Ballistics Evidence
Under Fire
BY PAUL C. GIANNELLI

The initial post-Daubert cases challenging
the admissibility of firearms (ballistics)
identification evidence were unsuccessful. (See United States v. Hicks, 389 F.3d 514,
526 (5th Cir. 2004) (ruling that “the matching of
spent shell casings to the weapon that fired them
has been a recognized method of ballistics test-
ing in this circuit for decades”); United States v.
(“Ballistics evidence has been accepted in crim-
nal cases for many years. . . . In the years since
Daubert, numerous cases have confirmed the reli-
bility of ballistics identification.”); United States
v. Santiago, 199 F. Supp. 2d 101, 111 (S.D.N.Y.
2002) (“The Court has not found a single case in
this Circuit that would suggest that the entire field
of ballistics identification is unreliable.”).

United States v. Green
The trend regarding admissibility of firearms
identification changed in 2005 in United States v.
Green, 405 F. Supp. 2d 104 (D. Mass. 2005), where
the court ruled that the expert could only describe
the ways in which casings were similar but not that
the casings came from a specific weapon “to the
exclusion of every other firearm in the world.” The
court wrote that “O’Shea [the expert] declared that
this match could be made ‘to the exclusion of every
other firearm in the world.’ . . . That conclusion,
needless to say, is extraordinary, particularly given
O’Shea’s data and methods.” (Id. at 107.)

Although the expert had seven years of expe-
rinece in the field, he was not certified, and his
laboratory was not accredited. Moreover, he
had never taken a neutral proficiency examina-
tion. Finally, he could not cite any reliable error
rates. The expert “conceded, over and over again,
that he relied mainly on his subjective judgment.
There were no reference materials of any specific-
ity, no national or even local database on which
he relied. And although he relied on his past expe-
rience with these weapons, he had no notes or pic-
tures memorializing his past observations.” (Id.)

The most riveting aspect of the case came in
the following paragraph:

I reluctantly come to the above conclusion
because of my confidence that any other
decision will be rejected by appellate courts, in
light of precedents across the country. . . . While
I recognize that the Daubert-Kumho stan-
dard does not require the illusory perfec-
tion of a television show (CSI, this wasn’t),
when liberty hangs in the balance—and, in
the case of the defendants facing the death
penalty, life itself—the standards should be
higher than were met in this case, and than
have been imposed across the country. The
more courts admit this type of toolmark
evidence without requiring documentation,
proficiency testing, or evidence of reliabil-
ity, the more sloppy practices will endure;
we should require more. (Id. (footnote omitted).)

In United States v. Monteiro, 407 F. Supp. 2d
351 (D. Mass. 2006), adequate documentation
was lacking, as the expert had not made any
sketches or taken photographs. The court wrote:
“Until the basis for the identification is described
in such a way that the procedure performed by
[the examiner] is reproducible and verifiable, it is
inadmissible under Rule 702.” (Id. at 374.)

By 2007 courts were becoming more cautious.
In United States v. Diaz, 2007 WL 485967 (N.D.
Cal. Feb. 12, 2007), the court found that the re-
cord did not support the conclusion that iden-
tifications could be made to the exclusion of all
other firearms in the world. Thus, “the examin-
ers who testify in this case may only testify that a
match has been made to a ‘reasonable degree of
certainty in the ballistics field.’” (Id. at *11.) Even
courts that admitted the evidence expressed reser-
vations. For example, in United States v. Williams,
506 F.3d 151 (2d Cir. 2007), the Second Circuit
upheld the admissibility of firearms identification
evidence involving bullets and cartridge casings.

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The opinion, however, contained some cautionary language: “We do not wish this opinion to be taken as saying that any proffered ballistic expert should be routinely admitted.” (Id. at 161.)

2008 NAS Ballistics Imaging Report
In 2008, the National Academy of Sciences published a report on computer imaging of bullets. (National Research Council, Ballistic Imaging (2008).) Although firearms identification was not the primary focus of the investigation, a section of the report commented on this subject. After surveying the literature on the uniqueness, reproducibility, and permanence of individual characteristics, the report noted that “[m]ost of these studies are limited in scale and have been conducted by firearms examiners (and examiners in training) in state and local law enforcement laboratories as adjuncts to their regular casework.” (Id. at 70.) The report concluded: “The validity of the fundamental assumptions of uniqueness and reproducibility of firearms-related toolmarks has not yet been fully demonstrated.” (Id. at 81.) The report qualified this statement, however, by stating:

There is one baseline level of credibility . . . that must be demonstrated lest any discussion of ballistic imaging be rendered moot—namely, that there is at least some “signal” that may be detected. In other words, the creation of toolmarks must not be so random and volatile that there is no reason to believe that any similar and matchable marks exist on two exhibits fired from the same gun. The existing research, and the field’s general acceptance in legal proceedings for several decades, is more than adequate testimony to that baseline level. Beyond that level, we neither endorse nor oppose the fundamental assumptions. Our review in this chapter is not—and is not meant to be—a full weighing of evidence for or against the assumptions, but it is ample enough to suggest that they are not fully settled, mechanically or empirically.

Another point follows directly: Additional general research on the uniqueness and reproducibility of firearms-related toolmarks would have to be done if the basic premises of firearms identification are to be put on a more solid scientific footing. (Id. at 81-82.)

The 2008 report further cautioned:

Conclusions drawn in firearms identification should not be made to imply the presence of a firm statistical basis when none has been demonstrated. Specifically, . . . examiners tend to cast their assessments in bold absolutes, commonly asserting that a match can be made “to the exclusion of all other firearms in the world.” Such comments cloak an inherently subjective assessment of a match with an extreme probability statement that has no firm grounding and unrealistically implies an error rate of zero. (Id. at 82.)

United States v. Glynn, 578 F. Supp. 2d 567 (S.D.N.Y. 2008), followed the report. The court ruled that the expert could not use the term “reasonable scientific certainty” in testifying. Rather, the expert would be permitted to testify only that it was “more likely than not” that recovered bullets and cartridge cases came from a particular weapon. The court also commented that “[b]ased on the Daubert hearings . . ., the Court very quickly concluded that whatever else ballistics identification analysis could be called, it could not fairly be called ‘science.’” (Id. at 570.) The court added that the “problem is compounded by the tendency of ballistics experts . . . to make assertions that their matches are certain beyond all doubt, that the error rate of their methodology is ‘zero,’ and other such pretensions.” (Id. at 574.)

2009 NAS Forensic Science Report
Agreeing with its 2008 Ballistics Imaging report, in 2009 the National Academy of Sciences report on forensic science summarized the state of the research as follows:

Because not enough is known about the variabilities among individual tools and guns, we are not able to specify how many points of similarity are necessary for a given level of confidence in the result. Sufficient studies have not been done to understand the reliability and repeatability of the methods. The committee agrees that class characteristics are helpful in narrowing the pool of tools that may have left a distinctive mark. Individual patterns from manufacture or from wear might, in some cases, be
distinctive enough to suggest one particular source, but additional studies should be performed to make the process of individualization more precise and repeatable.

(NATIONAL RESEARCH COUNCIL, NATIONAL ACADEMY OF SCIENCES, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD 154 (2009).)

In a different passage, the report remarked that “[m]uch forensic evidence ‘including, for example, bite marks and firearm and toolmark identifications’ is introduced in criminal trials without any meaningful scientific validation, determination of error rates, or reliability testing to explain the limits of the discipline.” (Id. at 107-08.)

**Recent Cases**

Several recent court cases have acknowledged the limitations surrounding the reliability of firearms identification evidence.

In 2009, a district court in United States v. Taylor, 663 F. Supp. 2d 1170, 1180 (D. N.M. 2009), wrote:

> [B]ecause of the limitations on the reliability of firearms identification evidence discussed above, Mr. Nichols will not be permitted to testify that his methodology allows him to reach this conclusion as a matter of scientific certainty. Mr. Nichols also will not be allowed to testify that he can conclude that there is a match to the exclusion, either practical or absolute, of all other guns. He may only testify that, in his opinion, the bullet came from the suspect rifle to within a reasonable degree of certainty in the firearms examination field. (Id. at 1180.)

In 2010, the court in United States v. Willock, 696 F. Supp. 2d 536, 546 (D. Md. 2010), based on a comprehensive magistrate’s report, held that “Sgt. Ensor shall not opine that it is a ‘practical impossibility’ for a firearm to have fired the cartridges other than the common ‘unknown firearm’ to which Sgt. Ensor attributes the cartridges.” Thus, “Sgt. Ensor shall state his opinions and conclusions without any characterization as to the degree of certainty with which he holds them.” (Id. at 549.)

Several other courts addressed the issue:

- United States v. Lape, 2010 WL 909756, at 4* (S.D. 2010) (noting “that the ‘science’ of matching toolmarks to shell casings and excluding all other weapons but the one tested as possibly having made those marks is not without its critics”);
- United States v. Alls, slip op., No. CR2-08-223(1) (S.D. Ohio Dec. 7, 2009) (“[T]his Court follows the approach taken by Glynn, Monteiro, Green, Diaz and Mouzone, and places a limitation on Ms.McClellan’s testimony. Although Ms. McClellan may testify as to her methodology, case work, and observations in regards to the casing comparison she performed for this case, she may not testify as to her opinion on whether the casings are attributable to a single firearm to the exclusion of all other firearms. Such testimony would be misleading and prejudicial given the inherent subjectivity in firearm and Toolmark Identification.”); and
- United States v. St. Gerrard, US Army Trial Judiciary, 5th Judicial Cir., Germany (7 June 2010) (“Considering the Daubert factors in light of Mrs. Sevigny’s anticipated testimony, the Court finds that any testimony indicating that the shell casing must have come from the AK-47 would be unreliable. While it is clear that Mrs. Sevigny has training and expertise in identifying toolmarks that would undoubtedly assist the trier of fact in this case, the subjective nature of the process, lack of quantitative standards, and limited scope of foundational testing do not demonstrate the scientific principles necessary to establish the origin of the marks with any specific amount of certainty.”).

Since 2005, admissibility of ballistics evidence has changed considerably. The 2008 and 2009 reports from the National Academy of Sciences as well as United States v. Green and subsequent cases illustrate that, unlike the initial challenges to admissibility of firearms evidence in the wake of Daubert, new challenges are likely to find more success.

**References**

The controversy has produced a number of articles:

- Stephen G. Bunch et al., *Is a Match Really a Match? A Primer on the Procedures and Validity of Firearm and Toolmark Identification*, 11 FORENSIC SCI. COMM. (July 2009);
- Roger G. Nichols, *Defending the Scientific Foundations of the Firearms and Tool Mark Identification Discipline: Responding to
Recent Challenges, 52 J. Forensic Sci. 586 (2007);
• Adina Schwartz, A Systemic Challenge to the Reliability and Admissibility of Firearms and Toolmark Identification, 6 Colum. Sci. & Tech. L. Rev. 2 (2005);
• Adina Schwartz, Challenging Firearms and Toolmark Identification—Part One, CHAM-
  PION (Oct. 2008);
• Adina Schwartz, Challenging Firearms and Toolmark Identification—Part Two, CHAM-
  PION 44 (Nov. 2008);
• See generally Paul C. Giannelli & Edward J. Imwinkelried, Scientific Evidence, ch. 14
  (4th ed. 2007).