

Under The Blood Moon: A Forensic Investigation of a St. Louis Police Killing

By Alison Flowers

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Months after publishing "The Fatal Tunnel," I received a tip from an unlikely source: my five-year-old son.

He was talking about the phases of the moon. Like many kids his age, he is obsessed with all things lunar. Like many parents, my mind was elsewhere.

"It's a waning crescent!" he declared one day, to which I replied "uh-huh."

"It's a waxing gibbous!" he declared another day, to which I replied "mm-hmm."

Then, it came to me.

I wondered how bright the moon was on December 12, 2019, in St. Louis. That was the night a decorated police officer fired eight shots, striking 24-year-old Cortez Bufford at least five times, after chasing him down in a pitch-black gangway between two homes — the fatal tunnel.

"Watch, when we get to the mouth of the alley, he's going to be running," Bufford's killer, Officer Lucas Roethlisberger, told his partner before exiting their police-issue Chevy Tahoe, according to Officer Martinous Walls' interview with investigators. Roethlisberger confronted Bufford outside of a BP in south St. Louis' Carondelet neighborhood because it looked like he was urinating beside the gas station, the officers said.

His prediction was right. Bufford ran. But if Bufford, who had been tased and beaten by St. Louis police five years prior, ran because he was scared of another violent encounter, his prediction was right, too. Video footage

outside the BP shows Roethlisberger almost immediately pulling his gun. As Bufford fled, he and the Tahoe collided. Bufford fell to the ground, got back to his feet and kept running northwest on Bates Street into the neighborhood. He veered into a yard and tried to clear a fence in one gangway but couldn't. He scuffled with the officer, scratching him, and then he ran across the street. The officer followed. Bufford's life ended in the black hole of the gangway.

"How was your vision in that?" an investigator later asked Roethlisberger.

"I could see," he answered, about a month after the shooting. What the officer could see, he asserted, was Bufford pulling a gun from his crossbody bag and pointing it at him, causing him to fear for his life.

Under the Fourth Amendment, this "reasonable fear" can give law-enforcement officers license to kill, the courts have ruled again and again.

This would be dispositive of the Bufford case, unless there was a way to rebut Roethlisberger's account. Yet no one else reportedly saw what happened. And the only other person who was present — Bufford — is dead.

But what if an officer creates the situation that puts him in fear of his life? Could he really have seen what he said he saw? What were the visibility conditions? Is there any way to *know*?

New Ways of Knowing

An emerging mode of investigative reporting, "forensic journalism" has been taught outside of the United States for years. In Cyprus, it is offered as a "New Media" module at Eastern Mediterranean University. In India, trained forensic journalists, under the presupposition of being neutral and

fact-based, can provide evidence directly to law enforcement and the courts.

A pioneer in this space is British citizen journalist Eliot Higgins and his Bellingcat website, which has probed the Malaysian Airlines flight disappearance and Russia's involvement in the conflict in Eastern Ukraine. Likewise, in the United States, journalists are increasingly using forensic methods to *challenge* official narratives. Newsrooms are adding forensics teams to their mix. *The New York Times*, for example, calls its unit the "Visual Investigations team." In 2019, Nieman Lab, a journalism think tank at Harvard University, predicted that video forensic reporting would become critical "in an era where impunity is an increasing norm, and human rights seem to be falling out of favor."

Pushing the frontiers of this evolving field, my colleague at the investigative journalism organization the Invisible Institute Jamie Kalven — who first uncovered the truth behind the case of Laquan McDonald, the Chicago teen whom now-convicted Officer Jason Van Dyke shot sixteen times in 2014 — and the UK-based human rights organization Forensic Architecture presented a yearlong investigation at the 2019 Chicago Architecture Biennial. Using new forensic techniques and on-the-ground reporting, they reconstructed the police shooting death of Harith Augustus, a local barber, in Chicago's South Shore neighborhood. Their investigation contested the police account that the shooting was justified and examined the aggressive policing that produced Augustus' death. In so doing, they extended the reach of human rights reporting and expanded what is knowable.

It was in that spirit, after publishing a nearly 8,000-word story about Bufford's death last May, that I knew there was more to know. There always is. And it weighed on me that the public might never find out what really happened, as attention on Bufford's case fizzles and a backlog of others collect dust at the St. Louis Circuit Attorney's Office — in the U.S. city with the highest rate of police killings in the country.

So, with the pro bono help and guidance of a forensic expert, I followed up on the story and undertook to test the official narrative of the incident.

Before We Begin

The credibility of Roethlisberger's account of killing Bufford is already poor. (Roethlisberger's attorney Jonathan Bruntrager declined on the officer's behalf to comment on this story, citing the police department policy to "not speak on the record about such matters.")

Roethlisberger originally said he thought Bufford had fired at him first, but Bufford did not fire at all.

He originally said he shot Bufford from the mouth of the gangway, but bullet casings, which tend to fly to the right and behind the shooter at a 45-degree angle, indicate he was well into the middle of the gangway, moving either forward or backward as he was shooting.

Roethlisberger's story is bolstered by the account his partner gave investigators. Their narratives lined up almost identically. There was, however, one notable difference.

When Walls stepped into the gangway that night and found Roethlisberger and the slain Bufford, he said, he "could not see."

"It was very dark," Walls said. In fact, Walls had to use a flashlight.

Police records indicate the shooting happened around 9:22 p.m. Walls did not enter the gangway until several critical minutes after the shooting — as 9:24 p.m. turned to 9:25 p.m. This new understanding of the timeline can be established by a time-stamped iPhone video that a resident, who did not wish to be identified, provided to the Invisible Institute. The video did not capture the shooting, but rather its aftermath.

By the time Walls made it to the gangway and rolled Bufford over, he and other officers said they saw a Glock 34 underneath his stomach.

Nagging Questions

Jeremy Bauer, a biomechanics and shooting reconstruction expert in Seattle, has testified in cases on both sides — for police departments, as well as the families of those killed by police. He reviewed photographs, the autopsy report and other records in the Bufford case at my request.

"The officer's got options for cover before committing to running into an unlit gangway," Bauer observed from photos of the scene. The options were the two houses on either side.

When he saw another shot of the gangway, littered with shell casings, he pointed out that the officer was "well in there."

Over several conversations, I put to Bauer my nagging questions about the case. The largest looming inquiry was that of visibility in the gangway, but the more I pored over the investigative file, other messy details came to the surface.

One of them was Bufford's reported collision into the front passenger panel of the police SUV, which happened early in the foot chase. It was an important piece of the narrative to examine because this is where Walls, who was driving the Tahoe, and Roethlisberger, who was on foot, said they observed the extended magazine of Bufford's pistol protruding from his bag when he fell to the ground — establishing "reasonable fear" well before they entered the dark gangway.

It is noteworthy that Walls and Roethlisberger were first interviewed about a month after the shooting and were aligned on this memory. Yet, another nearby officer who witnessed the collision and was interviewed the same

night as the shooting did not tell investigators he saw any gun when Bufford was "knocked" to the ground, got back on his feet and ran away.

I found a Tahoe in Chicago to take some measurements, and I discovered that Bufford would have had to have been hit and tossed about 15.5 to 17.5 feet away from the vehicle for the driver of the Tahoe to be able to see his gun in his bag.

With a Tahoe, you "don't necessarily go on top" — you'd likely be projected in the direction the vehicle was moving. "A 15 foot projection equates to an impact of between 15 and 18 miles per hour," Bauer said.

Stranger still, Walls and Roethlisberger said that Bufford ran into the Tahoe, not the other way around. In that scenario, Bufford would not have been projected at all, according to Bauer. He would have fallen more directly to the ground, further limiting Walls' ability to see Bufford's bag and the alleged gun magazine.

If Walls did not see Bufford's gun magazine, the police radio indicates one of the officers thought, or at least said aloud, that Bufford had a gun.

"North, north, north! He's got a gun ... Bates, he's running north, he's got a handgun," an officer's voice calls out over the radio.

Roethlisberger later told investigators he thought Bufford was carrying because of the type of "man bag" across his chest and that it looked heavy.

But is the *belief* that someone has a gun — which Bufford, in any case, would have been legally carrying — enough to establish an officer's reasonable fear for his life?

Another detail that bothered me was a drink bottle that appeared in police photographs at the scene. The supplemental report noted, "By the fence, the Detectives observed an unopened sports drink."

It was the type of drink Bufford's family knew him to buy, and he had purchased a drink at the BP gas station just before the confrontation and chase. It was hard to believe that Bufford could have run with the bottle without dropping it, throughout the encounter, including the collision with the police Tahoe. Or to understand how he would have the time or presence of mind to place the bottle neatly upright by the fence before allegedly pulling out a gun. It seems more likely that the bottle was in his pocket or his bag — and someone else took it out after the fact.

But a closer analysis of Bufford's black Lacoste crossbody bag raises doubt about whether he could have been carrying the gun that was allegedly found beneath him at all. The Lacoste bag was fairly small and slim. The police did not return it to the family, so we were not able to take measurements, but Bufford's mother, Tammy, estimated the bag was 8 inches tall by 5 inches wide. A similar style of the same brand bag measures 8 inches by 5.5 inches. But by either estimation, the gun — a Glock 34, which according to the manufacturer is 8.82 inches by 5.47 inches — would have either been too wide or too tall for such a bag. So why would Bufford walk around with a bag that's too small for his gun?

A police lab report of the gun was negative for fingerprints. It is clear from photographs of the scene that the gun changed locations. In one photo, the bloody gun is on the ground, partially obscured by leaves. In another, it's flipped over and placed inside what looks like a box. Bauer has found there is little to no consistency in how scenes are documented in instances of officer-involved shootings.

This is one of the problems in handling the gun, or any evidence, in the field," Bauer said. "What if there *were* prints on the gun? They can smear the prints and alter other evidence by handling evidence in the field. In fact, they could even be destroying evidence that could have helped them."

Meanwhile, the clip of the gun appears to have blood on it in police photographs, calling into question how it could become bloody if it was

inside the gun. And if it wasn't in the Glock, why would Bufford reach for a pistol that had no clip in it?

Bauer also reviewed the medical examiner's report for any takeaways about Bufford's position when the bullets hit his body. Of the eight shots fired, five, possibly six (a graze) of them hit Bufford's body, front and back, from his left fingertip to the right thigh and upper back. Three shots to his face and head, one in each cheek, and the fatal shot to the upper left forehead.

While it is very hard to assign an order to the shots, Bauer noted that it appears Bufford was likely "turned away from" the officer initially. Based on the description of wounds and their paths, the right side of Bufford's right thigh and his upper back were facing the barrel of the gun. "His back is to the officer," Bauer said.

It also appeared to Bauer that Bufford was fairly upright when he was hit with the first two shots, then "the head and face shots were the later shots." They appear more downward, indicating Bufford, already shot, may have been turning toward the officer when he was shot again in the right cheek, left forehead and left cheek.

"He's standing up, hit on the right, pivots to the right and puts his head down, potentially guarding, like in a hail storm," Bauer described while studying the report.

Back in the Gangway

I had made a follow-up reporting trip to St. Louis the week before speaking with Bauer. In Carondelet, I found two earwitnesses I hadn't spoken to

during my reporting for the first story, obtained a resident's video and tracked down the original owner of the gun allegedly found beneath Bufford. (The gun owner told me that particular pistol, purchased from Mike's Guns in St. Charles, Missouri, had been stolen from his home some years back; public records show he reported a Glock 34 stolen from his car in 2018. This ran counter to what force investigators had noted in their report, that "a computer inquiry on the Glock pistol revealed no theft.")

But the thrust of the trip was to examine the gangway at night with my own eyes. The experiment was thwarted by a light from a neighbor's basement window that illuminated the grassy path of the gangway, altering the conditions from the night of the shooting. The resident did not answer his door — I knocked a lot — and the basement light stayed on that night until I gave up. I drove back to Chicago the next morning.

That's when the moon entered my thinking. I decided to go back to St. Louis when the moon would be similar in size and illumination as the night of the shooting. I planned to reconstruct the conditions of the night Bufford was killed, as best I could. Along with matching the moonlight, I would use forensic tools to measure the brightness and contrast of the gangway to calculate visibility probability. I had even arranged for a stand-in to take the place of Bufford.

According to the website mooncalc.org, on December 12, 2019, the moon was almost as bright as it could be, a 99 percent full moon. When I would return on November 18, 2021, the moon would be even brighter, at 99.9 percent brightness.

This would not be the only variable to control, Bauer told me. The moon's overall position in the night sky — its altitude and azimuth (the angle of a sphere) would also be important factors to determine visibility. And it turns out, the moon's position that night, approximately 44 degrees altitude and 95 degrees azimuth, was not directly in line with the gangway.

"It wouldn't have had any direct illumination," Bauer said. Had the moon been up high and to the left the night of the shooting, it could have shone on the pale-colored farmhouse next door and provided some bounce, but Bauer added "we know the moon was not there."

There were no independent light sources in the space. Beyond the gangway, police photographs show the neighbor's porch light was illuminated the night of the shooting, but that would have only made it harder to see what was happening in the narrow space between the houses.

"The porch light in the officer's eyes would have made his eyes momentarily less sensitive to the darkness of the gangway," Bauer said. "His eyes would have needed time to adjust to the low light levels in the gangway after being exposed to the relatively bright porch light."

But even when it's really dark, you can sometimes make out objects and people because of the contrast with the background, Bauer reminded me. This is why I needed to reconstruct the scene and judge with my own eyes, as well as secure a set of special tools to measure luminance and illuminance.

To measure brightness, I rented a lux meter, specifically a SEKONIC C700U SpectroMaster, from a camera gear shop in Chicago. Online, I also rented "one of the best hand meters on the market," a certified calibrated Konica Minolta LS-110 Luminance meter, to gauge the contrast between a stand-in's body, who would be wearing similar clothing to Bufford's that night, and the wooden fence behind her. I would also need to test the stand-in's "gun." To be clear, I did not use an actual gun in this experiment. For my purposes, I instead selected an all-black can opener of similar size and thickness to a Glock, to sample against the fence. By measuring the contrast of the object (the body and the gun) against the background (the fence or the jacket or the T-shirt), it validates how strong the silhouette is, according to Bauer, to determine "threshold of detectability."

Above all, the neighbor's basement light would need to be turned off or fully covered. I purchased a 75-square-foot roll of heavy-duty, extra-wide aluminum foil and tape. With some training and these tips, I headed back to the gangway.

The Blood Moon

As chance would have it, the longest lunar eclipse of this century was to take place hours after my scheduled reconstruction. In the early morning hours, the full moon would travel through the edge of the Earth's shadow. Because of its reddish hue, it's called a blood moon, and although it had no bearing on the experiment, the realization was chilling as I prepared to hit the road.

My son wanted to know what I was up to. I explained that I was trying to find out what happened to somebody's son who died.

"What happens when we die?" he asked. He knew what my answer would be.

"The body dies," I told him, as I have before. "But the soul lives on."

"What's a soul?"

"It's a mystery."

That's what I say when I don't know something, so I find myself saying it a lot when my son asks questions.

"Does the soul turn into something else when the body dies?"

"Maybe..." I said. "It's a mystery."

In the Dark

The stand-in wore a gold Missouri Tigers T-shirt, black sweatpants and a black puffer jacket. Underneath the jacket, we placed a black cross-body bag. A notable difference between the stand-in and Bufford was skin tone. The stand-in was fair-skinned and white, while Bufford was Black with a medium skin tone. In the dark, it would be easier to see the stand-in's exposed head and hand than Bufford's. If I couldn't see a white person in the dark, I definitely wouldn't be able to see a Black person.

When we arrived around 7:45 p.m. (to be in range of the matching moon azimuth), the neighbor's basement light was on, again. I knocked on his door, again, and this time the homeowner answered. After identifying myself as an investigative journalist, and a little back and forth about what I was doing, he obliged and turned off the inside lights, leaving his porch light on. Check.

I had purchased a neon yellow safety vest and an orange traffic cone at a hardware store earlier in the day. But Bauer suggested I not wear the vest, to avoid bounce from any light that might alter the readings. So I placed both items on the sidewalk, as a signal to passersby that we were doing something with permission and intention. (At some point during the reconstruction, one such passerby casually took the safety vest. We did not intervene.)

I started with the lux meter. I took several readings over about ten minutes, clocking the same result each time: "UNDER." This meant the conditions were too dark to measure.

I moved on to the luminance photometer. For more than half an hour, and with Bauer on speakerphone at times, I measured the stand-in's different stances — front-facing, right side-facing, left side-facing, back-facing — in candelas per square meters. At the same time, I measured contrasting objects and backgrounds, in more than a dozen different scenarios, such as the ratio of the stand-in's (again, white) forehead to the fence or the ratio of the stand-in's gun (again, it was a can opener) to the fence or the jacket. Using a simple calculation (contrast = greater value minus lesser

value/greater value) and plugging it into a chart, I was able to determine the probability of detecting contrast.

The results: When the stand-in was facing me, the probability of detecting contrast of the "gun" object against the fence or against the clothing varied. As the moon's position in the sky changed and as the minutes passed, my readings went from zero percent to 30 percent to nearly 100 percent. When the stand-in's right side was facing me, the results were also mixed. But when the stand-in's left-side or back was facing me, there was zero percent probability of contrast detection.

In other words, detecting contrast between dark objects in the gangway was spotty at best and sometimes nonexistent. Meanwhile, discerning what the objects actually were — being able to tell that the object is a person or a gun, rather than a dark blob — was a matter for human eyes.

The Great Human Test

My vision is 20/20, according to a recent checkup.

At 8:49 p.m., recording my observations in a voice memo, I approached the gangway. The stand-in stood at the other end by the fence. In the solemnity of this experiment, I closed my eyes and pictured Bufford in the darkness. In my mind, he was alive and afraid. My mind wandered over to my own son, and I opened my eyes, so I wouldn't have to see.

"OK, here I go. Alright. The [porch] light is in my eyes. I am at the mouth of the gangway. I cannot see a person."

I walked further in, about a quarter of the way. "I can sort of see a person."

I kept walking to the halfway point.

I can see her hand move. She's white, and so I can see her white hand. She's wearing a black jacket. I can tell that there's a strap across her chest, but I can't see the bag."

I saw the whiteness of her hand against the black bag. "I can't see if she has anything in her hand," I told Bauer, who was on speakerphone.

"Do you?" I asked her.

"I do," she said. She was holding the can opener.

"Oh my gosh, OK. I cannot make out anything in your hand. I wouldn't know that you're holding an object."

Still standing halfway into the gangway, about a minute had passed since I entered it.

"I mean, I can see *you*. I just can't see anything in your hand other than your white hand."

Walking another quarter into the gangway, I said: "I still can't see this object."

I stopped three-quarters of the way through the gangway. This was deeper than Roethlisberger went. My eyes had been adjusting for more than two minutes. This was far longer than the seconds the officer had before firing. But at this stance, for the first time, I could detect that the stand-in was holding a black object of some kind.

"OK, I think that's all." After more than an hour of tests, we packed up.

There's always the great human test, I reminded myself, and it's pretty agreeable with the numbers. I could not see what Roethlisberger said he saw. I could not see a person at the mouth of the gangway, where he said he

was standing when he fired shots. Given the placement of the shell casings in the gangway, it is clear that Roethlisberger actually was about halfway into the gangway — but when I stood in roughly the same spot, I could only discern that there was a person, not that they were retrieving or holding any object.

At the Buffords'

Before leaving town, I stopped by the Bufford family home. It was only about four minutes in the car from where their son was shot. I realized the Buffords must drive by that gangway all the time.

Tammy Bufford, Cortez's mother, greeted me at her front door.

Other than finding a lawyer, there were no updates in the case, she told me. Not since the initial flurry surrounding the publication of "The Fatal Tunnel" in May 2021 in the *Intercept* and the *Riverfront Times* and a follow-up segment on St. Louis Public Radio. Four days after the story came out, Circuit Attorney Kim Gardner's office provided a statement to the NPR affiliate's midday show, *St. Louis on the Air*, seemingly announcing that they were seeking funding to investigate police-shooting cases like Bufford's.

"To this end, we have requested additional budgetary resources from the board of alderman and the Mayor to carry out these complex and difficult investigations required in such shootings as well as services for families involved in these tragic events," the statement read.

Later in the summer, Gardner reached out to the Buffords to meet them. According to the Bufford family, she connected them to other families affected by police killings. She also told them she would be assigning an investigator to look into what happened, beyond what the police put on paper, Tammy Bufford said. Gardner explained that she only has one investigator for these cases, but that she wants to create a unit dedicated to

them, Bufford said. (In "The Fatal Tunnel," we reported that St. Louis has more than twenty unsolved police shooting cases, where authorities have not made a determination about whether the shooting was "justified.")

But after meeting with the investigator once, the Buffords have not heard anything more from Gardner's office. After several calls and emails, a spokesperson did not provide any comment beyond an acknowledgement of our inquiry, in advance of this story.

"Her office is in shambles," Tammy Bufford said, describing how the circuit attorney's office lost — or couldn't find — a doorbell camera video one resident turned over.

Inside the Bufford home, we headed towards Tammy's desktop computer in the front family room where she opened up some files to show me.

She pointed out the blood on the clip of the gun. Next, she played the neighbor's 911 call off her computer speakers. I leaned in to listen. The time of the call was 9:25 p.m.

DISPATCHER: *St. Louis City Police, Erica.*

RESIDENT 1: *Yeah, I live at 533 Bates. There was somebody between my house and the next house firing shots. I mean, right outside my wall. I live in a frame house.*

DISPATCHER: *And how many shots did you hear?*

RESIDENT 1: *One, two. [pause] One, two, three. Five shots.*

RESIDENT 2: *[in the background] At least.*

DISPATCHER: *OK. All right. Well, I'll get an officer out there.*

RESIDENT 1: *All right.*

DISPATCHER: *Thank you.*

RESIDENT 1: *Thank you. Bye-bye.*

When Tammy Bufford played the call again, she pointed out the "at least" comment from the speaker in the background. I had missed it the first time.

What also struck me was the two clusters of shots the resident described: First there were two — "one, two" — then there were three more that he heard — "one, two, three." This lined up with Bauer's assessment of the "first two shots" and the later "face shots."

But what was most telling was the resident seemed to have no indication that the "someone" who was shooting was a police officer. He reported hearing nothing else to the dispatcher. Not "drop your gun" or "drop your weapon," as the neighbor on the other side of the gangway said.

When I asked another, very close earwitness (who was never interviewed by police and did not want to be identified in this story) if they heard the officer say anything of the kind, at any point, they said: "No, that was never said."

Tammy Bufford took me up to Cortez's bedroom on the second floor of the house. She apologized for the mess. The grandkids like to play in there, she explained. Hanging on his bedroom door were some of his clothes, left undisturbed two years later.

Back Home

When I returned to Chicago, I walked from the garage to our back kitchen door. My son was standing there, on the other side of the glass, waiting for me.

"Did the boy turn into something else?" he asked.

I must have looked puzzled.

"The boy who died. Did the boy's soul turn into something else?"

"It's a mystery."

I hugged him. "Maybe," I said, "he turned into the moon." 0x006E

Sam Stecklow contributed to the reporting for this story.

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