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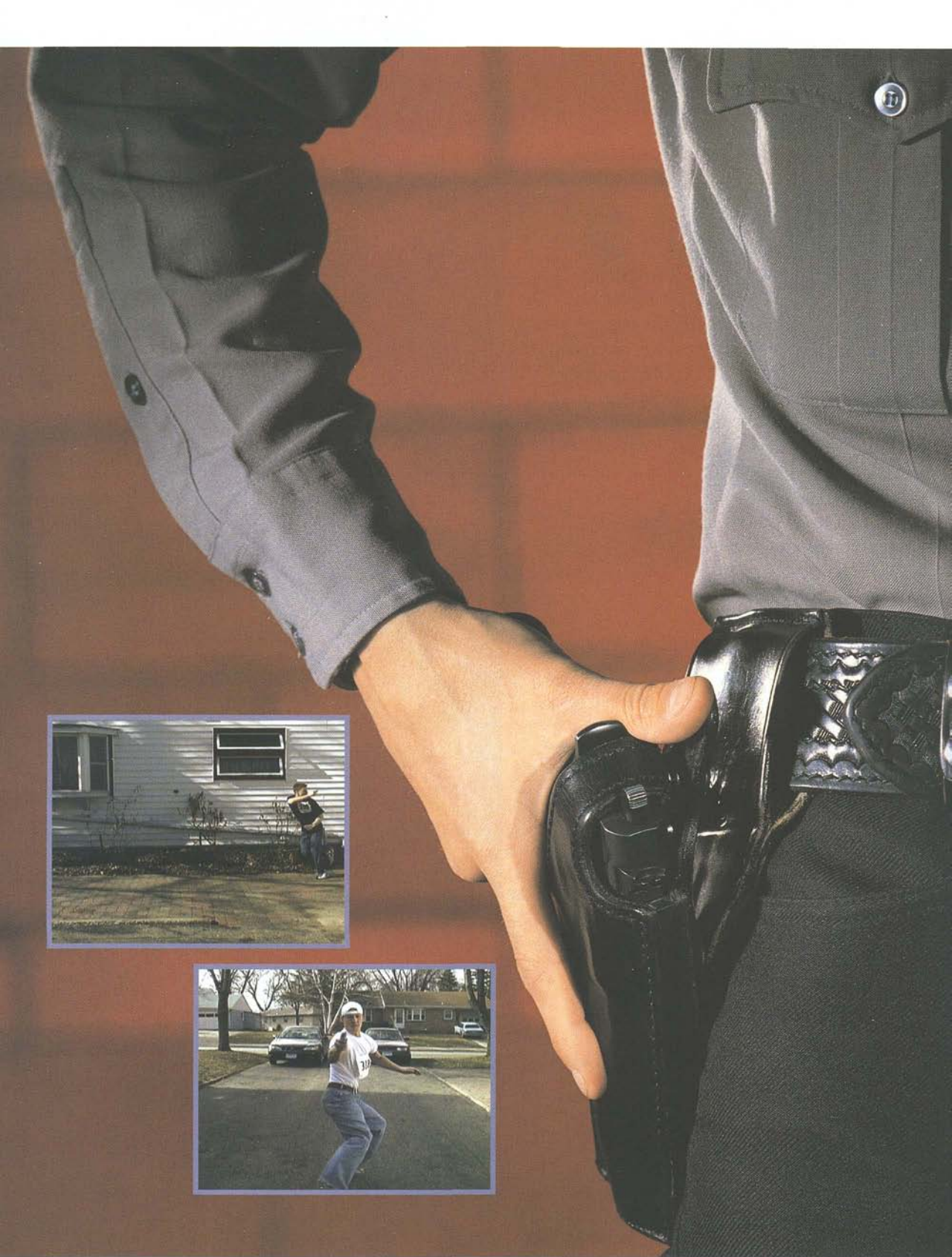
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New Force Science™ Center Unravels Vital Mysteries of

Extreme Encounters

BY CHARLES REMSBERG



BILL LEWINSKI

FOR MORE THAN A DECADE, ASLET MEMBER DR. BILL LEWINSKI, A SPECIALIST in police psychology and an authority on the emotional impact of critical incidents, has been scientifically researching the physical dynamics of life-threatening force encounters. With thousands of hours of his own time and thousands of dollars from his own pocket, he has for the first time meticulously documented critical subtleties of armed threats and officer responses, timed to hundredths of a second.



Some of his findings, not yet widely known or fully understood in law enforcement, provide surprising new insights into controversial shooting situations and have already proved pivotal in saving officers' careers in court. His groundbreaking work addresses some of training's most complex and provocative questions:

- ◆ Are shots to a suspect's back *really* evidence of a "police execution?"
- ◆ Is it *really* realistic to expect an officer to stop firing as soon as a threat is neutralized?
- ◆ Does seeing a suspect's hands *really* give an officer an edge in a vehicle stop?
- ◆ Do some commonly improvised tactics used by officers trying to improve their reaction time *really* work?

To pursue these issues in greater depth, and to investigate other challenging and vital mysteries regarding extreme encounters and officer performance, Lewinski founded the non-profit Force Science™ Research Center at Minnesota State University-Mankato. Officially launched in June 2004, the FSRC is dedicated to revealing the hidden truths about human dynamics so officers can be better trained, make better decisions and, ultimately, keep themselves and their communities safer.

In this exclusive interview with *The Trainer*, Lewinski explains the significance of his pioneering research and the role he expects the FSRC to play in reshaping law enforcement training.

Q. Is it a stretch to say that the work of the Force Science™ Research Center could revolutionize law enforcement training?

Answer: Not a stretch at all, especially in regard to training for armed encounters. We hope also to revolutionize attitudes held by people who judge police officers' behavior.

Right now much of the public, the media, even some people in law enforcement, unfortunately, have romanticized notions of what officers can actually do in life-threatening situations. They exaggerate an officer's true capabilities for perceiving danger and defending himself. Our research is proving that unrealistic, mistaken concepts often hold officers to standards they can't possibly meet, even with superior training.

We're defining the limits of human performance and the parameters of danger—exactly how threats play out biomechanically, just how far behind the reactionary curve

officers really are when it comes to threat response. When this information is translated into new training, the social, moral and professional impact will be profound.

Q. Why did you start researching lethal encounters?

Answer: Over the years I've conferred with probably 900 officers who've been involved in deadly force situations, mostly shootings. I saw their pain because a lot of them couldn't really interpret what happened. Often their pain was compounded when they were accused of wrongdoing, and then judged by others who also didn't understand confrontational dynamics. I knew there had to be answers out there that could be identified by the scientific method.

Smith & Wesson had done a benchmark study that showed how long it takes the average officer to draw and fire from a Level 1 holster, reacting to a shot timer. But no one had researched *suspect* movement. That's where I started in the late 1980s, using a time-coded video camera.

I had a statistically valid sample—25 young, vigorous adult volunteers—make the motions involved in facing an officer

while holding a handgun at their side, then turning to run away. Each subject repeated different variations of this action multiple times—quarter turns, half turns and so on—and I recorded and studied their speed and movements.

Surprises turned up right away. With each successive experiment, there were new surprises. That kept drawing me in deeper and deeper.

Q. Surprises like what?

Answer: In the first experiment I intended to measure only the *speed* of movement—how fast a subject could turn from one position to another. But I discovered a very important *pattern* of movement, too.

Males, especially, tended to use their hands and arms to assist them in turning. This often brought their gun up and forward, and could create the illusion that they were consciously pointing the gun at the officer. Actually, this wasn't true because the suspect would continue rotating away from the officer to flee. But based on the split-second perception of threat, the officer could decide to shoot in self defense...and by the time the bullet arrived, the suspect would be further turned and end up shot in the side or back.

To someone who didn't understand the dynamics involved, it would look like the deliberate, illegal "execution" of a fleeing, non-threatening subject. This would be disastrous for the officer.

I then set up a second series of experiments with 25 new volunteers, repeatedly moving in 11 different shooting configurations—pulling a gun from the waistband, grabbing it from a vehicle console and shooting out the window, every major motion that suspects make in lethal encounters.

This took weeks to film and more weeks to analyze; it was very complicated and very micro-hundredths of a second. In the end we documented, as objectively and empirically as possible, that some suspects intent on shooting an officer can move and fire from

Bottom line: if an officer dealing with a determined armed suspect waits to shoot until he sees a gun pointed at him, it's too late.

most positions three times faster than the average officer can react. More typically, suspects could get off two rounds at an officer before the officer, with his gun already out, finger on the trigger, committed to shooting, could fire—acting as fast as he could.

Bottom line: if an officer dealing with a determined armed suspect waits to shoot until he sees a gun pointed at him, it's too late.

Next, with some outstanding cooperation from the LAPD in 2002, we measured officer reaction time in moving—on target and firing from various holstered and unholstered gun positions. We captured thousands of pieces of data about cops reacting simply to an auditory stimulus, which provokes the fastest response time. No visual distraction, no judgment involved—just moving and shooting.

Q. Any new surprises there?

Answer: We're still mining that data, but we've identified some things that *don't* work that I think will surprise a lot of officers.

For example, some cops like to hold their gun down behind their leg in a "boot-leg" position on nighttime vehicle stops, thinking this will reduce their lag time if there's trouble. We discovered that a trained officer can actually draw from his holster faster than he can throw his arm up from his leg. And, of course, that's safer too.

Some officers think unsnapping their holster will increase speed. We found that a

trained officer actually draws slower from an unsnapped holster because the awkwardness of grabbing a looser weapon delays reaction time; plus he still, automatically and reflexively, goes through the same sequence as if the holster were fully snapped.

Other officers think they're safe, when facing an armed suspect, if their gun is out in a low-ready position. Not so. We tested this against suspects holding a gun pointed down at waist level, a gun held behind their back, and at their side. From these positions, the average subject could point and fire two rounds before the average officer could get on target from low-ready and shoot. The fastest suspect could put three rounds in the officer.

Again, the biomechanics of movement—reaction in its purest form—trap officers behind the reactionary curve. This is even without judgment, distraction and hesitation being introduced as elements.

We've known all along that an armed suspect is dangerous. Now we can prove how incredibly fast and dangerous he can be.

Q. At what point in your experiments did you decide to establish the Force Science™ Research Center?

Answer: Last year I wanted to do studies involving decision making with more than 100 officers from the Tempe P.D. in Arizona, and I needed much more sophisticated equipment than I'd been using. Dr. Bill Hudson, who heads the Electrical and Computer Engineering and Technology Department at Minnesota State and is now my deputy director, volunteered to help design special computer software: a gun that allows trigger pull to be timed in 120 discrete positions; a complex, computer-controlled light board to provoke various visual stimuli; and so on.

I realized that to pursue more complicated research in reliable and meaningful ways, I needed the input and support of



more people from varied backgrounds. This led me to assemble our top-notch national advisory board and a technical experts board, and to create the Center to be an international focal point for scientifically based lethal force research with university-level standards and credibility.

Q. What research is in your pipeline right now?

Answer: This summer we're conducting several simultaneous experiments. One is studying how information is picked up and processed in an officer's peripheral vision, and what implications this may have in force situations. Another involves the influence of multiple suspects on reaction time, and a third explores how we might be able to use officer movements to impose lag time on threatening subjects. A couple of our advisory board members are investigating how perception in rapidly unfolding circumstances is affected by light level.

We've just started looking at how arm movement and weapon control can affect the pattern of shell casings ejected from a semiautomatic. In its early stages, this study seems to be challenging the traditional idea that an officer's position during a shooting can be reliably pinpointed by where his shell casings are found.

We're also discussing with the military possible studies that could impact urban guerilla warfare, as well as law enforcement tactics. We have another 10 projects in the can, just waiting for funding.

There are a lot of academic researchers who have no idea that the work they're doing has possible applications to policing. A psychologist on our campus, for instance, has done extensive research on how split-second distractions affect attention to surroundings, and how a person's internal self-talk affects reaction time. He didn't have a clue this might be of interest and value to police.

Part of the Center's job is to find people like him and convince them to adapt their experiments so they'll be relevant to officers and trainers.

Q. Is there a training aspect to the Center?

Answer: Right now our focus is solely on defining human performance. The practical application of our data is up to other people whose forte is tactical response. In other words, trainers have to face the challenge of what this information means to training.

Some progressive departments already are experimenting in that direction. Within

a year we plan to have a training component that can help. Looking ahead, I can see the Center testing innovations in tactics and perhaps equipment, and doing experiments to determine such things as how many repetitions are necessary to permanently erase outmoded officer behavior and reliably supplant it with something new and better.

Q. Officers are already benefiting in court from your research, right?

Answer: Absolutely. Our findings have been accepted into evidence in a growing number of state and federal jurisdictions. We have also clarified controversial shootings for grand juries, IA hearings, inquests and other investigative forums.

A number of officers who have been charged criminally or sued civilly have been exonerated because of what we could reconstruct, based on force science. When emotions are high and anti-police sentiments abound because of faulty assumptions and knee-jerk accusations, getting an unbiased, documented interpretation of what really happened out to the public can have a strong calming effect. It builds credibility for an agency.

Jurors typically come to court knowing that the Lone Ranger and Roy Rogers never

shot anyone in the back. They imagine gun-fights to be static Dodge City standoffs. When they hear our data, they begin to comprehend just how dynamic, fast and often counter-intuitive real confrontations tend to be. They see that body movement can produce radical changes in positioning faster than an officer can change a decision to shoot, and that his rounds can easily end up someplace other than where he thought he was placing them. They also understand why officers can't always wait for absolute proof before responding to a perceived imminent threat.

Some of our most recent findings from the Tempe studies even help explain why so-called "extra" rounds are often fired by cops after a threatening suspect has been neutralized. For the first time, we've been able to document that when the average officer is shooting rapidly (as he would be in the adrenalized stress of defending his life), it takes him an average of two additional shots to process the information and stop pulling the trigger once he perceives the threat is ended. He's not acting maliciously. He simply can't stop any quicker.

When facts like that are known, they speak for themselves and will generally support the actions of conscientious, truthful officers.

Q. How can trainers help you?

Answer: A number of departments have given us free access to their officers for con-

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ducting experiments. We need more of that kind of research partnering. Even very small, remote agencies can help because some of our studies will involve surveys for which we need a broad-based nationwide pool.

Obviously, if anyone has a big inheritance they'd like to donate to new research, that would be *tremendously* helpful!

Q. Until new and better tactics are developed to complement your findings, what advice would you give officers who are "far behind the reactionary curve" when they're working the street?

Answer: Remain aware of reality. Even if you have above average reaction times, there are limits to your response capabilities imposed by the nature of human brain function and human physiology. You can't react faster than your

body permits you to react.

Use every opportunity you have to put or keep a suspect at a disadvantage. That includes using cover and concealment, creating distance, slowing him down through positioning, whatever.

Don't dismiss safety fundamentals. For instance, if you can't see a subject's hands on a vehicle stop, you're casting your fate to the wind if you approach. Our studies have proved that wherever a suspect may have his hands hidden from sight in a car, he can reach a gun and shoot at you faster than you can react—even with your gun on target and your finger on the trigger. He'll be a lot slower with his hands out the window or, at the very least, where you can watch them.

Stay open-minded. As research into extreme encounters progresses, more insight will emerge and some old "truths" are certain to be laid to rest. Remember that your survival begins with attitude. Be willing to do what it takes to change for the better.

FREE UPDATES

Free reports on the latest findings of the Force Science™ Research Center, plus other important notices about use-of-force issues, will be available periodically via an email information service. To sign up, just send a request with your email address, name and affiliation to: updates@forcescience.com

Center reports can be critical to: law enforcement trainers, administrators and line officers; use-of-force investigators and PIOs; judges, prosecutors and defenders of police in criminal cases, civil litigation and administrative hearings; medical examiners and coroners; military tacticians; other professionals involved in force-related matters.

Hard Facts vs. Raw Emotion: Case Cleared

On the surface, it was easy for the cop to look wrong in the Los Angeles Halloween Party shooting. It went like this:

Officer responds to "loud party" disturbance...partygoer, a young minority male actor, whips a gun from his waistband and points it straight at officer...officer shoots. *But...*the gun turns out to be a phony and the "assailant" turns out to be dead from four shots in his back. An emotionally charged community screams for the officer's head.

What saved him was Dr. Bill Lewinski's scientific research into the dynamics of force encounters.

Clearly there was bad luck involved. The dead man apparently had mistaken the officer for a fellow party guest in a police costume, and had pointed the gun in jest. However, the weapon was so realistic that it was registered and was forbidden to be taken from the movie studio prop room where it was stored.

More troublesome was the shot placement. The officer insisted that the subject's gun was pointed at him throughout the

encounter, but that didn't seem to jibe with the officer's rounds entering the "assailant's" back.

As Lewinski reconstructed the event, with the help of highly sophisticated computer animation, the officer's initial rounds missed the suspect, who apparently suddenly realized he was in a real encounter and started to turn away. Lewinski's research experiments show that when right-handed subjects turn while pointing a gun straight out, they tend to turn to the left. Moving left, the young actor stepped into the officer's field of fire.

The last part of the body to come into a turn when someone is pointing a gun straight out, Lewinski has documented, is an extended arm. Thus the suspect's back could have been presented to incoming rounds even while the gun was still pointed toward the officer. Indeed, the suspect had collided with a chair against a wall so, Lewinski stated, his arm was never able to swing completely into his turn.

The officer's story now made sense.

Lewinski's explanations first helped clear him in a review board investigation, which could have resulted in criminal charges. Next the city presented Lewinski as its expert in a \$5,000,000 lawsuit brought by the peripatetic Johnny Cochran.

Cochran was headed to trial, breathing fire—until his team deposed Lewinski. They tried for six hours to poke holes in his research methods and findings before finally giving up. Three days later, Cochran quietly accepted a token settlement and went away. ♦

In addition to serving on the National Advisory Board of the Force Science Research Center, Charles Rensberg is the author of, STREET SURVIVAL, THE TACTICAL EDGE and TACTICS FOR CRIMINAL PATROL, which remain the country's leading training texts. Rensberg is the co-founder of Calibre Press, Inc., a company he and his partner led for 20 years and sold in 1999. After a five-year hiatus, Rensberg has re-entered the law enforcement training arena. You can contact him via email at cr@forcescience.com.

Eight ASLET Members on Blue Ribbon Board

A blue ribbon Advisory Board, including eight ASLET members (*) and representing a broad cross-section of professional expertise, will help guide the new Force Science™ Research Center in its wide-ranging investigations of lethal force dynamics. The Board, selected by Executive Director Bill Lewinski,* PhD, consists of:

***Alexis Artwohl, PhD**, 16-year police psychologist who trains officers to achieve peak performance in high-stress situations; co-author of *Deadly Force Encounters*.

***Thomas Aveni**, authority in low-light tactical training, and police-shooting reconstruction; former police training coordinator for Smith & Wesson Academy.

***Cory Brente**, leading deputy city attorney in LA's Police Litigation Section, 12 years exclusively defending LAPD officers in state and federal civil suits.

***Scott Buhrmaster**, marketing and business development specialist; co-founder of original Street Survival Newsline® and former research

director for Calibre Press.

Bill Everett, veteran use-of-force trainer; litigation management attorney for League of Minnesota Cities, defending cities and counties in police-related lawsuits.

John Frey, Doctor of Arts, dean of College of Science, Engineering and Technology, Minnesota State University-Mankato

Kevin Gilmartin, PhD, prominent behavioral scientist; author of *Emotional Survival for Law Enforcement*; consultant to federal critical incident response teams.

***Dave Grossi**, court-certified expert in more than 400 police use-of-force cases; former Street Survival® Seminar instructor and force/firearms training commander.

Philip Hayden, PhD, co-creator of FBI SWAT team; developer of first realistic "in vivo" training environment for lethal force encounters.

***John Hoag**, labor relations trainer and attorney specializing in representing public safety labor organizations and officers facing disciplinary actions.

Bill Hudson, PhD, Chair of Electrical and Computer Engineering and Technology Dept., Minnesota State University-Mankato; deputy director of FSRC.

***Gary Klugiewicz**, creator of Active Counter-Measures DT system; head of tactical training for Fox Valley (WI) Technical College; former Street Survival® Seminar instructor.

Scott Olson, PhD, author and expert on communications and the media; VP for academic affairs at Minnesota State University-Mankato.

***Charles Rensberg**, author of leading law enforcement tactical books; co-founder of the original Calibre Press and its Street Survival® Seminar.

***Bob Roberts**, expert on police technology, terrorism and LE education; Director of nation's pre-eminent community college CJ program at Fox Valley Technical College.

Parris Ward, authority on forensic high-speed photography, video imaging and computer animation; frequently testifies as biomechanics expert in police cases.