So you are able to say that you visually can indicate that your height was taller, slightly taller than the individual in the video; is that correct?

[Meline]: That is correct.

After hearing counsel's subsequent arguments, the trial court denied Matthews's motion to exclude Meline's testimony. Addressing the defense's argument under Maryland Rule 5-403, the court stated that the "potential height of the individual in question is of value, and the information is probative." The court continued:

So the question in my mind is whether or not [the probative value] is outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury.... [A]ll evidence is prejudicial, ... [t]he question is whether or not it is ... [u]nfairly prejudicial.

[The evidence] does have ... certainly a qualifier as [defense counsel] correctly points out. But it is right there, available to the jury, available for cross-examination, there is a conclusion that is reached. It is clear. It is concise. It is not confusing. It was not particularly confusing to the Court to see it. When you look at the photos, and you look at the overlay, and you look at all the images, it – it's something that is clear to your eye, and then is explained by an expert, and there are mathematical calculations, but in addition to that, as to the – the second sentence, if you will, of the opinion regarding the potential of uncertainty, that is clear as well, and it is particularly stated, and it is available to the Defense for cross-examination, and, quite candidly, I find it very easy to understand.

... I do not find it unfairly [prejudicial]. I do not find that it confuses the issues, and nor do I find that it would be misleading to the finder of fact[.]

Thus, the trial court declined to exclude Meline's testimony under Rule 5-403.

With respect to Rule 5-702, the trial court found that Meline was qualified as an expert based on knowledge, skill, experience, training, or education in the relevant area. The court further found that Meline's testimony about the use of reverse-photogrammetric analysis to calculate the height of the individual captured in the surveillance video was appropriate in Matthews's case. Finally, the court found that "based on all of the information presented, ... there is a sufficient factual basis for her to testify, to support her testimony, as to the opinion that she indicated that she would express." Thus, the trial court

denied Matthews's motion and ruled that the State would be permitted to introduce Meline's expert testimony concerning reverse projection photogrammetry and her height measurement of the person shown in the questioned image. The prosecutor confirmed with the trial court that Meline would be permitted to "say that visually I am 5'10", I was on the video, and the person visually ... was shorter than she was, in that position."

E. The Trial

Matthews's jury trial began on October 16, 2018. In her opening statement, the prosecutor explained that locals call Scott Town Road the "Lane." They refer to the dead-end section of the Lane (at its western end point) as "Down Bottom" and the section closer to the intersection with Nick Road as "Up Top." The police know the intersection of Scott Town Road and Nick Road to be an "open-air drug market." Indeed, earlier in the day on May 31, 2017, police had installed a pole camera near that intersection as part of an effort to investigate illegal drug sales.

The State introduced footage recorded by the pole camera between 11:00 p.m. on May 31 and 2:00 a.m. on June 1, which captured events occurring in the section of Scott Town Road immediately to the east of Nick Road. The State also introduced video footage from that same three-hour period that was taken from the cameras located at 1291 Scott Town Road, including the footage of the suspect cutting through the front yard of the property at approximately 12:43 a.m. while carrying what appeared to be a shotgun. The murders occurred in the area between the pole camera and 1291 Scott Town Road, and were not captured on any of the cameras.

The State called several witnesses who were blood relations or long-time friends or acquaintances of Matthews. Some of these witnesses testified that they consumed drugs and/or alcohol on the night of May 31 and into the early morning of June 1. Several were uncooperative on the witness stand and were effectively impeached by defense counsel. Still, they provided testimony that was damaging to Matthews.

For example, Richard Jackson, who had known Matthews for “20 years or so,” testified that after Smith’s car backed into the ditch, he saw McKenzie and Smith arguing before police arrived. According to Richard Jackson, at that time Matthews “was trying to have them, you know, quiet down because they were being super loud.” Smith was “running his mouth,” and Matthews said, “that’s all right, I got something for your ass or something along those lines.” Matthews then walked away. After the car was removed from the ditch and the police left the scene, Richard Jackson saw Matthews “walking down the road with a shotgun.” At that time, Matthews was on Nick Road approaching Scott Town Road, where McKenzie and Smith were. While Richard Jackson was on the stand, the State showed him the video footage taken from one of the cameras at 1291 Scott Town Road and, in particular, the footage of the man carrying what appeared to be a shotgun. Richard Jackson testified that the person shown in that footage looked like Matthews.¹⁰

¹⁰ On cross-examination, Richard Jackson admitted to being a drug addict and to buying (and most likely using) crack cocaine on the night of May 31. He also confirmed that, prior to trial, while he told the detectives about hearing Matthews say, “I’ve got something for you,” he only mentioned seeing Matthews with a shotgun earlier in the evening (approximately 40 minutes prior to the car going into the ditch).

Joseph Tongue – the person who helped Smith push the Saturn down Scott Town Road – testified that he is Matthews’s cousin. According to Tongue, after the car went into the ditch, Tongue heard McKenzie and Smith “screaming,” “fussing,” and “arguing.” Tongue told them that they needed to get their car out of the ditch before police arrived, but “the police showed up.” After the car was removed from the ditch and had been pushed down the road, McKenzie and Smith continued to argue in front of Tongue’s grandmother’s house. Tongue saw Matthews coming, and knew that Matthews “was mad.” Tongue told McKenzie and Smith to leave. As Matthews, McKenzie, and Smith were arguing, Tongue “started walking off” and then “heard a gunshot” followed by “another gunshot.” When he looked back, he saw “Kirk [Matthews] and Linda and them,” and Matthews was holding what “[l]ooked like a gun,” “a large gun.”

The prosecutor asked, “[W]hen’s the first time you saw him with a shotgun?” Tongue replied, “When he was coming around the corner.” The prosecutor asked, “[D]id you see anybody other than Kirk Matthews with a gun?” Tongue replied, “Nah.” The prosecutor asked what, if anything, Tongue heard Smith say to Matthews. Tongue replied, “You not going to shoot nobody.”¹¹

Charles Jackson testified that he has known Matthews for about 10 years. He stated that he lives less than a mile from the Lane and went there to buy drugs. On May 31, 2017, Charles Jackson arrived at the Lane around 10:30 or 11:00 p.m., and was “Down Bottom”

¹¹ On cross-examination, Tongue stated that he consumed alcohol and drugs on the night of the killings, including PCP, Xanax, and a pint of vodka. He testified that he had smoked PCP every day for ten years.

with several others – including Matthews – when McKenzie came “speeding down there, cussing about looking for her car.” According to Charles Jackson, Matthews told McKenzie: “You’re making the lane hot. Take that shit up out of here.” Charles Jackson was also present when Smith arrived and subsequently backed the car into the ditch. After watching the video footage taken in front of 1291 Scott Town Road, Charles Jackson testified that the person shown carrying a gun “looks like” Matthews.

Rico Hicks testified that Matthews is a “good friend of the family.” Rico Hicks also testified that he was on the Lane on the night of the shooting and “heard gunshots,” however, he never saw anyone with a gun and never saw who was shot. Rico Hicks’s testimony was impeached through the testimony of Edward Hicks – his relative¹² – who testified that in the days following the shooting, Rico Hicks “told me that he seen Kirk [Matthews] shoot the – two people and then just dragged them off the road” and that “it was the worst thing he ever saw.”

Crime Scene Technician Katie Ladue testified that four shotgun shells were recovered at the scene of the crime and “it did appear that [the victims] had been dragged out of the road because there was blood that trailed from an original location where there was blood pooling off to the location of the dirt area where they were found.” The State introduced crime scene photographs showing the blood trails leading from the middle of Scott Town Road to the victims’ bodies in the nearby dirt clearing.

¹² Rico Hicks testified that Edward Hicks is his “uncle,” while Edward Hicks testified that Rico Hicks is his “cousin.”

On October 23, 2018, the fifth day of the State's case-in-chief, the State called Steven Marchant as a witness. Marchant was a crime scene technician for AAPD in June 2017. Marchant testified that, on June 3, 2017, he executed a search warrant to obtain, among other things, Matthews's height. According to Marchant, he "used the tape measure that we have in the van, and I ran it straight up behind the subject and then took a photograph of it." The State introduced a copy of that photograph, which reflected that Matthews's height was measured to be approximately 5'9". Later on October 23, 2018, AAPD Detective Jason DiPietro testified that he witnessed Marchant measure Matthews's height, that "the tape was to the ground," and that Matthews was measured at approximately 5'9" in height.

The State then called Meline as an expert witness in the areas of photogrammetry and reverse projection photogrammetry. Meline testified in keeping with her testimony at the motions hearing regarding the reverse-projection photogrammetry analysis that she performed on site at 1291 Scott Town Road. Meline opined, to a reasonable degree of scientific certainty, that the person shown in the video footage carrying what appeared to be a shotgun was 5'8" plus or minus two-thirds of an inch. Meline also explained on direct examination that several other factors, including the unevenness of the ground and the distance of the camera from the subject, could add to the degree of uncertainty in a way she could not calculate. Defense counsel cross-examined Meline at length concerning these variables and other points. Among other things, Meline acknowledged that she could not tell what kind of head covering the subject was wearing or if the subject was wearing it high on the head or pulled down tight to the scalp. In addition, Meline conceded that she

could not determine what kind of shoes the person was wearing and if they contained a heel of any height. However, Meline took issue with defense counsel's suggestion that it was difficult to see the subject's feet; according to Meline, "[W]e believe that we could see one foot very firmly of the individual." And, while she again acknowledged that there were "additional considerations that may have affected uncertainty that can't be calculated," Meline maintained that she "still was comfortable with" her opinion that the subject's height was 5'8" plus or minus two-thirds of an inch.

After the State rested its case, the defense called several witnesses,¹³ including Katherine Bragg. Bragg testified that she moved to Shady Side with her husband and children in November 2016. She and her family lived at 5218 Nick Road. Bragg testified that, on the evening of May 31, 2017, she sat outside her house and drank four or five White Russian cocktails while she waited for her husband to return home from work. At one point, she heard what sounded like a car getting stuck. Subsequently, she saw a white woman wearing "short, short shorts" walk past her house approaching Scott Town Road.¹⁴ Soon afterwards, Bragg saw a white man wearing a gray t-shirt come from the same direction as the white woman.¹⁵ After the man passed Bragg's house, Bragg heard arguing between male and female voices. Approximately 10 minutes after that, Bragg saw a second

¹³ Although the defense had called Robert Sanderson as an expert witness in photogrammetry at the hearing on Matthews's pretrial motion, the defense did not call Sanderson at trial.

¹⁴ McKenzie was wearing "short shorts" on the night of May 31-June 1, 2017.

¹⁵ Smith wore a dark gray t-shirt that night.

white man wearing a gray sweatshirt and jeans walk past her house in the same direction that the two prior white individuals (presumably McKenzie and Smith) had proceeded. According to Bragg, this second white man was “thin,” “younger,” and “tall” (at least 5’11”) with blonde hair. Bragg testified that this man was carrying a shotgun, and that he “cocked” the shotgun in front of her driveway. Bragg’s husband then called 911 to report an armed man. While Bragg’s husband was making the 911 call, Bragg and her husband heard gunshots, which Bragg’s husband then reported to the 911 operator. It was this 911 call that led police to return to the area of Scott Town Road at approximately 12:43 a.m.

Bragg’s testimony was important to the defense because not only is Matthews shorter than the man Bragg described having seen with a shotgun¹⁶; Matthews is African American, whereas Bragg described seeing a white man with blonde hair carry and “cock” a shotgun in front of her house. In addition, at 56 years old in June 2017 and 240 pounds (according to his driver’s license issued in July 2016), Matthews is not someone most people would describe as “younger” or “thin.”

After the defense rested, the trial court instructed the jury¹⁷ and the parties presented closing arguments. With respect to Meline’s testimony, defense counsel stated:

¹⁶ As stated above, AAPD personnel measured Matthews at approximately 5’9” on June 3, 2017. Matthews’s driver’s license lists him at 5’6”. The record does not reflect whether Matthews was wearing shoes at the time AAPD measured his height and, if so, the heel size of his shoes.

¹⁷ Pertinent here, the trial court instructed the jurors, among other things, that “[y]ou should consider an expert’s testimony together with all the other evidence,” and “[y]ou should give expert testimony the weight and value you believe it should have. You are not required to accept an expert’s testimony even if it is uncontradicted. As with any other witness, you may believe all, part or none of the testimony of an expert.”

I'm not going to say a lot about it because I think it's very simple. Not what [Meline] does, I think she's smart. I think she does it well. I think it's a great tool. But at the end of the day what she is telling you is nothing.

....

That's her expert opinion, but however – however, due to the ... distance, the resolution of the imagery, the quality, the unevenness of the landscape, which you'll see pictures of – it's ditches and bumpy and grassy – the body position because no one's a hundred percent sure what that is, the degree of uncertainty – that two-thirds one way or the other – could be significantly greater and that's not a quantifiable number. Well, an inch, five inches?

So what does that tell you? He might be five-eight based on what I know, but there's a lot of stuff I don't know which could significantly change that. So what it's telling you is nothing....

As smart as Ms. Meline is, and she certainly is, she didn't add anything. So why is she here? To bolster a case that has no physical or forensic evidence. To make it look like what, "We did this and she's from the FBI and she's really smart." And she's going to say all these things and it sounds important, but at the end of the day it's telling you nothing forensically.

On October 26, 2018, the jury found Matthews guilty of two counts of second-degree murder, two counts of use of a firearm in the commission of a crime of violence, and related charges. The trial court subsequently sentenced Matthews to an aggregate sentence of 110 years of imprisonment, with all but 80 years suspended. Matthews appealed his convictions.

F. Appeal

The Court of Special Appeals reversed Matthews's convictions and remanded for a new trial, holding that the trial court abused its discretion by admitting Meline's expert testimony. *Matthews v. State*, 249 Md. App. 509 (2021). In so holding, the intermediate

appellate court concluded that there was an “analytical gap” between the underlying data and the opinion:

Ms. Meline concluded that the person in the video was 5’8” with a “calculable uncertainty” of 0.67 inches, which would seem to eliminate a taller white man as the shooter. But without shrinking from her estimate, she undermined her calculation by acknowledging that there was no scientific way to calculate the actual uncertainty, and that the margin of error could be significantly greater due to the “far from pristine” circumstances of this case.... [She] admitted that she was unable to see the individual’s feet, that the individual was wearing a head covering, and that there was “concern” about the subject not being at “full height” in the video she was measuring.

Under these circumstances, the missing input variables that had not been considered in the seemingly precise height calculation prevented a reliably accurate height calculation. Put another way, the analytical gap between the data available for reverse photogrammetry projections and the conclusion Ms. Meline offered to the jury remained unbridged. Although Mr. Matthews was able to challenge [Meline’s] conclusions by cross-examining her about the missing pieces, it should not have fallen to the jury to work through the science on its own.

Id. at 543-44. Having ruled in Matthews’s favor under Maryland Rule 5-702, the Court of Special Appeals did not need to consider his alternative argument under Rule 5-403. However, the Court stated that “the unreliability of the height estimate resulting from this expert testimony raises serious doubt about whether the probativity of allowing it in outweighed the danger of unfair prejudice, especially where the video itself was unilluminating and the remaining testimony so equivocal.” *Id.* at 544.

The State filed a petition for *certiorari* in this Court, seeking review of the following question: “Did the Court of Special Appeals err by holding that an expert witness created an ‘analytical gap,’ and thus rendered her testimony inadmissible as a matter of law, by

acknowledging the limitations of her scientific methodology?” On June 22, 2021, we granted the State’s petition. *State v. Matthews*, 474 Md. 719 (2021).¹⁸

II

Standard of Review

Appellate courts review a trial court’s decision concerning the admissibility of expert testimony under Maryland Rule 5-702 for abuse of discretion. *See Rochkind*, 471 Md. at 10. Under this standard, an appellate court does “not reverse simply because the ... court would not have made the same ruling.” *Devincentz v. State*, 460 Md. 518, 550 (2018) (internal quotation marks and citation omitted). “Rather, the trial court’s decision must be well removed from any center mark imagined by the reviewing court and beyond the fringe of what that court deems minimally acceptable.” *Id.* (internal quotation marks and citation omitted); *see also Williams v. State*, 457 Md. 551, 563 (2018) (“An abuse of discretion occurs where no reasonable person would take the view adopted by the circuit court.”); *Jenkins v. State*, 375 Md. 284, 295-96 (2003) (“Abuse occurs when a trial judge exercises discretion in an arbitrary or capricious manner or when he or she acts beyond the letter or reason of the law.”).

We also review a trial court’s ruling concerning admissibility of evidence under Maryland Rule 5-403 for abuse of discretion. *Montague v. State*, 471 Md. 657, 673-74 (2020).

¹⁸ In its opinion, the Court of Special Appeals rejected two arguments Matthews had raised regarding other evidentiary issues. Matthews did not cross-petition this Court to review those portions of the Court of Special Appeals opinion, and as such, they are not before us.

III

Discussion

In the pre-*Rochkind* era, this Court frequently observed that “the admissibility of expert testimony is a matter largely within the discretion of the trial court, and its action in admitting or excluding such testimony will seldom constitute a ground for reversal.” *Roy v. Dackman*, 445 Md. 23, 38-39 (2015) (quoting *Bryant v. State*, 393 Md. 196, 203 (2006) (internal quotation marks omitted)); *see also Clemons v. State*, 392 Md. 339, 359 (2006); *Oken v. State*, 327 Md. 628, 659 (1992); *Hartless v. State*, 327 Md. 558, 576 (1992); *Johnson v. State*, 303 Md. 487, 515 (1985); *Stebbing v. State*, 299 Md. 331, 350 (1984). In *Rochkind*, even as we abrogated the *Frye-Reed* standard in favor of *Daubert*, we reiterated that a trial court’s ruling to admit or to exclude expert witness testimony “will seldom constitute a ground for reversal.” *Rochkind*, 471 Md. at 10 (quoting *Roy v. Dackman*, 445 Md. at 38-39). We reaffirm today that, in this respect, *Rochkind* did not change the law in Maryland. Post-*Rochkind*, it is still the rare case in which a Maryland trial court’s exercise of discretion to admit or deny expert testimony will be overturned. As we explain below, the trial court in this case did not abuse its broad discretion in admitting Meline’s expert testimony.

A. The Trial Court's Ruling Under Maryland Rule 5-702

We begin our analysis of the trial court's exercise of discretion under Maryland Rule 5-702 by reviewing the governing law. To set the stage, we discuss the evolution of federal law concerning the admissibility of expert testimony involving scientific matters.

1. The Supreme Court's *Daubert* Trilogy¹⁹

For 70 years prior to the Supreme Court's decision in *Daubert* in 1993, the *Frye* "general acceptance" test was the dominant standard that courts used to determine the admissibility of novel scientific evidence. As noted above, this Court adopted the *Frye* test as the law in Maryland in *Reed v. State* in 1978.

In *Daubert*, the Supreme Court stated that Federal Rule of Evidence 702 superseded the *Frye* test. At the time, Federal Rule 702 provided: "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." In *Daubert*, the Court explained that the inquiry into admissibility of evidence under Rule 702 is "a flexible one," and its focus "must be solely on principles and methodology, not on the conclusions that they generate." *Daubert*, 509 U.S. at 594-95. To that end, the Court interpreted Rule 702 to require a determination whether the scientific testimony at issue is "not only relevant, but reliable." *Id.* at 589. With respect to this reliability assessment, the Court

¹⁹ See *Rochkind*, 471 Md. at 14 n.5 (noting that courts have referred to *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), and *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999), as the "Daubert Trilogy").

provided a non-exclusive list of factors for federal trial courts to consider: (1) “whether a theory or technique ... can be (and has been) tested”; (2) “whether [it] has been subjected to peer review and publication”; (3) “the known or potential rate of error”; (4) “the existence and maintenance of standards controlling the technique’s operation”; and (5) incorporating the *Frye* test, whether the theory or technique is “general[ly] accepted” within the relevant scientific community. *Id.* at 593-94. The *Daubert* analysis, according to the Court, was more flexible than the “uncompromising ‘general acceptance’ test,” *id.* at 596, and gave trial courts “greater discretion to admit scientific expert testimony that is relevant and founded on sound principles, even though novel or controversial.” *Rochkind*, 471 Md. at 14.

In 1997, in *General Electric Co. v. Joiner*, 522 U.S. 136 (1997), the Supreme Court first articulated the concept of an “analytical gap” in considering the admissibility of expert testimony. Joiner was an electrician who developed small-cell lung cancer. *Id.* at 139. During his employment, he had been exposed to polychlorinated biphenyls (PCBs) and products derived from PCBs, which were manufactured by the defendants. *Id.* at 139-40. The plaintiff’s experts opined during their depositions that PCBs and the derivative products at issue promote cancer. *Id.* at 140. They further opined that Joiner’s exposure to PCBs and their derivatives was likely responsible for Joiner’s cancer. *Id.* The trial court precluded the plaintiff’s experts from testifying at trial, concluding that they had not established a link between exposure to PCBs and small-cell lung cancer. *Id.* The Supreme Court upheld the trial court’s exercise of discretion. The Court explained that none of the epidemiological studies upon which the experts relied provided a causal link between PCBs

and lung cancer. *Id.* at 145-46. The Court stated that “nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *Id.* at 146.

In *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999), the Supreme Court extended applicability of the *Daubert* test to other kinds of non-scientific knowledge, including to “testimony based on ‘technical’ and ‘other specialized’ knowledge.” The Court also explained that “whether *Daubert*’s specific factors are, or are not, reasonable measures of reliability in a particular case is a matter that the law grants the trial judge broad latitude to determine.” *Id.* at 153.

2. Maryland Rule 5-702

This Court adopted Maryland Rule 5-702 in 1994, soon after the Supreme Court decided *Daubert*. The Rule provides:

Expert testimony may be admitted, in the form of an opinion or otherwise, if the court determines that the testimony will assist the trier of fact to understand the evidence or to determine a fact in issue. In making that determination, the court shall determine

- (1) whether the witness is qualified as an expert by knowledge, skill, experience, training, or education,
- (2) the appropriateness of the expert testimony on the particular subject, and

(3) whether a sufficient factual basis exists to support the expert testimony.

Md. Rule 5-702.

Whether the third prong's requirement of "a sufficient factual basis" has been met requires analysis of two subfactors: (1) an adequate supply of data; and (2) a reliable methodology. *Rochkind*, 471 Md. at 22. Absent either of these factors, an expert opinion is "mere speculation or conjecture." *Id.* (internal quotation marks and citations omitted).

The proponent of challenged expert testimony must establish the three prongs of Rule 5-702 (including the two subfactors that make up a "sufficient factual basis") by a preponderance of the evidence. *See Crane v. Dunn*, 382 Md. 83, 92 (2004) (explaining that the trial court generally applies the preponderance of the evidence standard in making admissibility determinations); *see Daubert*, 509 U.S. at 592 n.10 ("These matters should be established by a preponderance of proof.").

3. The Rochkind Decision

In *Rochkind*, we abrogated the *Frye-Reed* general acceptance test and adopted *Daubert*. In so doing, we explained that "[a]dopting *Daubert* eliminates the duplicative analysis" that courts previously were required to undertake and instead "permits trial courts to evaluate *all* expert testimony – scientific or otherwise – under Rule 5-702." *Rochkind*, 471 Md. at 35 (emphasis in original). Thus, after *Rochkind*, Rule 5-702 is the touchstone when determining the admissibility of expert testimony.

Rochkind held that, in conducting its analysis under Rule 5-702, a trial court should consider a number of factors in determining whether the proffered expert testimony is

sufficiently reliable to be provided to the trier of fact. Several of those factors came from *Daubert* itself:

- (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;
- (3) whether a particular scientific technique has a known or potential rate of error;
- (4) the existence and maintenance of standards and controls; and
- (5) whether a theory or technique is generally accepted.

Id. (quoting *Daubert*, 509 U.S. at 593-94; Fed. R. Evid. 702 Advisory Committee Note).

We also favorably cited additional factors that other courts had applied in determining whether expert testimony is sufficiently reliable. These factors include:

- (6) whether experts are proposing to testify about matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying;
- (7) whether the expert has unjustifiably extrapolated from an accepted premise to an unfounded conclusion;
- (8) whether the expert has adequately accounted for obvious alternative explanations;
- (9) whether the expert is being as careful as he [or she] would be in his [or her] regular professional work outside his [or her] paid litigation consulting; and
- (10) whether the field of expertise claimed by the expert is known to reach reliable results for the type of opinion the expert would give.

Id. at 35-36 (quoting Fed. R. Evid. 702 Advisory Committee Note).

Having provided this non-exclusive list of factors for trial courts to consider as part of the reliability analysis inherent in Rule 5-702, we added several overarching observations. First, we noted that the reliability inquiry is “a flexible one.” *Id.* at 36 (quoting *Daubert*, 509 U.S. at 594). Second, the trial court must focus “solely on principles and methodology, not on the conclusions that they generate.” *Id.* (quoting *Daubert*, 509

U.S. at 595) (internal quotation marks omitted). However, “conclusions and methodology are not entirely distinct from one another.” *Id.* (quoting *Joiner*, 522 U.S. at 146) (internal quotation marks omitted). Thus, “[a] trial court ... must consider the relationship between the methodology applied and conclusion reached.” *Id.* Third, a trial court need not “admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert”; rather, “[a] court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *Id.* (quoting *Joiner*, 522 U.S. at 146) (internal quotation marks omitted).²⁰ Fourth, “all of the *Daubert* factors are relevant to determining the reliability of expert testimony, yet no single factor is dispositive in the analysis. A trial court may apply some, all, or none of the factors depending on the particular expert testimony at issue.” *Id.* at 37. Finally, *Rochkind* did “not upend [the] trial court’s gatekeeping function. ‘Vigorous cross-examination, presentation of contrary evidence, and

²⁰ Even before we decided *Rochkind*, this Court had recognized and applied the concept of an “analytical gap” that the Supreme Court discussed in *Joiner*. See *Rochkind*, 471 Md. at 17. In *Blackwell v. Wyeth*, we stated that generally accepted methodology “must be coupled with generally accepted analysis in order to avoid the pitfalls of an ‘analytical gap.’” *Blackwell v. Wyeth*, 408 Md. 575, 608 (2009). We subsequently discussed the “analytical gap” concept in *Chesson v. Montgomery Mut. Ins. Company*, stating that although “[g]eneral acceptance does not equate to unanimity of opinion within a scientific community ... [a] trial judge ... cannot admit expert testimony based on scientific methodology without consideration of whether the analysis itself is flawed and posits an ‘analytical gap.’” *Chesson v. Montgomery Mut. Ins. Co.*, 434 Md. 346, 356-57 (2013) (quoting *Blackwell*, 408 Md. at 608). In *Savage v. State*, we held that the expert witness at issue in that case did not “connect the dots” between the empirical observations and his ultimate conclusions, and concluded that the existence of an analytical gap undermined the validity of the expert witness’s testimony. *Savage v. State*, 455 Md. 138, 158, 170-71 (2017) (discussing how the expert’s “analysis did not bridge the ‘analytical gap’ between the data available to him and his ultimate conclusions”).

careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” *Id.* at 38 (quoting *Daubert*, 509 U.S. at 596).

Against this backdrop, we now consider whether the trial court abused its discretion under Maryland Rule 5-702 in admitting Meline’s expert testimony. As part of that analysis, we assess the trial court’s reliability determination under *Rochkind*.²¹

4. The Trial Court Did Not Abuse Its Discretion Under Rule 5-702.

The State argues that the Court of Special Appeals erred in concluding that the trial court abused its discretion when it admitted Meline’s expert testimony. According to the State, the Court of Special Appeals misapplied the concept of an “analytical gap.” In the State’s view, there was no logical disconnect between the underlying photogrammetry data and Meline’s height estimate. According to the State, while Meline’s inability to quantify how certain variables affected the degree of uncertainty may have detracted from the ultimate weight of her height estimate, it did not render her opinion inadmissible. The State further contends that the Court of Special Appeals failed to afford the appropriate level of deference to the trial court’s threshold admissibility ruling. According to the State, based on the evidence presented at the pretrial hearing, the trial court was well within the bounds of its discretion in finding that Meline had an adequate supply of data and applied a reliable

²¹ In *Rochkind*, we stated that our decision would “appl[y] to this case and any other cases that are pending on direct appeal when this opinion is filed, where the relevant question has been preserved for appellate review.” 471 Md. at 38-39. We explained that “[i]n this context, the ‘relevant question’ is whether a trial court erred in admitting or excluding expert testimony under Maryland Rule 5-702 or *Frye-Reed*.” *Id.* at 39. As noted above, Matthews’s trial occurred before we decided *Rochkind*. Because Matthews objected to the admission of Meline’s testimony under Rule 5-702 and *Frye-Reed*, *Rochkind* applies here.

methodology. Thus, Meline’s estimate of the vertical distance, as measured from the ground to the top of the suspect’s headwear, was more than “mere speculation or conjecture.”

Matthews argues that the Court of Special Appeals correctly held that Meline’s proffered testimony presented an analytical gap, and that the trial court should not have admitted it. According to Matthews, Meline’s opinion was unreliable due to the unknown margin of error. That is, because Meline could not inform the jury of the overall degree of uncertainty of her height estimate, the jury was not able to make an intelligent decision about how much weight to ascribe to the evidence, and the trial court therefore should not have allowed the jury to hear Meline’s testimony.

We agree with the State that the trial court did not abuse its discretion. There is no dispute that Meline’s methodology was reliable. Nor was there any analytical gap in her proffered testimony. The unknown degree of uncertainty concerning the accuracy of Meline’s height estimate went to the weight the jury should give to the expert testimony, not to its admissibility.²²

- a. *The Expert Testimony Was Not Per Se Inadmissible Due to Meline’s Inability to Scientifically Calculate the Effect of All Potential Variables on the Degree of Uncertainty.*

Matthews contends that Meline’s opinion was unreliable due to Meline’s inability to provide an overall margin of error for her height estimate, given that she could not

²² The State alternatively argues that, if the trial court erred in admitting Meline’s expert testimony, the error was harmless beyond a reasonable doubt. Because we conclude that there was no error in the admission of Meline’s testimony, we do not reach the State’s harmless error argument.

scientifically calculate the effect of several variables. Other than the error rate, Matthews points to no other *Daubert/Rochkind* factor in support of his contention that Meline's testimony lacked sufficient reliability. To the extent Matthews argues that an unknown degree of uncertainty renders an expert opinion per se inadmissible, he is incorrect.

The reliability factors we listed in *Rochkind* – including “whether a particular scientific technique has a known or potential rate of error” – are neither exhaustive nor mandatory. *See Kumho Tire*, 526 U.S. at 153 (“[W]hether *Daubert*'s specific factors are, or are not, reasonable measures of reliability in a particular case is a matter that the law grants the trial judge broad latitude to determine.”); *Savage v. State*, 455 Md. 138, 178 (Adkins, J., concurring) (explaining that “a trial court is not required to consider any or all of the *Daubert* factors in making its reliability determination”; those factors “were ‘meant to be helpful, not determinative’”) (quoting *Kumho Tire*, 526 U.S. at 151).

Thus, it is not sufficient to point to an unknown degree of uncertainty/error rate that applies to an expert opinion and claim that a trial court is necessarily stripped of discretion to admit that opinion. Rather, as discussed below, the trial court should first consider whether the unknown degree of uncertainty inheres in the expert's methodology or whether the uncertainty applies to the expert's conclusions. If the latter scenario is applicable, the trial court should determine whether the uncertainty in the expert's conclusions is the product of an analytical gap in the expert's analysis and/or whether the uncertainty ultimately renders the opinion unhelpful to the trier of fact.

b. Because Meline's Methodology Was Reliable, the Trial Court Was Not Required to Exclude Her Testimony Due to the Unknown Degree of Uncertainty That Applied to the Height Measurement.

There is no dispute in this case concerning the reliability of Meline's methodology. Matthews does not contend that photogrammetry – and, in particular, reverse projection photogrammetry – is an unreliable technique. Indeed, photogrammetry has been an accepted technique for making measurements in photographs for many years and has been deemed reliable by many courts applying the *Daubert* factors. *See, e.g., Chapman ex. rel. Estate of Chapman v. Bernard's Inc.*, 167 F. Supp. 2d 406, 421 (D. Mass. 2001) (“The application of mathematics to photographs to derive measurements appears reasonable and does not strike this Court as ‘junk science.’”); *Commonwealth v. Caruso*, 4 N.E.3d 1283, 1289 (Mass. App. 2014) (“According to the FBI affidavit, photogrammetry has been in use for over a century[.]”); *Gecker as Trustee for Collins v. Menard, Inc.*, 2019 WL 3778071, at *4 (N.D. Ill. Aug. 12, 2019) (noting that photogrammetry “has a long, recognized history of reliability in the scientific and judicial community,” and collecting cases). Rather than challenging Meline's methodology, Matthews argues that Meline's conclusions were unreliable because she could not account for the effect of several variables on the degree of uncertainty that applied to her height measurement.

Matthews fails to appreciate the distinction between uncertainty inherent in an expert's methodology and uncertainty that applies to an expert's conclusions following the application of a reliable methodology. If an unacceptably high margin of error exists whenever a particular scientific technique is applied or no error rate can ever be determined with respect to that technique, a trial court may well decide to exclude testimony

concerning the application of such a technique. In that situation, the court is concerned about the inherent unreliability of the expert's methodology, i.e., the unacceptably high risk of an inaccurate conclusion being reached in every case where the technique is used. A different situation applies where an expert applies a reliable technique to an adequate supply of data, but in reporting her results, states that she is unable to quantify a specific degree of uncertainty/margin of error. That scenario is generally less problematic than where an expert has applied a technique that is unreliable in every instance in which it is used.

For these reasons, in exercising its gatekeeping function under Rule 5-702, a trial court generally should be most concerned about the reliability of an expert's methodology. Once a trial court is satisfied that an expert has applied a reliable methodology to an adequate supply of data, the court should not exclude the expert's testimony merely because the court is concerned that the expert's particular conclusions may be inaccurate. *See Manpower, Inc. v. Ins. Co. of Pennsylvania*, 732 F.3d 796, 806 (7th Cir. 2013) ("The district court usurps the role of the jury, and therefore abuses its discretion, if it unduly scrutinizes the quality of the expert's data and conclusions rather than the reliability of the methodology the expert employed."); *Ruiz-Troche v. Pepsi Cola of Puerto Rico Bottling Co.*, 161 F.3d 77, 85 (1st Cir. 1998) ("*Daubert* does not require that a party who proffers expert testimony carry the burden of proving to the judge that the expert's assessment of the situation is correct."). Rather, the trial court should only exclude expert testimony if it finds that it amounts to "mere speculation or conjecture." *Rochkind*, 471 Md. at 22 (internal quotation marks and citations omitted).

Matthews's reliance on cases such as *Polymer Dynamics, Inc. v. Bayer Corp.*, 2005 WL 1041197 (E.D. Pa. 2005), therefore, is misplaced. In *Polymer Dynamics*, the federal district court granted the defendant's pretrial motion to exclude one of the plaintiff's experts. *See id.* at *3. The court found that the expert's *methodology* was unreliable for several reasons, including the small sample sizes of the experiments the expert conducted and "an unacceptable margin of error" (25 percent for one experiment and approximately 55 percent for another experiment). *Id.*; *see also Cassidy v. State*, 235 N.J. 482, 498 (2018) (where improper calibration of blood-alcohol testing device resulted in unknown uncertainty of measurements taken by the device, test results produced by that device were inadmissible under *Frye*); *United States v. Cordoba*, 194 F.3d 1053, 1059-60 (9th Cir. 1999) (testimony regarding results of polygraph held to be inadmissible due to unreliability of the technique, as reflected in, among other things, the lack of a known error rate for polygraphs generally).

In this case, unlike *Polymer Dynamics*, *Cassidy*, and *Cordoba*, Meline used a reliable methodology. And the trial court could conclude, based on Meline's testimony, that Meline applied her reliable technique to an adequate supply of data. Thus, the trial court did not necessarily abuse its discretion by failing to exclude Meline's testimony after Meline acknowledged that her reliable methodology did not produce a result for which the overall margin of error could be quantified. However, we emphasize that just because the trial court was not *required* to exclude Meline's testimony when Meline acknowledged an unknown degree of uncertainty, it does not follow that the trial court was *required* to admit it. In such a situation, before admitting expert testimony, a trial court should consider

whether the unknown degree of uncertainty is the result of an analytical gap and, if there is no such analytical gap, the court should determine whether the opinion would assist the jury in understanding the evidence and/or deciding a fact in issue, despite the unknown degree of uncertainty.

c. There Was No Analytical Gap in Meline's Proffered Testimony.

An “analytical gap” typically occurs as a result of “the failure by the expert witness to bridge the gap between his or her opinion and the empirical foundation on which the opinion was derived.” *Savage*, 455 Md. at 163. For example, in *Savage*, a criminal case involving a claim of self-defense, we perceived an analytical gap where the defense expert failed to “connect the dots” between the results of the psychological tests he had administered on the defendant and his opinion that the defendant was more likely to have greater difficulty controlling his reactions under conditions of chaos and stress. *Id.* at 164.

Here, there was no analytical gap in Meline’s proffered testimony. At the motions hearing, Meline explained in detail how she conducted the reverse photogrammetry analysis to arrive at her height estimate of 5’8” and how she calculated the known uncertainty of plus or minus two-thirds of an inch. She then explained that there were other variables that might lead to a significantly higher degree of uncertainty, and that she could not scientifically calculate them.

There was no disconnect between the results of the photogrammetry analysis and Meline’s opinion. The underlying height value was based on the calibrated height chart in the overlay image, and the 0.67 inch margin of error was based on calculations that went essentially unchallenged. To this extent, Meline’s height estimate was the result of

combining “generally accepted methodology” with “generally accepted analysis.” *See Rochkind*, 471 Md. at 17.

The Court of Special Appeals viewed Meline’s acknowledgment that there were other variables she could not quantify that could increase the margin of error as indicative of an analytical gap in her analysis. 249 Md. App. at 543-44. We fail to perceive an analytical gap in the absence of a demonstrable flaw in Meline’s logic. Meline testified at the motions hearing that, based on the reverse projection photogrammetric analysis she conducted, she concluded that the height of the subject in the questioned image was 5’8” plus or minus two-thirds of an inch, but the plus-or-minus value could be greater based on other variables she could not quantify. There was nothing illogical about that explanation. Whether or not Meline’s opinion would assist the jury in understanding the evidence or deciding a fact in issue, despite the unknown degree of uncertainty, is another question that the trial court needed to consider. We now turn to that question.

d. The Trial Court Acted Within Its Discretion in Concluding That Meline’s Opinion Would Assist the Jury to Understand the Evidence or to Determine a Fact in Issue.

The trial court ruled that Meline’s expert testimony was admissible under Maryland Rule 5-702. In so doing, the court necessarily found that the testimony would “assist the trier of fact to understand the evidence or to determine a fact in issue.” Md. Rule 5-702. This was the case despite Meline’s acknowledgment that the known margin of error of two-thirds of an inch could be significantly greater due to certain scientifically unquantifiable variables. The trial court acted within its discretion in making this finding.

First, Meline explained in detail how she conducted her analysis, which allowed the trial court to assess the rigor and care with which Meline approached her work. The trial court could conclude that Meline ensured, among other things, that: (1) the surveillance camera was in the same position as when the questioned image was captured; (2) she stood in the same spot in the front yard of 1291 Scott Town Road where the suspect had stood when the questioned image was captured; (3) she placed the height chart in the same spot where the subject had been standing; (4) the height chart was placed “within the center of gravity of the individual”; (5) she appropriately used software to overlay the image depicting the suspect and the image of the height chart to ensure that the height chart was in the same location, so that the suspect’s height could be measured; and (6) she accurately calculated the known degree of uncertainty.

Second, Meline explained at the motions hearing why, despite the unknown degree of uncertainty attributable to certain variables, she nevertheless was comfortable with her height estimate of 5’8” plus or minus two-thirds of an inch. She stated that “the body position of the individual is the factor that [she was] most concerned about,” which is why she is “so careful when it comes to image selection and trying to ... use an image that depicts the individual from head to toe in as upright of a position as possible.” Notably, the defense expert agreed that the questioned image was a “correctly selected image.” In response to defense counsel’s question, “[W]ould you agree that how someone wears a head covering even if you knew what it was could impact the reported height of an individual?”, Meline stated, “I would, which is why when I report a measurement I report that measurement as a measured distance from the ground to the top of the headwear of the

individual.” Defense counsel also asked, “Can you tell us exactly how you located where the bottom of the foot would be for that individual?” Meline replied, “[W]e indicated where the back of the heel was and then essentially worked from there on the left foot.” Meline further stated that her “ability to stand where the individual was standing tells me what the terrain was in that location,” although she acknowledged that she would not be aware of “minor changes” in the terrain between June and November. The trial court was entitled to credit Meline’s assessment that she had sufficiently addressed the impact of these variables on her height estimate, despite the fact that she could not quantify them.

Third, given Meline’s known height of between 5’9” and a half and 5’10”, and the fact that she ensured that she stood in the same spot and position as the subject in the questioned image, Meline was able to opine that the subject appeared to be slightly shorter than Meline herself. Given that 5’8” plus or minus two-thirds of an inch is, in fact, “slightly shorter” than Meline’s height, the trial court reasonably could conclude that the unevenness of the terrain and the other unquantifiable variables – to the extent Meline could not completely eliminate them from having any impact – had little to no effect on her height estimate.

All of these factors allowed the trial court to reasonably conclude that the height estimate of the subject as 5’8” plus or minus two-thirds of an inch would assist the jury in determining the identity of the person in the questioned image, despite the fact that Meline could not calculate the effect of all variables on the degree of uncertainty. The trial court’s finding that Meline’s testimony would assist the jury in understanding the evidence or deciding a fact in issue was not an endorsement of the accuracy of Meline’s height

measurement. Rather, it was a determination that Meline’s testimony had probative value. The trial court acknowledged Meline’s statement regarding the potential uncertainty of her assessment, and observed that cross-examination by the defense would be the proper vehicle to attack the validity of Meline’s height estimate. We agree. But even if one or more members of this Court would have decided to exclude Meline’s testimony had we been the trial judge, we certainly cannot say that the trial court’s decision to admit the challenged testimony was “well removed from any center mark imagined by the reviewing court and beyond the fringe of what that court deems minimally acceptable.” *Devincentz*, 460 Md. at 550 (citing *North v. North*, 102 Md. App. 1, 14 (1994)).

In this regard, we find the reasoning of the federal court in *Gecker* persuasive. In that case, an expert testified concerning close-range photogrammetry in a personal injury case. *Gecker*, 2019 WL 3778071, at *1. The expert recreated the estimated force of motion when a woman was hit by a shopping cart train in a grocery store parking lot. *Id.* At issue in the case were unquantifiable “error rates” in a fact-specific case. The court stated that:

The fact that Dr. Fisher’s specific application of photogrammetric principles cannot be evaluated in light of potential error rates is not fatal to the admissibility of Dr. Fisher’s testimony. As Dr. Fisher explained during his deposition, error rates in the field of close-range photogrammetry depend on the quality of the available data, which is fact specific to each case.... Nor is he the first expert applying photogrammetry to have cited this limitation. Therefore, if the error rate for photogrammetry depends on the video or photo quality in each case, it is of no surprise that Dr. Fisher is unable to provide specific error rates for the interior and exterior Menards surveillance cameras as they existed in 2014. To the extent Dr. Fisher was able to account for error rates in his analysis of Plaintiff’s specific case, he did so.... This, again, is something that goes to credibility but not threshold admissibility of Dr. Fisher’s opinions.

....

... While the Court is mindful of the fact that reliable methods do not always produce reliable conclusions, *Daubert* only requires courts to scrutinize the former. The latter is a question for the jury. The Court can find an expert opinion reliable if it is based on “good grounds” or methods and procedures of science rather than on subjective belief or unsupported speculation. *Daubert*, 509 U.S. at 590. Because Dr. Fisher’s theory can be tested, the science of close-range photogrammetry has been subject to peer review and is accepted in the relevant scientific community, Dr. Fisher’s methodology and testimony meet the standard for admissibility under *Daubert* and Rule 702.

Gecker, 2019 WL 3778071, at *6-*7. See also *United States v. Williams*, 235 F. App’x 925, 928-29 (3d Cir. 2007) (notwithstanding defendant’s argument that, among other flaws, the government failed to proffer evidence as to reverse projection photogrammetry’s error rate, affirming trial court’s admission of expert testimony concerning height estimate of bank robber); *Aviva Sports, Inc. v. Fingerhut Direct Mktg., Inc.*, 829 F. Supp. 2d 802, 830 (D. Minn. 2011) (denying motion to exclude photogrammetry expert’s testimony; where the expert “thoroughly detailed his methods, including ... his criteria for making measurements ... and reducing errors due to inherent measurement error, poor photograph quality, parallax (or perspective), and age estimates,” court held that movant’s criticisms were “issues concerning the factual basis of [the expert’s] calculations and the errors in his measurements—issues well-suited for vigorous cross-examination and presentation of contrary evidence”) (cleaned up).

Our conclusion respects the trial court’s role as a “gatekeeper,” and does not transform the trial court into an “armed guard.” *Ruiz-Troche*, 161 F.3d at 86. “As long as an expert’s scientific testimony rests upon ‘good grounds, based on what is known,’ it should be tested by the adversary process – competing expert testimony and active cross-

examination – rather than excluded from jurors’ scrutiny for fear that they will not grasp its complexities or satisfactorily weigh its inadequacies.” *Id.* at 85 (quoting *Daubert*, 509 U.S. at 590).

The trial court did not require “the jury to work through the science on its own.” *Matthews*, 249 Md. App. at 544. Indeed, *Matthews*’s counsel ably cross-examined Meline at the trial, and highlighted the uncertainty in Meline’s opinion in her closing argument, contending that Meline’s opinion is “telling you nothing forensically.” In addition, *Matthews* could have called Sanderson in his defense case had he decided to offer the jury a competing expert opinion.

In sum, the trial court did not abuse its broad discretion under Maryland Rule 5-702 in admitting Meline’s testimony.

B. The Trial Court’s Ruling Under Maryland Rule 5-403.

We also conclude that the trial court did not abuse its discretion by declining to exclude Meline’s testimony under Maryland Rule 5-403.

The trial court found that the proffered testimony had probative value and that its probative value was not outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury. In particular, the trial court found that Meline’s proffered testimony

... is clear. It is concise. It is not confusing. It was not particularly confusing to the Court to see it. When you look at the photos, and you look at the overlay, and you look at all the images, it – it’s something that is clear to your eye, and then is explained by an expert, and there are mathematical calculations, but in addition to that, as to the – the second sentence, if you will, of the opinion regarding the potential of uncertainty, that is clear as well,

and it is particularly stated, and it is available to the Defense for cross-examination, and, quite candidly, I find it very easy to understand.

... I do not find it unfairly [prejudicial]. I do not find that it confuses the issues, and nor do I find that it would be misleading to the finder of fact[.]

Matthews argues that the trial court's ruling was an abuse of discretion. According to Matthews, Meline's testimony "had virtually no probative value. Since the suspect's height could not be estimated with any degree of certainty, the evidence did not rule out a suspect who was 5'11." And, Matthews argues, whatever minimal probative value it had was substantially outweighed by the danger of unfair prejudice. In particular, Matthews contends that "[t]he manner in which [Meline's] height estimate was presented—a seemingly precise estimate of height and 'calculable' margin of error—is confusing and misleading. It suggests that the FBI believed the suspect to be within .67 inches of 5'8", when in fact, this 'calculable' margin of error has no practical significance at all and the actual margin of error is unknown."

We disagree with Matthews's assessment. The trial court easily could conclude that Meline's testimony was probative of the issue of the identity of the shooter. Among other things, Meline testified that the subject in the questioned image was slightly shorter than Meline herself, who measures between 5'9" and a half and 5'10". The evidence before the jury was that Matthews was approximately 5'9". Meline's testimony tended to corroborate the testimony of Joseph Tongue and others who said that they saw Matthews with a shotgun around the time of the murders. Her testimony also tended to corroborate the State's witnesses who testified that the subject in the questioned image looked like Matthews.

We also agree with the trial court’s conclusion that the probative value of Meline’s testimony was not substantially outweighed by the danger of unfair prejudice. The trial court explained that it found Meline’s testimony easy to understand. The court acknowledged the “qualifier” that was part of Meline’s testimony, but decided that any flaws in Meline’s conclusions attributable to this qualifier were properly the subject of cross-examination or competing expert testimony. As we said in *Rochkind*, “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.” 471 Md. at 38 (quoting *Daubert*, 509 U.S. at 596) (internal quotation marks omitted). The trial court acted well within its discretion in rejecting Matthews’s argument under Rule 5-403.

IV

Conclusion

For the reasons stated above, we conclude that the trial court did not abuse its discretion in admitting expert testimony concerning the reverse projection photogrammetry analysis that the FBI performed, and the height estimate of the suspect that resulted from that analysis. Accordingly, we reverse the judgment of the Court of Special Appeals and order that Matthews’s convictions be reinstated.

JUDGMENT OF THE COURT OF SPECIAL APPEALS REVERSED; CASE REMANDED TO THE COURT OF SPECIAL APPEALS WITH THE INSTRUCTION TO REINSTATE THE JUDGMENT OF CONVICTION. COSTS IN THE COURT OF SPECIAL APPEALS AND

**THIS COURT TO BE PAID BY
RESPONDENT.**

Circuit Court for Anne Arundel County
Case No. C-02-CR-17-002275
Argued: November 1, 2021

IN THE COURT OF APPEALS

OF MARYLAND

No. 15

September Term, 2021

STATE OF MARYLAND

v.

KIRK MATTHEWS

*Getty, C.J.

*McDonald

Watts

Hotten

Booth

Biran

Wilner, Alan M. (Senior Judge,
Specially Assigned),

JJ.

Dissenting Opinion by Watts, J.

Filed: June 22, 2022

*Getty, C.J., and McDonald, J., now Senior Judges, participated in the hearing and conference of this case while active members of this Court. After being recalled pursuant to Md. Const., Art. IV, § 3A, they also participated in the decision and adoption of this opinion.

Respectfully, I dissent. I would hold that the Court of Special Appeals correctly determined that the Circuit Court for Anne Arundel County abused its discretion in admitting the testimony of Kimberly Meline, the State's expert witness, because there was an analytical gap between the facts and data available to the expert and the opinion that the expert rendered. Based on a technique known as "photogrammetry and reverse projection photogrammetry," the State's expert rendered an opinion as to the height of a person depicted in a video image/frame even though there were a number of variables or pieces of information missing for use in the analysis. At trial, the expert candidly acknowledged that she had no way of knowing the effect that the missing information had on the outcome of her estimate. The Court of Special Appeals held that, based on the record, the circuit court should have precluded the expert from testifying and that the error in allowing the testimony was not harmless. See Matthews v. State, 249 Md. App. 509, 544, 246 A.3d 644, 664. I agree.

First, this case illustrates some of the problems inherent in this Court's decision to apply the holding of Rochkind v. Stevenson, 471 Md. 1, 38, 236 A.3d 630, 651-52 (2020), reconsideration denied (Sept. 25, 2020)—in which the Court adopted the factors discussed in Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 593 (1993) and additional factors contained in the Advisory Committee Notes to Federal Rule of Evidence 702—retroactively. In adopting the Daubert factors and additional ones, this Court emphasized that its holding did not represent a significant change in the law because a drift toward Daubert had been occurring for many years. See Rochkind, 471 Md. at 17, 236 A.3d at 639. In an effort to assuage concerns about the change that adopting Daubert would

create, this Court engaged in a lengthy analysis to show that for the admission of expert testimony, an assessment of the Daubert factors was already partially required under Maryland Rule 5-702 and our case law. See Rochkind, 471 Md. at 26, 236 A.3d at 644-45. There is no question that our case law on admission of expert testimony concerning novel scientific issues under the approach adopted in Reed v. State, 283 Md. 374, 382, 391 A.2d 364 (1978) had evolved since 1978, see Savage v. State, 455 Md. 138, 180–81, 166 A.3d 183, 208-09 (2017) (Adkins, J., concurring), but from my perspective the adoption of the Daubert factors and additional ones constituted a significant change in the standard for admission of expert testimony in Maryland.

The adoption of the Daubert factors and additional ones involves a new evidentiary analysis that garners a different standard of review. Before Rochkind, although appellate courts reviewed application of Maryland Rule 5-702 for abuse of discretion, a circuit court’s analysis under Frye-Reed warranted a *de novo* standard of review. See Rochkind, 471 Md. at 37, 236 A.3d at 651. In Rochkind, this Court changed that and held that “all [expert] testimony is reviewed under an abuse of discretion standard.” Id. at 37, 236 A.3d at 651 (citing Gen. Elec. Co. v. Joiner, 522 U.S. 136, 143 (1997)). The majority opinion states that “after *Rochkind* (as it was before *Rochkind*) it is the rare case in which a Maryland trial court’s exercise of discretion to admit or deny expert testimony will be overturned.” Maj. Op. at 3. So, what can be gleaned from this is that unlike with the Frye-Reed *de novo* standard of review, a trial court’s decision to admit or preclude expert testimony under the Daubert factors and additional ones will rarely be reversed under an abuse of discretion standard. Whether this prediction will prove to be accurate remains to

be seen.

In addition, it seems apparent that even though consideration of issues such as whether an analytical gap existed was already required under Maryland Rule 5-702, the adoption of the five Daubert factors and five additional ones imposed additional standards that must be met or, at a minimum, more factors to be considered before expert testimony may be admitted. Next, it seems fair to consider whether the adoption of the Daubert factors and other additional factors will create similar results in Maryland as their adoption has in other jurisdictions. For example, recent scholarship suggests “the *Daubert* admissibility standard impacts filings exactly like a method of tort reform, but only for claimants of color.” Rochkind, 471 Md. at 58, 236 A.3d at 664 n.4 (Watts, J., dissenting (quoting Andrew W. Jurs & Scott DeVito, *A Tale of Two Dauberts: Discriminatory Effects of Scientific Reliability Screening*, 79 Ohio St. L.J. 1107, 1109-10 (2018))).

After assuring that the adoption of Daubert and other additional factors was not a significant change, the Rochkind opinion made the shift to the Daubert factors and additional ones apply retroactively to any case that was pending at the time of the issuance of the opinion “where the relevant question has been preserved for appellate review.” Rochkind, 471 Md. at 38, 236 A.3d at 652 (quoting Kazadi v. State, 467 Md. 1, 47, 223 A.3d 554, 554 (2020)). In doing so, this Court cited a standard for retroactivity that applies to changes in constitutional rules in criminal cases. In other words, after announcing the evolution from Frye-Reed to Daubert and additional factors, the Court made it retroactive under a standard reserved for changes to constitutional rules in criminal cases. See Rochkind, 471 Md. at 67 n.6, 236 A.3d at 669 n.6 (Watts, J., dissenting) (observing that

Griffith v. Kentucky, 479 U.S. 314, 322 (1987), concerned the retroactive application of constitutional rules in criminal cases).

Now, this Court has before it a case that was tried before the decision in Rochkind. And, after the Court of Special Appeals permitted additional briefing concerning Rochkind, Matthews, 249 Md. App. at 542 n.9, 246 A.3d at 663 n.9, the majority opinion reverses the Court of Special Appeals's determination under Rochkind (which excluded the expert's testimony) to render admissible the testimony of a State's expert witness in the field of "photogrammetry and reverse projection photogrammetry analysis" against a defendant in a criminal case. See Maj. Op. at 47.

In this case, the expert analyzed home surveillance video that depicted an individual (who had been identified as a suspect) and selected a particular image/frame of the video from which to conduct a "reverse photogrammetric analysis" to estimate the individual's height. In other words, the expert rendered an opinion as to the height of an individual depicted in a video using calculations based on an image or frame of the video and other information she gathered. It was undisputed that the image or frame chosen for the analysis was captured at night and could not be enhanced, that the person in the video wore a hat (meaning that the expert could not see the top of the person's head and the expert did not know the measurements of the hat), and that the expert could not see both of individual's feet (meaning that the expert could not know whether the person was standing at full height). In addition, the expert acknowledged that there was uncertainty in "the subject to camera distance, the resolution of the imagery, the unevenness of the landscape, and the body position of the subject[.]"

In my view, the issue of the admissibility of the expert testimony in this case centered squarely on whether there was an analytical gap between the expert's opinion and the data underlying the opinion. With certainty, there was an insufficient factual basis for the expert's opinion and an analytical gap existed between the available facts and the opinion rendered by the expert. The issue of whether there is an analytical gap between an expert's opinion and the data underlying it is a component of the analysis of the admissibility of expert testimony that existed under Maryland Rule 5-702 separate and apart from this Court's adoption of Daubert and other additional factors in Rochkind. See Savage, 455 Md. at 183-84, 166 A.3d at 210 (Adkins J., concurring) (discussing that this Court considered whether there existed an analytical gap under Maryland Rule 5-702). From my perspective, that the analysis of expert opinion under Maryland Rule 5-702 for the existence of an analytical gap predated the adoption of the Daubert factors and additional ones in Rochkind raises an interesting point about this case. Given that this Court's abandonment of Frye-Reed and embrace of Daubert-Rochkind is unnecessary to the analysis of whether an analytical gap involving the expert's opinion existed, any observations about the general applicability of Rochkind would be mostly *dicta*.

It is well-established that not every Daubert factor and other additional factor adopted under Rochkind will apply in every case. See Rochkind, 471 Md. at 37, 236 A.3d at 651. Stated otherwise, it is acknowledged that not all of the Daubert factors fit each case. In this case, the question of admissibility focused on whether an analytical gap existed. The notion that Kirk Matthews, Respondent, has not challenged the State's expert's testimony under any Daubert factor or additional factor apart from the error rate

is simply wrong. See Maj. Op. at 34-35. The question of whether a technique has a known rate of error or whether its results fall within a certain margin of error is far different from the question of whether the technique was performed with a lack of relevant information and therefore the reliability of the results cannot be ascertained, which is the circumstance in this case. Here, the question is not whether the applicable technique has a known rate of error or whether the expert could correctly calculate a rate of error. Rather, the question is whether the expert had access to sufficient information to render a reliable opinion. The answer is plainly no.

On brief before this Court, Matthews specifically contended that “[t]he Court of Special Appeals correctly concluded that there was an ‘analytical gap’ between the data available for reverse photogrammetry in this case and the ‘specific height estimate’ that Meline offered the jury.” Matthews argued:

The analytical gap analysis is nothing more than a reliability test. *City of San Antonio v. Pollock*, 284 S.W.3d 809, 822 (Tex. 2009) (“Analytical gaps can undermine the reliability of an expert’s opinion. The Supreme Court said as much in ... *Joiner*, [] observing that courts ... are free to test reliability by analyzing whether the expert’s opinion fits the facts of the case.”).

The concept of an analytical gap between the facts available and the conclusion offered, as set forth in *Joiner*, 522 U.S. at 146, is captured by Rule 5-702(3)’s requirement that a sufficient factual basis exists to support the expert testimony. “[S]ufficient factual basis’ includes two sub-elements: (1) an adequate supply of data; and (2) a reliable methodology.” *Rochkind*, 471 Md. at 22. *See* § 22:13. *Fit*, 3 *Mod. Sci. Evidence* § 22:13 (2020-2021 Edition) (“The fit concept is now captured in Federal Rule of Evidence 702(b) that requires the testimony to be ‘based on sufficient facts or data.’ Courts increasingly rely on this section rather than the *Joiner* ‘fit’ language to exclude expert evidence.”). As this Court has explained, the concept of an analytical gap simply means that “generally accepted methodology ‘must be coupled with generally accepted analysis’....” *Rochkind*, 471 Md. at 17 (quoting *Blackwell*, 408 Md. at 608). *Joiner*, 522 U.S. at 146[] (“A court

may conclude that there is simply too great an analytical gap between the data and the opinion proffered.”).

The record demonstrates that the State’s expert testified, among other things, that due to several variables the degree of uncertainty with respect to her conclusions could be greater. Specifically, on cross-examination, the following exchange occurred:

[MATTHEWS’S COUNSEL]: Okay, which means ultimately, we don’t know how uncertain this result is?

[MELINE]: I would say that I have some indication based on the overlay of my own, myself in that similar position with the image of the questioned individual and knowing that the questioned individual appeared to be slightly shorter than I, myself, am that I have some indication as to the uncertainty with the method. However, there are factors in here that I cannot calculate.

* * *

[MATTHEWS’S COUNSEL]: [A]s here where the conditions are far from pristine, [the] margin of error is going to become greater it stands to reason, right?

[MELINE]: It does.

When asked by Matthews’s counsel about the statement in her report that “the degree of uncertainty in this measurement could be significantly greater” based on several variables, including “the subject to camera distance, the resolution of the imagery, the unevenness of the landscape, and the body position of the subject,” the expert acknowledged: “I don’t have a scientific way of quantifying how those dimensions had an effect on my measurement and consequently I wanted in an abundance of caution to mention them.”

Insofar as to whether it was an abuse of discretion for the circuit court to admit the expert’s testimony under Maryland Rule 5-702, I would hold that it was because an

analytical gap clearly existed between the facts—known and unknown to the expert—and the conclusions that were drawn by the expert. Under Maryland Rule 5-702, expert testimony is admissible where it “will assist the trier of fact to understand the evidence or to determine a fact at issue.” A “court shall determine (1) whether the witness is qualified as an expert by knowledge, skill, experience, training, or education, (2) the appropriateness of the expert testimony on the particular subject, and (3) whether a sufficient factual basis exists to support the expert testimony[.]” in deciding whether the testimony will be admissible. Md. R. 5-702. The “hallmark” of [an] analytical gap is “the failure by the expert witness to bridge the gap between his or her opinion and the empirical foundation on which the opinion was derived.” Sugarman v. Liles, 460 Md. 396, 425, 190 A.3d 344, 361 (2018) (quoting Savage, 455 Md. at 163, 166 A.3d at 183). In order “[t]o bridge the analytical gap, an expert’s testimony must have a sufficient factual foundation.” Id. at 427, 190 A.3d at 362 (quoting Savage, 455 Md. at 163, 166 A.3d 183).

In Joiner, 522 U.S. at 146, the Supreme Court held that a trial court’s decision to admit “scientific evidence” is reviewed under an abuse of discretion standard of review, and that in a trial court’s discretion, it “may conclude that there is simply too great an analytical gap between the data and the opinion proffered[.]” and refuse to admit the testimony on that basis. In Joiner, a plaintiff offered testimony of experts to support an argument that exposure to a chemical in the workplace “promoted” the development of the plaintiff’s lung cancer. Id. at 139-40. The experts relied upon studies for their conclusions, including animal studies as well as four epidemiological studies. See id. at 146. The trial court refused to admit the expert testimony because the studies relied upon did not support

the conclusions of the experts, *i.e.*, given the lack of support, the proffered opinions failed to transcend “subjective belief or unsupported speculation.” Id. at 140 (citations omitted). The United States Court of Appeals for the Eleventh Circuit reversed, determining that the trial court exceeded its authority in refusing to admit the evidence. See id. at 141.

After clarifying that abuse of discretion was the correct standard of review, the Supreme Court held that the Court of Appeals failed to accord deference to the trial court and that the trial court did not abuse its discretion. See id. at 143. Specifically, it was not an abuse of discretion for the trial court to reject the reliance on animal studies, where the animals in question—infant mice—received “massive” doses of the chemical and Joiner, an adult man, received much less. Id. at 144-45. Likewise, the trial court did not abuse its discretion in rejecting the experts’s reliance on the epidemiological studies because the studies either did not “support” a “conclusion that [the plaintiff’s] exposure to [the chemical] caused his cancer[,]” “did not suggest a link between the increase in lung cancer deaths and the exposure to the [chemical,]” made no mention of the chemical, or in one study, involved “subjects” who “had been exposed to numerous potential carcinogens” beyond the chemical at issue and consequently failed to afford a sufficient factual basis for the asserted conclusions. Id. at 144-46. In rejecting Joiner’s argument that under Daubert a trial court may consider only the principles and methodology as opposed to the conclusions of the expert, the Supreme Court explained that “nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert[,]” and that on the contrary,

“[a] court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” Joiner, 522 U.S. at 146.

In Rochkind v. Stevenson, 454 Md. 277, 295, 164 A.3d 254, 264 (2017), this Court held that a trial court abused its discretion in permitting the plaintiff’s expert testimony under Maryland Rule 5-702 where the court “failed to check for an ‘analytical gap’ between the expert’s data and her conclusion.” In order to testify that exposure to lead paint caused Stevenson’s ADHD, the expert relied on an EPA-ISA paper, which discussed the fact that multiple studies had found a causal relationship between exposure to lead and some symptoms of ADHD, but not ADHD itself. See id. at 288, 164 A.3d at 260. This Court explained that Maryland Rule 5-702(c)’s requirement of a “sufficient factual basis . . . to support the expert testimony[.]” involves assessment of two factors: “adequate supply of data and a reliable methodology.” Id. at 286, 164 A.3d at 259 (quoting Roy v. Dackman, 445 Md. 23, 42–43, 124 A.3d 169 (2015)).

This Court concluded that the expert failed to supply adequate data to support the conclusion that lead exposure caused ADHD where the discussion of the studies in the EPA-ISA paper did not say that lead exposure caused ADHD, but rather indicated that such exposure caused only some symptoms associated with ADHD. Id. at 291-94, 164 A.3d at 262-64. To render an opinion, the expert needed to “jump” from studies showing that lead exposure causes symptoms of ADHD to an opinion that it caused “a clinical ADHD diagnosis[.]” Id. at 291, 164 A.3d at 262. Although “seem[ingly] reasonable,” this Court stated that such a jump was an analytical gap of the sort discussed in Joiner, and that it was an overstatement and impermissible especially given “the added weight a jury might give

to testimony from a designated expert[.]” Rochkind, 454 Md. at 291, 164 A.3d at 262 (citations omitted).

By contrast, in Sugarman, 460 Md. at 427-29, 190 A.3d at 362-63, another lead exposure case, this Court perceived no analytical gap in an expert’s conclusion that lead exposure caused the plaintiff’s defects in auditory encoding and processing speeds based on the EPA-ISA’s discussion of lead exposure’s tendency to cause general attention defects—even though the EPA-ISA did not identify the specific types of attention disorders—because the experts explained that defects in auditory encoding and processing speeds fell within the umbrella of general attention defects.

As in Joiner and the earlier opinion in Rochkind, in this case, I would hold that there was an analytical gap between the expert’s opinion as to the height of the suspect and the data available, where the expert acknowledged that she did not “have a scientific way of quantifying how” missing variables, *i.e.*, unknown information such as the “subject to camera distance, the resolution of the imagery, the unevenness of the landscape, and the body position of the subject,” would have “had an effect on [her] measurement.” The expert testified honestly that the missing information all meant that the margin of error as to her calculations could be much greater than estimated. In other words, the expert essentially testified that she could not assure the reliability of her test results. Similar to one of the studies at issue in Joiner, 522 U.S. at 144-46, which showed increased cancer rates but which did not serve as a sufficient factual predicate for the proposition that a specific chemical caused cancer because the expert failed to account for the numerous other toxins to which the subjects in the study were exposed, in this case, numerous unavailable

pieces of information prevented the State's expert witness from rendering a reliable opinion. As the Court of Special Appeals stated, "the analytical gap between the data available for reverse photogrammetry projections and the conclusion [the expert] offered to the jury remained unbridged." Matthews, 249 Md. App. at 544, 246 A.3d at 664.

In this case, in addition to all of the above, the expert acknowledged that the trainee who assisted her with making the height estimate identified "difficulties" with the photograph chosen for the photogrammetric analysis. Among other things, the trainee noted "issues with not being able to see the suspect's feet clearly[]" and stated that "not a lot of detail could be seen in any of the enhanced images[.]" Significantly, the expert acknowledged that when authorities were considering whether to even go forward with a reverse photogrammetric analysis in the case, her trainee had estimated a margin of error of plus or minus three inches.

As to the relevant terrain, the expert indicated that in the photograph the suspect stood in a grassy area. The expert testified that she visited the scene at the end of November. Thomas Lancaster, a private investigator, testified on behalf of the defense that the terrain was different every time he visited, and "very different" between the winter and summer months because in summer, the ground was less solid overall and because grasses and other vegetation obscured the scene.

On recross-examination, the State's expert testified, in part, about the terrain as follows:

[MATTHEWS'S COUNSEL:] Okay. You spoke about foot placement of the individual and you testified that you aligned your own leg and foot to mimic what you saw in the individual from the questioned image, correct?

[MELINE:] That's correct.

[MATTHEWS'S COUNSEL:] Now that in itself still doesn't tell us anything about the footwear of the individual in the questioned image, correct?

[MELINE:] That's correct.

[MATTHEWS'S COUNSEL:] And it doesn't tell us anything about whether that person may have been standing in some kind of hole or divot or on a hill or something of that nature, correct?

[MELINE:] I would disagree, because in this particular case because I was on scene I was able to see the land on which I was standing. And with the exception of the possibility of changes in the terrain between June and November, I would say that my ability to stand where the individual was standing tells me what the terrain was in that location.

[MATTHEWS'S COUNSEL:] So certainly you were there November 28th, you weren't out there June 1st, correct?

[MELINE:] No, I was not there June 1st.

[MATTHEWS'S COUNSEL:] You weren't out there anytime before November 28th, 2017, nearly six months later, correct?

[MELINE:] That's correct.

[MATTHEWS'S COUNSEL:] Okay. So you wouldn't be aware of what kind of minor changes in terrain there might have been within that time?

[MELINE:] No, ma'am.

Beyond the differences between the terrain's features in summer versus winter, Mr. Lancaster also testified that the property is uneven, with depressions, ditches, and downed trees or branches, that the ground is "marshy in a lot of places especially in the wooded area surrounding" the house, and that the region overall is a peninsula which is "mostly at or below sea level" characterized by swampy, sandy, and marshy conditions.

The suspect's headwear and foot positioning presented other uncertainties that affected the expert's opinion. The expert acknowledged that in the photograph the suspect appeared to be wearing a hat and that given her inability to calculate the impact of the headwear, she provided an estimate of the suspect's height including any headwear. As for the position of the suspect's feet, the expert testified that because in the photograph the left heel was difficult to see, she determined the position of the suspect's heel by visiting the scene and assessing the terrain, which she indicated is a best practice. But the expert visited the scene at a time when the terrain would have been "very different" from when the image in the photograph was captured and the expert acknowledged that "changes in the terrain between June and November" could have undermined her assessment of the terrain and by extension her assessment of the suspect's foot placement.

In contrast to the State's expert, Robert Sanderson an expert in photogrammetry, who testified on behalf of the defense, testified that unknown information created uncertainty in any estimate of the suspect's height. Mr. Sanderson expressed the opinion that it was not possible to provide a height estimate from the image chosen by the State's expert using photogrammetry in light of the unknown information. Mr. Sanderson explained that even with "contrast adjustment and sharpening" applied to the image, he could "not really see[] the detail [he would] need to see" with respect to "[f]oot placement, footwear, headwear[,] or "terrain." Mr. Sanderson testified that these were "core" variables, and the State's expert acknowledged that they were "unknowns[.]" In addition, Mr. Sanderson identified the issue of whether the camera had moved after the video had been taken as an additional variable because "[c]ertain movements of the camera . . . can

affect the end result[,]” and he questioned the State’s expert’s method of compensating for the movement. At bottom, Mr. Sanderson’s testimony did not result in conflicting expert opinion (a circumstance often encountered at trials with expert testimony), but rather his testimony was that of another expert in the field of photogrammetric analysis essentially identifying the existence of an analytical gap between the available facts and the ability to render a reliable opinion.

Although the State’s expert testified extensively as to her qualifications in the area of photogrammetry and regarding her methodology in conducting an analysis of the photograph at issue, this does not change the underlying requirement of Maryland Rule 5-702(c) that a sufficient factual basis support the expert’s opinion. Maryland Rule 5-702 does not require perfection. In this case, though, the expert recognized the significance of unknown information on the reliability of her opinion when she testified that there was no “scientific way of quantifying” how the missing information would have affected her work.¹

The overarching inquiry in admission of expert testimony is a determination that it is reliable. See Daubert, 509 U.S. at 589 (“[U]nder the Rules [of Evidence] the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable.”). As the Supreme Court recognized in Daubert, the trial court is in essence the “gatekeep[er]” of reliability and this function will “inevitably on occasion . . . prevent

¹In light of the expert’s acknowledgment that she did not have a scientific way of quantifying how the missing information affected her measurement, any probative value with respect to the expert’s opinion was substantially outweighed by the danger of unfair prejudice. See Md. R. 5-403.

the jury from learning of authentic insights and innovations.” Id. at 597.

It will not be the case that an analytical gap will exist in every instance in which an expert cannot account for unknown facts. But in this case unknown information, such as the condition of the terrain on which the person stood, the distance of the person from the camera, and the positioning of person’s body, and the poor quality of the photograph at issue, created an analytical gap that the expert herself recognized when she acknowledged that she had no way of calculating the effect that the missing information had on the outcome of her measurements. Although the expert indicated that she felt comfortable with her analysis, the missing variables concerned core information that an expert performing a reverse projection photogrammetric analysis would have needed to render a reliable opinion. There can be no reasonable quarrel with the Court of Special Appeals’s determination in this case that it was an abuse of discretion to admit expert testimony where the expert essentially acknowledged that she could not say that her opinion was reliable.²

²This is not a case of harmless error. To hold that the admission of the State’s expert’s testimony was harmless, a determination must be made “beyond a reasonable doubt, that the error in no way influenced the verdict[.]” Dionas v. State, 436 Md. 97, 108, 80 A.3d 1058, 1065 (2013) (quoting Dorsey v. State, 276 Md. 638, 359 A.2d 665, 678 (1976)). No such determination could be reached here. Although the State argues that witnesses testified to seeing Matthews approach the victims with a gun, that does not get around the fact that the State’s expert testimony was the only scientific evidence implicating Matthews, the State’s lay witnesses were beset with credibility problems, none of the State’s witnesses purported to have witnessed the shooting, and Bragg’s testimony was “important” to the defense because “Matthews is African American, whereas Bragg described seeing a white man with blonde hair carry and ‘cock’ a shotgun in front of her house[.]” Maj. Op. at 22. Indeed, the Court of Special Appeals described the circumstances of the case as follows:

For the above reasons, respectfully, I dissent.

The story of this case is complicated and hard to follow. A great many people were involved; many of them are related, others have lived in the affected neighborhood for years. Everything happened late at night, and the participants' vision and memories were incomplete and frequently clouded by substances. There was some video footage, but it too was incomplete. The challenge for everyone lay in piecing together fragments of evidence that took many different forms.

Matthews, 249 Md. App. at 516, 246 A.3d at 648.

STATE OF MARYLAND

v.

KIRK MATTHEWS

*** IN THE**
*** COURT OF APPEALS**
*** OF MARYLAND**
*** COA-REG-0015-2021**
*** No. 15**
*** September Term, 2021**

ORDER

Upon consideration of the Motion for Corrected Mandate as to Costs filed on October 28, 2022, by Petitioner, State of Maryland, and no opposition having been filed by Respondent, Kirk Matthews, it is this 21st day of November, 2022,

ORDERED, by the Court of Appeals of Maryland that the Motion for Corrected Mandate as to Costs filed by Petitioner, State of Maryland, on October 28, 2022, is **GRANTED**; and it is further

ORDERED, that the final sentence of the Mandate set forth at the conclusion of the Majority Opinion in the above-captioned case is modified to read as follows: “**COSTS IN THE COURT OF SPECIAL APPEALS AND THIS COURT TO BE PAID BY RESPONDENT.**”

/s/ Shirley M. Watts
Senior Judge

*Judge Wilner, Judge Getty, and Judge McDonald participated in the consideration of this matter.

**Chief Judge Fader, Judge Gould, and Judge Eaves did not participate in the consideration of this matter.