

Authors' Response

Sir:

Dr. Schwartz opens with an implication that the author stresses being more precise in linguistic issues will go far in helping to "still the quibbling of attorneys." While I have no doubts that being more precise in our language will help to communicate the intricacies of our discipline better, I have little expectation that it will actually "still the quibbling." There will always be quibbling. That is the nature of the judicial system.

A careful reading of Dr. Schwartz's response highlights three primary issues. One is the identification criteria—the amount of correspondence that establishes in the examiner's opinion that a particular tool was responsible for producing a tool mark in question. The second is that some form of statistical treatment is needed to lay the foundation for "testimony that the likelihood that any tool besides the suspect tool made the evidence tool mark is vanishingly small." Finally, Dr. Schwartz delves into the issue of subclass characteristics and how there are no hard and fast rules to account for them.

The identification criterion for a firearm and tool mark examiner is subjective. It is based on his or her conception of what is to be expected as coincident correspondence between two non-matching tool marks and what is expected in tool marks known to have been produced by the same tool. The issue is whether or not this subjectivity renders the science of firearm and tool mark discipline impotent. It would not serve the reader to repeat what has already been clearly delineated in the referenced article (1) showing how the subjectivity does not render the discipline impotent. It can and has been tested, verified and validated. Furthermore, in his ruling in a case in which both Nichols and Schwartz appeared, Judge Alsup wrote, "This order holds that the theory of firearms identification, though based on examiners' subjective assessment of individual characteristics, has been and can be tested. Importantly, the literature from the field demonstrates that the traditional pattern matching theory has been tested—and verified—for the decades that firearms examination has been in existence" (2).

As has been done in the past, Dr. Schwartz continues to mischaracterize consecutive matching striations, otherwise referred to as CMS (3). CMS is not a different method of comparison. It is simply a means to describe the correspondence that is being observed in a discrete, numerical format. As expressed in the referenced article (1), the advantage lies in that an examiner is not necessarily subject to his or her training and experience when developing an identification criterion but can also rely on the work of others utilizing a similar model for describing their comparisons (4).

The second issue of statistical treatment is lost in the discussion of why Dr. Schwartz considers a DNA analogy appropriate. The

point is simply that there is an unknown—that, "vanishingly small" likelihood that another tool could have made a suspect tool mark, as referred to by Dr. Schwartz. It is refreshing that she no longer claims firearms and tool mark examiners have not even "attempt[ed] to answer this question" (5). Such treatment is being explored and there have been difficulties as thoroughly discussed in the referenced article (1). The important issue to stress is that in the absence of a specific statistical treatment such as that exists for DNA, the plethora of published studies, validation tests and proficiency tests have demonstrated that firearm and tool mark examiners can and do reach conclusions of identity with a very low error rate. Would a statistical treatment be helpful in helping a jury to better understand the significance of a non-absolute identification? It could, but the lack of such treatment does not invalidate the wealth of available information supporting the reliability of the discipline.

Finally, the referenced article (1) detailed a number of studies regarding the issue of subclass characteristics. It is clear, based on that discussion, that a trained firearm and tool mark examiner would be able to make the necessary connections between the manufacturing process and the likelihood about whether or not subclass characteristics would be an issue. In addition, there are issues of tool—substrate interaction that are to be considered. Just because subclass characteristics may be present on or near tool working surfaces, does not mean that they will be transferred to tool marks produced by that tool. What Dr. Schwartz is seeking are "strict rules" about what is and what is not a subclass characteristic and what manufacturing processes produce them. With all due respect, trained examiners have little difficulty in assessing these well written studies and making rules of application for their casework and the discipline in general.

References

1. Nichols RG. Defending the scientific foundations of the firearms and tool mark identification discipline. *J Forensic Sci* 2007;52(3):586–94.
2. Transcript of Hearing. United States vs. Diaz. U.S. District Court, Northern California, No. CR 05-00167 WHA, 9.
3. Schwartz A. A systemic challenge to the reliability and admissibility of firearms and toolmark identification. *Columbia Sci Technol Law Rev* 2005;6:1–42.
4. Nichols R. Consecutive Matching Striations (CMS): its definition, study and application in the discipline of firearms and tool mark identification. *AFTE* 2003;35(3):305.
5. Schwartz A. A systemic challenge to the reliability and admissibility of firearms and toolmark identification. *Columbia Sci Technol Law Rev* 2005;6:13.

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