

# Of Bad Science and Misplaced Faith

By Tom Aveni

Most of us have been conditioned to accept the opinions of people who've been recognized as experts in their chosen field. We've perhaps also been conditioned to believe that by eliminating the human element from the testing of certain mechanical devices we can yield consistent and desirable results pertinent to the performance parameters of that device.

Handguns are a prime example. Manufacturers routinely clamp handguns into mechanical firing platforms, such as the Ransom Rest, and then test them to determine their intrinsic accuracy potential. A good semi-automatic pistol, fired from a Ransom Rest, may yield 1" groups at 25 yards, whereas that same pistol might only yield 3" groups (or worse) when fired from human hands. This is all integral to assuring quality control in handgun manufacture, and it may also yield certain bragging rights when a handgun is being marketed. The consumer is often humbled when he takes his new handgun to the range, expecting to see results similar to those the manufacturer boasted of.

Fortunately, there generally aren't severe consequences as an outgrowth of such misconceptions. But, what if the stark contrast between sterile lab-like testing and real-world results were somehow misapplied in a way to endanger one's personal liberty?

Unfortunately, this isn't an intellectual exercise of hypothetical possibilities. A Chandler Arizona police officer was confronted with "science" that suggested his application of deadly force wasn't justifiable. On the tenuous foundation of that one spent cartridge casing, the officer was subsequently subjected to a criminal indictment and a subsequent high-stakes trial. The final resting place of a single spent cartridge casing was represented to suggest that the officer fired from a vantage point that was contradictory to the officer's assertion of shooting in righteous self defense.

How could a single spent cartridge casing become such a convincing piece of evidence against the officer? How could a forensic expert's testing of the officer's pistol, on a fixed platform rest, be expected to yield results that might even come close to how the officer fired that fateful shot? These questions became the basis of Dr. Bill Lewinski's quest for justice for the accused officer.

Having trained police officers in handgun skills for over twenty-two years, and having been personally exposed to the ejection of roughly 1.5 million pistol cartridges, there were many salient observations to bring to bear in this case. It's rare to see two people pick up the same handgun, fire the same ammunition, and not see measurable deviations in their cartridge case ejection patterns. There are many obvious reasons for this, so obvious in fact that one should be mystified that the position of a single spent cartridge casing might somehow be used in an attempt to convict an officer of homicide.

Anyone who has expended enough time on the range can attest to the fact that handgun

recoil characteristics are influenced by a myriad of shooter variables. And, those same recoil characteristics will directly impinge upon case ejection patterns. The ever-present potential for changes in grip, stance, and posture could all influence recoil characteristics of the handgun. Did forensic testing of the officer's handgun take these critical issues into consideration? Apparently not.

## **Grip**

We are all taught that a handgun's recoil characteristics will show favor toward the path of least resistance. Typically, a one-handed grip will influence a recoil vector toward the side of the handgun that is unsupported. But, even in this, one cannot be certain of the final outcome. Is the officer using a "firm handshake" grip? Or perhaps a more passive "limp" grip? If trained to do so, or due to the nature of a stressful encounter, what influence will a "convulsive grip" have on cartridge ejection patterns? If the officer is shooting with both hands on the handgun, is he/she exerting an even pressure on the full circumference of the grip, or is one hand exerting more passive pressure on one side than the other? How high (or low) has the officer placed his/her hands on the grip in relation to the bore axis of the handgun? There are other important grip-related issues, but for the sake of brevity, we'll move on to the next concern.

## **Stance**

One might ponder whether we'll see measurable ejection pattern differences in shooting techniques (e.g., Weaver vs. Isosceles), but, even that proposition isn't a simple matter of black and white. There is a classic Weaver and a classic Isosceles. There is a modified Weaver and a modified Isosceles. The variations in these two techniques alone suggest substantive changes in everything from the isometric tension used to attenuate handgun recoil, to the degree of shoulder-forward posture that one might also employ to mitigate recoil.

## **Posture: Range vs. Street**

Range observations pertinent to shooting posture are insightful, but we're likely to see a plethora of improvised shooting postures on the street. In lethal confrontations, officers routinely find themselves firing when off-balance, or worse yet, when falling. If the officer is firing around cover or concealment, the handgun is likely to be canted in a way that will also influence ejection patterns. The officer might also find him/herself firing from a seated or prone position – perhaps with the handgun resting against a surface or object. Or, the officer might exhibit a crouching posture far in excess of anything they exhibited in training. We could also take into consideration officers firing when moving, climbing stairs or struggling for retention of their weapon.

Fortunately, Dr. Lewinski's work in defense of the Chandler officer didn't have to go to all of the above extremes. He merely had to undermine accepted notions about how an off-balance officer's single shot at a moving automobile could yield very different results from those exhibited under the overly narrow and rigid test conditions of a forensic

expert. However, to be of legitimate forensic value, the task at hand had to invoke solid research methodology, and the expenditure of thousands of rounds of handgun ammunition. Luckily, Bill Lewinski is no stranger to either of these prerequisites.